



### **North Essex Authorities**

Infrastructure Order of Cost Estimate [41,000 Homes]

North Essex Authorities Gleeds Cost Management Project LNCM 0931

Version: 1 Date: 01/07/2019

#### DOCUMENT CONTROL

Project name	North Essex Authorities	Project number	LNCM0931
Date of Issue	1 July 2019	Version number	01
Reason for issue	Cost Estimate for Garden Communities Infra	structure Works	
Document author		Grade	
Signature			
Contributors	David Hutt, Colin Field. Willem Viljoen, Ria C and Analytics	Carr, Della Hughes, D	avid Nicholl, Gleeds Insight
Approved by	Colin Field	Grade	Director
Signature			
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Security classification	Confidential		
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#### **Executive Summary**

Gleeds have undertaken a review of the cost of infrastructure works associated with the development of 41,000 homes across 3 new garden communities in North Essex. This report is based on the design information contained within AECOM's Infrastructure Planning, Phasing and Delivery (NEGC IPPD) Draft Report dated July 2019..

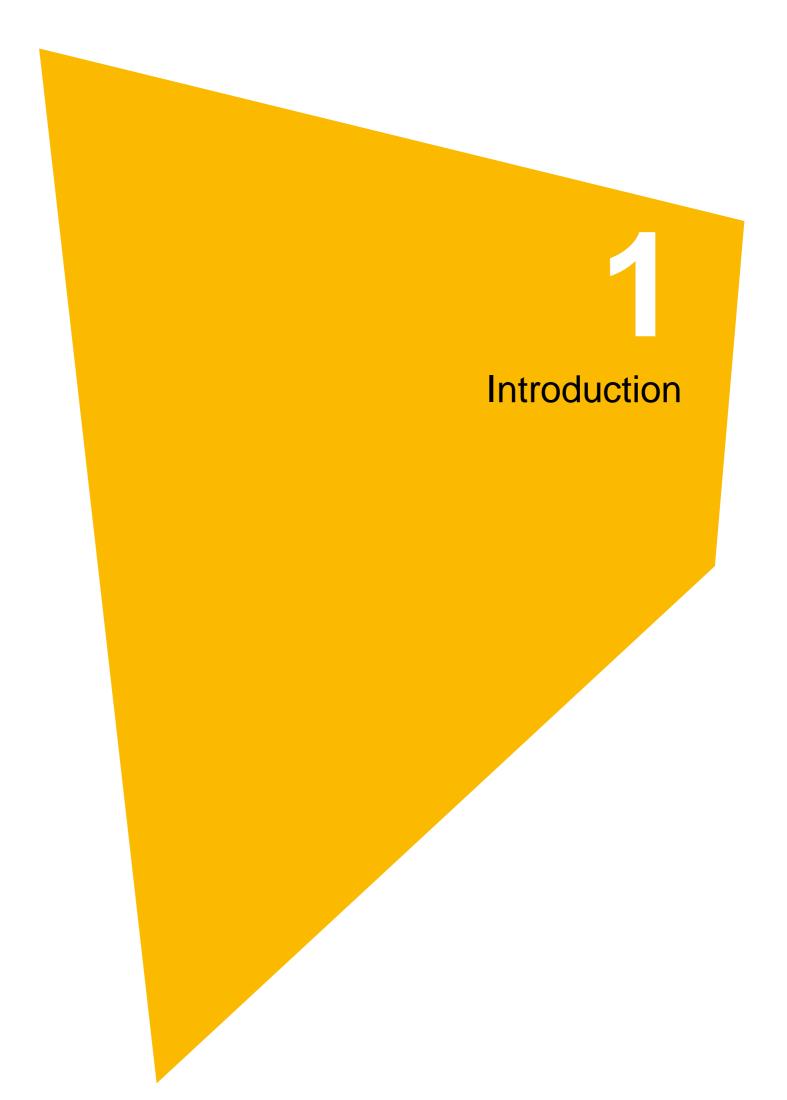
We have identified clear assumptions within our report under Section 5.

This estimate reflects prices at Q4 2018 based on the details referenced therein. The pricing basis of this preliminary budget estimate is current market conditions and should be reviewed at regular intervals of no longer than 3 months.

Throughout the cost estimating process we have worked collaboratively with other consultants. The infrastructure requirements have been informed by review of the design information as set out in the AECOM IPPD Draft Report July 2019, and in some cases estimated using metrics outlined in ECC Developer's Guide to Infrastructure Contributions Document. We have also incorporated Essex County Councils' guidance on Education requirements, UCML guidance on utilities provisions, Essex Highways guidance on Rapid Transit System requirements and the North Essex Authorities guidance on Per Unit Contributions.

A number of benchmark data are identified within this report; however, the following are key priorities during the next stage of the feasibility design;

- Inflation Forecast to be reviewed
- Refined design information to determine accurate benchmark information
- Strategic review of associated risk



#### Introduction

#### Overview

Gleeds have been asked to provide cost advice for the community infrastructure and enabling works required to support the delivery of 41,000 homes across three new garden communities over a number of phases in Essex to Garden Community Principles.

Whilst it is too early to provide detailed substantiation behind the Order of Cost Estimate contained within this report, this report aims to give the NEA the intended guidance of the likely cost associated with the infrastructure works.

This report presents the findings of a "high-level" design assessment based on AECOM's IPPD Draft Report dated July 2019. Identifying three broad locations at West of Braintree, Tendring Colchester Borders and Colchester Braintree Borders. It is noted that these analysis and options will continue to evolve, and the basis of our report is the assumed delivery of 41,000 homes as outlined within AECOM's IPPD Draft Report dated July 2019 and the number of homes proposed for each of the Garden Communities is as follows:

Site	Gleeds	AECOM
	Number of Residential Units	Number of Residential Units
1 - West of Braintree	12,500	12,500
2 - Tendring Colchester Borders	7,500	7,500
3 - Colchester Braintree Borders	21,000	21,000
	41,000	41,000

	NEA	ONS	Gleeds
Garden Community	Number of Residential Units	Anticipated Population	£ / Residential Unit
Site 1 – West of Braintree	12,500	30,000	£64,000
Site 2 – Tendring Colchester Borders	7,500	18,000	£66,000
Site 3 – Colchester Braintree Borders	21,000	50,400	£63,000

Please note: £ / Residential Unit rates reflect prices at 4Q2018 and include 10% Professional Fees and 10% Risk.

64,000

#### Infrastructure Costs per Site:

	Site 1	Site 2	Site 3	All Sites
	West of Braintree	Tendring	Colchester	
		Colchester	Braintree	
		Borders	Borders	
Number of Units	12,500	7,500	21,000	41,000
	(£ Total)	(£ Total)	(£ Total)	(£ Total)
Education	105,930,000	65,250,000	172,350,000	343,530,000
Healthcare & Community	23,260,000	13,020,000	36,090,000	72,370,000
Open Space	39,850,000	23,910,000	66,950,000	130,710,000
Utilities - Scheme-Wide Enabling Works	230,420,000	138,640,000	389,980,000	759,040,000
Additional Onsite Requirements	8,340,000			8,340,000
Utilities - Off-Site Requirements	34,910,000	27,250,000	70,360,000	132,520,000
Transport	140,830,000	108,740,000	248,850,000	498,020,000
Per Unit Contributions	81,690,000	30,710,000	117,600,000	230,000,000
Total Construction Cost (exc. Fees				
and Risk)	665,230,000	407,520,000	1,101,780,000	2,174,530,000
Cost per Unit (exc. Fees and Risk)	53,000	54,000	52,000	53,000
Professional Fees (10%)	66,520,000	40,750,000	110,180,000	217,450,000
Project Risk (10%)	73,180,000	44,830,000	121,200,000	239,200,000
Total Cost at 402018 (exc. VAT)	804.930.000	493.100.000	1.333.160.000	2.631.180.000

#### Cost per Unit

Assumptions:

• Number of units as per the AECOM IPPD Draft Report dated July 2019.

64,000

• Anticipated population assumes a population per household rate in line with the Office for National Statistics (ONS, 2017) average of 2.4 persons per household.

66,000

63,000

Professional Fees and Risk Allowances:

- Professional fees assumed at 10%.
- Project risk assumed at 10%. Given the high-level nature of this estimate, we have assumed 10% Risk as a reasonable starting point. Risk allowance and allocation on an item by item basis should be strategically reviewed as a key priority.

This report provides the analysis and conclusions that derived from a select group of documents given the works that has gone into the Garden Communities Charter and the three Borough Councils Local Plan process. We also used the objectives as set out in the NEGC Concept Feasibility Study. A schedule of information used can be found in Appendix D.

#### Background

The NEA's preferred option is to deliver the Garden Communities through an infrastructure led approach.

This report outlines the conceptual masterplan work undertaken by AECOM to further support the NEA's infrastructure planning, phasing and delivery of the three garden communities. We have also accounted for several changes to the design which have been advised by the NEA and their advisers

The principal objective for this report is to:

Set the Cost Framework for the delivery of the Garden Communities Infrastructure as outlined in AECOM's IPPD Draft Report dated July 2019.

The report consists of 5 sections comprising:

- Total Infrastructure Requirements by Phase:
  - West of Braintree
  - Tendring Colchester Borders
  - Colchester Braintree Borders
- Assumptions
- Appendices

## Total Infrastructure Requirements by Phase – West of Braintree

#### Site 1: West of Braintree

Infrastructure	Demand Arising From Development	Unit of demand	Rate	Notes	Commentary / Assumptions	Total	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	Phase 7	Phase 8	Phase 9	Phase 10
							1351	2853	4108	5156	6665	ive Development 8223	9224	10658	11866	12500
							1351	1502	1255	1048	2509 Phase	d Development 1558	1001	1434	1208	634
Education																
Primary Schools: 2 Form Entry (including 56 place EY+C facility)	14	FE	3,150,000	Requirement as advised by the NEA.	2FE facilities and EX + C Assuming 210	(										
ratumy)				ule NEA.	places per FE and 5 places per EY. Excludes temporary accommodation.	6	2FE + EY	2FE + EY	2FE + EY		2FE + EY			2FE + EY		2FE + 1
Secondary Schools	12	FE	3,690,000	Requirement as advised by the NEA.	Assuming 150 place per FE. Excludes temporary accommodation.		7,470,000	7,470,000 6FE	7,470,000		7,470,000	7,470,000	6FE	7,470,000		7,470,00
Standalone Early Year Facilities (56 place, above those co-located with Primary)	8	Facilities	1,170,000	Requirement as advised by the NEA.	per facility. 7 EY facilities within prima schools, 15 in total required by development.	ary		22,140,000					22,140,000			
					Excludes temporary accommodation.	9,360,000	1,170,000	1 1,170,000		1,170,000	1,170,000	1 1,170,000	1 1,170,000		1,170,000	1 1,170,00
Healthcare & Community																
General Practitioners	2805	m2	3000	Based on West of Braintree Social Infrastructure Standards EXD/013E Braintree Council Website	Demand arising 17 GPs. Assuming 180 population per GP. Assuming a population of 30,000 (2.4/unit). Assuming 165 m2 / GP.	0	2	2	1	2	2	1	2	2		
Dentists	900	m2	3,000	Based on West of Braintree	Demand arising 18	8,415,000	990,000	990,000	495,000	990,000	990,000	495,000	990,000	990,000	495,000	990,00
				Social Infrastructure Standards EXD/013E Braintree Council Website	Dentists. Assuming 1760 population per dentist. Assuming a population of 30,000 (2.4/unit). Assuming 50 m2 / Dentist.	)	2	2	2	2	2	2	1	2		
Community Space and Libraries	3600	m2	2,500	Library Space based on ECC Social Infrastucture Standards, Arts Council. Community Space provisions as advised by the NEA and their advisers.	m2 of Library Space Assuming 30 m2 pe s 1000 persons.	r r d t s	300,000	300,000	300,000	300,000	300,000	300,000	150,000	300,000	300,000	150,00
						9,000,000	11% 972,720	12% 1,081,440	10% 903.600	8% 754,560	12% 1,086,480	12% 1,121,760	8% 720,720	11% 1,032,480	109	
4 Court Sports Centre	1428	m2	1,450	Based on ECC Social Infrastucture Standards, Colchester SPC Provision of Open Space, Sport and Recreational facilities 2006.	1000 persons.	r ər	512,120	1,001,100	300,000	101,000	1,000,400	1,12,1,700	120,120	1,002,000		
4 Lane Swimming Pool	100	~ 0	0.000	Based on ECC Social	Domandi-i 0	2,070,600	1 690,200				1 690,200				690,200	1
	490	m2	2,200	Infrastructure Standards, Infrastructure Standards, Colchester SPG Provision of Open Space, Sport and Recreational facilities 2006.	1000 persons.	ər	1					1				
						1,078,000	539,000					539,000				
Open Space																
Open space	240	ha	140,000	Based on ECC Social Infrastructure Standards, based on an average of Braintree, Colchester and Tendring LPA. Uplifted to 8th our 1000 people as activised	Assuming a population of 30,000 (2.4/unit). Including; 8ha total open space a per 1000 population	e										
				per 1000 people as advised by the NEA.		33,600,000	24.00 3,360,000	52.80 7,392,000	19.20 2,688,000	28.80 4,032,000	52.80 7,392,000		12.00 1,680,000	12.00 1,680,000	26.4 3,696,000	

3.2 Environment/waste - Allowance to include any noise attenuation and on	12,500	units	500		1 I	<b></b>									1
site recycling points				Covers the provision of acoustic bunding / fencing to mitigate the											
				impact of external sources of noise such as highways and											
				public transport and localised solid waste recycling area.											
				rooyoning aroa.	6,250,000	1351 675,500	1502 751,000	1255 627,500	1048 524,000	1509 754,500	1558 779,000	1001 500,500	1434 717,000	120 604,000	
4 Utilities - Scheme-Wide Enabling Works															
			18,434 See Breakdown Below	v. Assuming Site Area as defined in the	230,420,000										
				AECOM IPPD background work of 685ha plus an											
				allowance for an additional 10% of this area to allow for											
				works outside of the core development											
				area and within the site boundary. Excludes any											
				allowance for archaeological findings.											
					Includes the below items										
Site Preparations and Earthworks           4.1         General demolition and site clearance 754 ha = m²           4.2         Strategic Earthworks; cut and fill	7,540,000 7,540,000	m <sup>2</sup> m <sup>2</sup>	1		7,540,000 7,540,000	814,923 814,923	906,006 906,006	757,016 757,016	632,154 632,154	910,229 910,229	939,786 939,786	603,803 603,803	864,989 864,989	728,666	
Highways     Primary and secondary road network	7,540,000		10		75,400,000	8,149,232	9,060,064	7,570,160	6,321,536	9,102,288	9,397,856	6,038,032	8,649,888	7,286,656	
Drainage           4.4         Foul and surface water network	7,540,000	m²	2		15,080,000	1,629,846	1,812,013	1,514,032	1,264,307	1,820,458	1,879,571	1,207,606	1,729,978	1,457,331	1 764,858
Landscaping 4.5 Cost captured in open-space Noise attenuation															
4.6 Cost captured in open-space Waste Management															
4.7 Provision for recycling on site, excluding new amenitys     Energy     4.8 58 No. 11 kV to 400 V distribution substations	12,500	Nr Substations	250 315,000		3,125,000 18,270,000	337,750	375,500 2,195,323	313,750 1,834,308	262,000 1,531,757	377,250 2,205,554	389,500 2,277,173	250,250	358,500 2,095,934	302,000	
<ol> <li>9 No. 11 kV ring circuits from primary substation to connect to distribution substations.</li> </ol>	9	Ring Circuits	315,000		2,840,000	306,947	341,254	285,136	238,106	342,845	353,978	227,427	325,805	274,458	3 144,045
4.10         400 V LV circuits from distribution substations to end users           4.11         Residential Electricity Connections	12,500	Circuits/Unit	1,300 Based on UCML's Utilities Review	Assuming 12,500 nr residential	16,250,000	1,756,300	1,952,600	1,631,500	1,362,400	1,961,700	2,025,400	1,301,300	1,864,200	1,570,400	824,200
				connections. Excludes off-site mains lay from the POC location and											
				any upstream reinforcement.											
				Excludes connections to commercial.											
					20,625,000	11% 2,229,150	12% 2,478,300	10% 2,070,750	8% 1,729,200	12% 2,489,850	12% 2,570,700	8% 1,651,650	11% 2,366,100	109	% 5% 0 1,046,100
4.12 Budget cost per Low Voltage (LV) Service Disconnection		Unit	1,800 Based on UCML's Utilities Review	Number of existing properties within the core development											
				area likely to be demolished is unknown.											
Potable water				unknown.	Excluded										
4.13 New network of distribution pipework     4.14 Water mains, connections and infrastructure charges	12,500	Network	1,300 Based on UCML's Utilities	Assuming the supply	16,250,000	1,756,300	1,952,600	1,631,500	1,362,400	1,961,700	2,025,400	1,301,300	1,864,200	1,570,400	824,200
			Review	of 12,500 nr dwellings. Excluding Infrastructure charge											
				inflations. Excluding connections to commercial.											
Waste Water					19,375,000	11% 2,094,050	12% 2,328,100	10% 1,945,250	8% 1,624,400	12% 2,338,950	12% 2,414,900	8% 1,551,550	11% 2,222,700	109	
4.15         New network of collection pipework           4.16         Plot connections for all properties to waste water distribution	12,500	Connections	1,300		16,250,000	1,756,300	1,952,600	1,631,500	1,362,400	1,961,700	2,025,400	1,301,300	1,864,200	1,570,400	
A.17 Low Pressure Residential Connections	12,500		500 Based on UCML's Utilities	Assuming 12,500 nr	6,250,000	675,500	751,000	627,500	524,000	754,500	779,000	500,500	717,000	604,000	317,000
			Review	low pressure residential connections. Includes											
				gas pressure reduction systems and on-site medium											
				pressure mains lay. Excludes off-site											
				mains lay and upstream reinforcements or											
				connection enabling works. Excludes connections to											
				commercial.	5,625,000	11% 607,950	12% 675,900	10% 564,750	8% 471,600	12% 679,050	12% 701,100	8% 450,450	11% 645,300	109 543,600	
					-,,0				,				,,		
5 Additional onsite requirements		Plant	Based on AECOM IPPD												
5.1 New Plant to treat additional capacity onsite		Fidit	based on AECOM IPPD background work		7,700,000	100% 7,700,000									
	•		•	•	, ,										

5.2 1 No. Medium to Low Pressure reducing station		Station 1	635,000	Based on AECOM IPPD background work			100%									
						635,000	635,000									
6 Utilities - Off-Site Requirements																
Electricity 6.1		MVA		Based on AECOM IPPD												
Primary Substation 132/11 kV with 2 x 45 MVA transformers		MITA.		background work		11 050 000		100%								
6.2		Connection		Based on AECOM IPPD		11,250,000		11,250,000								
132 kV connection to Primary Substation from Braintree Grid substation				background work			100%									
6.3				Based on UCML's Utilities		9,200,000	9,200,000									
Electricity Diversion Works				Review			100%									
Potable Water						2,000,000	2,000,000									
6.4 Connection to closest feasible supply source with capacity				Based on AECOM IPPD background work												
(e.g. trunk main or reservoir)						4,100,000	100% 4,100,000									
6.5 Budget cost per lowering of a 100mm distribution water main to		5 Site Entrances	15,000	Based on UCML's Utilities	Assuming 5 nr Site	4,100,000	4,100,000									
accommodate a site entrance.				Review	Entrances	75,000	75,000									
Waste Water / Foul Water 6.6		Upgrades		Based on AECOM IPPD												
Upgrades to water course discharges / Surface Water		opgradoo		background work		1,600,000	100% 1,600,000									
6.7				Based on AECOM IPPD		1,000,000	1,600,000									
Effluent from on-site waste treatment plant pumped 3.5km to River Brain				background work			100%									
Gas						2,050,000	2,050,000									
6.8 Extension to Medium Dresquire potwork		1km Pipeline		Based on AECOM IPPD												
Extension to Medium Pressure network				background work		1,025,000	100% 1,025,000									
Telecommunications 6.9		% of total		Based on AECOM IPPD												
Development of access chambers for BT Telecoms network,				background work												
BT Openreach fibre optic network and private telecoms network throughout development		provision					11%	12%	10%	8%	12%	12%	8%	11%	10%	
6.10 Budget cost per fibre provider for the diversion of underground		3 nr	130.000	Based on UCML's Utilities	Assuming 3nr	3,220,000	348,018	386,915	323,288	269,965	388,718	401,341	257,858	369,398	311,181	163,318
apparatus at a single location.		5 11	130,000	Review	Providers	000.000	100% 390,000									
	_					390,000	390,000									
7 Transport																
7.1 On site RTS route and related improvements/facilities (WoB5)		% of total		Based on Jacobs RTS Study		r										
		provision		2019	investment scenario. Low end of the range											
					(as allowances for risk/contingency											
					added separately)											
						22,900,000	15% 3,435,000	12% 2,748,000	15% 3,435,000	13% 2,977,000	14% 3,206,000	18% 4,122,000	13% 2,977,000	0%	0%	0%
7.2 Contribution to provisions of off site RTS network (WoB6)		% of total		Based on Jacobs RTS Study		22,900,000	3,435,000	2,748,000	3,433,000	2,977,000	3,200,000	4,122,000	2,977,000	-	-	-
		provision		2019	Cost relates to higher	r										
					investment scenario. Low end of the range											
					(as allowances for risk/contingency											
					added separately). Allowance as a											
					proportion of overall											
					funding requirements	64,200,000	27% 17,334,000	30% 19,260,000	14% 8,988,000	14% 8,988,000	15% 9,630,000	-	- 0%	- 0%	- 09	- 0%
7.3 Various combined segregated pedestrian / cycle "Greenways" through site (WoB8)		% of total provision		Based on AECOM IPPD background work,												
				amendments to these costs as advised by the NEA.												
						2,940,000	11% 317,755	12% 353,270	10% 295,176	8% 246,490	12% 354,917	12% 366,442	8% 235,435	11% 337,277	10% 284,122	
7.4 Upgrade to existing pedestrian bridge over A120 to provide pedestrian / cycle connection between site and Flitch Way. At-grade or elevated link		% of total provision		Based on AECOM IPPD background work,												
to continue into the site (WoB12)		,		amendments to these costs as advised by the NEA.												
						4,410,000	100% 4,410,000									
7.5 New pedestrian / cycle bridge (combined with new junction arrangements) over A120 providing a connection between the site and		% of total provision		Based on AECOM IPPD background work,												
Flitch Way, including new route south of A120 (WoB11)		,		amendments to these costs as advised by the NEA.												
						6,510,000		100% 6,510,000								
7.6 A shared use footway/Cycleway between Rayne and Blake End alongside the B1256. (WoB10)		% of total provision		Based on AECOM IPPD												
		provision		background work. ITP reviewed & costs assumptions												
				increased to achieve high												
				qualiy connection.			50%		50%							
7.7 Flitch Way east of Pods Lane and Rayne to retain rural character and		% of total		Based on AECOM IPPD	-	8,600,000	4,300,000		4,300,000							
setting. A 2km all-weather surfaced section from River Brain to Pods Lane in Rayne with sensitive lighting is proposed to improve		provision		background work. ITP reviewed and consider should												
connectivity to Braintree town-centre B123; (WoB9)				be higher to get better qualiy connection.												
								100%								
		1				4,200,000		4,200,000								

8 Transit Hub & multi-modal interchange (with RTS) (WoB7)		% of total provision	Consistent approach to other GCs. As advised by the NEA.	To provide for interchange between modes, including provision of park & ride (as appropriate)											
					Included in on-site RTS, item 7.1	_	-								
Upgrades to improve safety and operation at the B1417 / B1256 and B1256 / Blake End junction to form a new roundabout or signal controlled junction (WoB1a)	9 F	% of total provision	Based on AECOM IPPD background work, amendments to these costs as advised by the NEA.												
					2,550,000	100% 2,550,000									
0 Utilise existing access arrangements from the A120 junction with the addition of a new on-slip (WoB1b)		% of total provision	Based on AECOM IPPD background work, amendments to these costs as advised by the NEA.			100%									
1 All-vehicle off-slip and associated junction improvement at Stebbing	9	% of total	Based on AECOM IPPD		3,026,000	3,026,000									
Green (WoB2b)		provision	background work, amendments to these costs as advised by the NEA.		050.000		100%								
2 Additional infrastructure to form an all-movement junction between the	9	% of total	Based on AECOM IPPD		850,000		850,000								
A120 and B1417 and associated widening of the bridge structure. (WoB2a)	1	provision	background work, amendments to these costs as advised by the NEA.												
					7,000,000	100% 7,000,000									
<ol> <li>Bus only eastbound off-slip and eastbound on-slips to above junction (WoB15)</li> </ol>		% of total provision	Based on AECOM IPPD background work, amendments to these costs as advised by the NEA.				100%								
			Record on AECOM IDDD		1,620,000		1,620,000								
4 The addition of a full junction upgrade connecting the main site access with the above upgrades to the A120/B1417 junction (WoB3)		% of total provision	Based on AECOM IPPD background work, amendments to these costs as advised by the NEA.				100%								
5 The addition of a new signal control or roundabout junction providing		% of total	Based on AECOM IPPD		10,200,000		10,200,000								
direct access from the B1256 junction through to the site (WoB1c)		provision	background work, amendments to these costs as advised by the NEA.				100%								
					1,820,000		1,820,000								
6 Internal road network		% of total provision													
					Included in enabling costs										
Per Unit Contributions															
Investment in early phase bus/transit services (WoB14)		% of total provision	Based on AECOM IPPD background work, amendments to these costs as advised by the NEA.	Delivered from day one with funding annually for the first three phases											
					5,438,580	33% 1,794,731	33% 1,794,731	34% 1,849,117							
2 Contribution to Strategic highways (incl A120 improvement) (WoB5)		% of total 2,0 provision	500 Allowance as advised by the NEA.		31,250,000	11% 3,377,500	12% 3,755,000	10% 3,137,500		12% 3,772,500	12% 3,895,000	8% 2,502,500	11% 3,585,000	10% 3,020,000	5% 1,585,000
3 Travel plan measures (smarter choices, car clubs, charging points, etc) - Straight Line Cost Over Time		% of total provision	500 Allowance as advised by the NEA.	Aligned to Modal Shift analysis (ITP)		11%	12% 751,000	10%	8%	12%	12%	8%	11%	10% 604,000	5%
4 Open Space Endowment		% of total 2, provision	100 Allowance as advised by the NEA.		6,250,000	11%	12%	10%	8%	12%	12%	8%	11%	10%	5%
5 Employment Space		% of total 1,1 provision	000 Allowance as advised by the NEA.		26,250,000	2,837,100	3,154,200	2,635,500	2,200,800	3,168,900	3,271,800	2,102,100	3,011,400	2,536,800	1,331,400
					12,500,000	1,351,000	1,502,000	1,255,000	1,048,000	1,509,000	1,558,000	1,001,000	1,434,000	1,208,000	634,000
Subtotal Total Cost Per Phase					665,223,180	122,602,818	139,136,824	62,464,349	45,963,227	70,454,018	56,667,891	55,379,646	48,077,338	38,056,851	26,420,218
Plus Professional fees at 10% Plus Contingency at 10%			10% 10%			12,260,282 13,486,310	13,913,682 15,305,051	6,246,435 6,871,078	4,596,323 5,055,955	7,045,402 7,749,942	5,666,789 6,233,468	5,537,965 6,091,761	4,807,734 5,288,507	3,805,685 4,186,254	2,642,022 2,906,224
Total Scheme Cost Per Phase						148,349,410	168,355,557	75,581,863	55,615,505	85,249,361	68,568,148	67,009,372	58,173,578	46,048,790	31,968,463
Total costs at 4Q2018 (excluding VAT) Accumulative number of units						148,349,410 1351	168,355,557 1502	75,581,863 1255	55,615,505 1048	85,249,361 1509	68,568,148 1558	67,009,372 1001	58,173,578 1434	<b>46,048,790</b> 1208	<b>31,968,463</b> 634
Total % of units						11%	12%	10%	8%	12%	12%	8%	11%	10%	5%
Total Cost per Unit						109,807	112,088	60,225	53,068	56,494	44,010	66,942	40,567	38,120	50,423

## Total Infrastructure Requirements by Phase – Tendring Colchester Borders

Site 2: Tendring Colchester Borders

Ĩ	nfrastructure	Demand arising from development	Unit of demand Rate	Note	es	Commentary/assumptions	Total	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6
ŀ		and total cost								Cumulative D			
								1442	3004	4556 Phased Dev	5783	6848	7500
								1442	1562	1552	1227	1065	652
1 E	Education												
				0.450.000			1						
	rrimary Schools: 2 Form Entry (including 56 place EY+C acility)	8	FE	3,150,000 Rec advis	ised by the NEA.	2FE facilities and EY + C Assuming 210 places per FE and 56 places per EY. Excludes temporary accommodation.							
-							00.000.000	2FE + E 7,470,00		2FE + EY 7,470,000		2FE + EY	
1.2 \$	Secondary Schools	8	FE	3,690,000 Rec advis	ised by the NEA.	Assuming 150 places per FE. Excludes temporary accommodation.	29,880,000	7,470,00	0 7,470,000	7,470,000		7,470,000	
_							29,520,000		8FE 29,520,000				
1.3	Standalone Early Year Facilities (56 place, above those co-located with Primary)	5	Facilities	1,170,000 Rec advi:	ised by the NEA.	Assuming 56 places per facility. 4 EY facilities within primary schools, 9 in total required by development. Excludes temporary accommodation.							
-							5,850,000	1,170,00	1 1 0 1,170,000		2 2,340,000		1,170,000
2	lealthcare & Community												
2.1	Seneral Practitioners	1650	m2	Colc Soci Stan Brair	chester Borders cial Infrastructure	Demand arising 10 GPs. Assuming 1800 population per GP. Assuming a population of 18,000 (2.4/unit). Assuming 165 m2 / GP.			2 2	2	1	2	1
E							4,950,000	990,00	0 990,000	990,000	495,000	990,000	495,000
2.2 [	Dentists	550	m2	Colc Soci Stan Brair	chester Borders cial Infrastructure ndards EXD/013B	Demand arising 11 Dentists. Assuming 1760 population per dentist. Assuming a population of 18,000 (2.4/unit). Assuming 50 m2 Dentist.	1		3 2	1	2	2	1
							1,650,000	450,00	0 300,000	150,000	300,000	300,000	150,000
2.3	Community Space and Libraries	1800	m2	on T Colc Stan Brain Web Spac advis	Tendring chester Borders cial Infrastructure ndards EXD/013B intree Council bsite. Community ace Provisions as ised by the NEA I their advisers.	Demand arising 540 m2 of Library Space. Assuming 30 m2 per 1000 persons. Demand arising 1080m2 of Community Space. Assuming 60 m2 per 1000 persons. Demand arising 1nr 1800 m2 facilities. Assuming a population of 18,000 (2.4/unit). As advised by the NEA, the cost for Community Space and Library Facilities has been phased in accordance with unit delivery.							
F							4,500,000	23 1,035,00		17% 765,000	12% 540,000	21% 945,000	10% 450,000
2.4 4	Court Sports Centre	952	m2	Soci Stan Colc Prov Spac	cial Infrastucture ndards, chester SPG vision of Open ace, Sport and creational facilities	Demand arising 2 nr facilities. Assuming 0.072 facilities per 1000 persons. Assuming 476m2 per facility. Assuming a population of 18,000 (2.4/unit).			1		1		
	Lane Swimming Pool	045		0000 0	ad an 500		1,380,400	690,20	0		690,200		
2.5 4	Lane Swimming Poor	245	m2	Soci Stan Colc Prov Spac	cial Infrastucture ndards, chester SPG vision of Open ace, Sport and creational facilities	Demand arising 1 nr facility. Assuming 0.048 facilities per 1000 persons. Assuming 245m2 per facility Assuming a population of 18,000 (2.4/unit).							
┣							539,000	539,00	1				
L		R	•I	L				223,00					

	┫┠────┼────								
3 Open Space									
3.1 Open Space	144 ha	140,000     Based on ECC     Assuming a population of 18,000 (2.4/unit). Including; 8ha total ope Standards, based on an average of Braintree, Colchester and Tendring LPA. Uplifted to 8ha per 1000 people as     Assuming a population of 18,000 (2.4/unit). Including; 8ha total ope space per 1000 population.							
		advised by the NEA	20,160,000	38.88 5,443,200	47.52 6,652,800	1.44	28.80	20.16	7.20
3.2 Environment/waste - Allowance to include any noise attenuation and on-site recycling	7,500 units	500	20,160,000	5,443,200	0,032,800	201,600	4,032,000	2,022,400	1,008,000
points		Covers the provision of acoustic bunding / fencing to mitigate the impact of external sources of nois such as highways and public transport and localised solid wast recycling area.		1442	1562	1552	1227	1065	652
			3,750,000	721,000	781,000	776,000	613,500	532,500	326,000
4 Utilities - Scheme-Wide Enabling Works									
		18,485 See Breakdown Assuming Site Area as defined in Below. the AECOM IPPD background wc of 424ha less the University area 15.4ha and the Park & Ride Area South of the A133 of 2.78ha totalling 403ha plus an allowance for an additional 10% of this area allow for works outside of the corr development area and within the site boundary. Excludes any allowance for archaeological findings.	of to e 138,635,000	26,654,889	28,873,049	28,688,203	22,680,686	19,686,170	12,052,003
	-		Includes the below items						
Site Preparations and Earthworks	4 400 000 m²		4 400 000	054 744	000.004	040.745	704 740	000.000	005 445
<ul> <li>4.1 General demolition and site clearance 443 ha = m<sup>2</sup></li> <li>4.2 Strategic Earthworks; cut and fill</li> </ul>	4,430,000 m <sup>2</sup> 4,430,000 m <sup>2</sup>		4,430,000	851,741 851,741	922,621 922,621	916,715 916,715	724,748	629,060 629,060	385,115 385,115
Highways									
4.3 Primary and secondary road network Drainage	4,430,000 m <sup>2</sup>	10	44,300,000	8,517,413	9,226,213	9,167,147	7,247,480	6,290,600	3,851,147
4.4 Foul and surface water network	4,430,000 m <sup>2</sup>	2	8,860,000	1,703,483	1,845,243	1,833,429	1,449,496	1,258,120	770,229
Landscaping 4.5 Cost captured in open-space									
Noise attenuation									
4.6 Cost captured in open-space									
Waste Management 4.7 Provision for recycling on site, excluding new amenitys	7,500 Nr	250	1,880,000	361,461	391,541	389,035	307,568	266,960	163,435
	7,500 14	250	1,000,000	301,401	551,541	303,035	307,300	200,300	100,400
Energy			10,100,000	1 000 570	0.405.030		1 701 110	( 170,000	
<ul> <li>4.8 33 No. 11 kV to 400 V distribution substations</li> <li>4.9 7 No. 11 kV ring circuits from primary substation to connect to distribution substations</li> </ul>	33 Substations	315,000	10,400,000	1,999,573	2,165,973	2,152,107	1,701,440	1,476,800	904,107
4.10 400 V LV circuits from distribution substations to end users	7 Ring Circuits 7,500 Circuits/Unit	315,000 1,300	2,210,000 9,750,000	424,909 1,874,600	460,269 2,030,600	457,323 2,017,600	361,556 1,595,100	313,820 1,384,500	192,123 847,600
4.10     400 V LV circuits from distribution substations to end users       4.11     Residential Electricity Connections	7,500 Circuits Offic	Based on UCML's Utilities Review Utilities Review Assuming 7,500 nr residential connections. Excludes off-site mains lay from the POC location and any upstream reinforcement. Excludes connections to		1,674,600	2,030,600	2,017,000	1,595,100	1,384,500	847,600
		commercial.	14,000,000	23% 3,220,000	17% 2380000	17% 2380000	12% 1680000	21% 2940000	10% 1400000
4.12 Budget cost per Low Voltage (LV) Service Disconnection	Unit	1,800 Based on UCML's Utilities Review Number of existing properties within the core development area likely to be demolished is unknow		3,220,000	2380000	2380000	1680000	2940000	140000
Potable water 4.13 New network of distribution pipework	7,500 Network	1,300	9,750,000	1,874,600	2,030,600	2,017,600	1,595,100	1,384,500	847,600
4.13 New network of distribution pipework 4.14 Water mains, connections and infrastructure charges	7,000 19680018	Based on UCML's Assuming the supply of 7,500 nr Utilities Review dwellings. Excluding Infrastructure charge inflations. Excluding connections to commercial.		23%	2,030,600	17%	1,595,100	21%	10%
	┨┠────		11,750,000	2,702,500	1997500	1997500	1410000	2467500	1175000
4.15 Budget cost per water service disconnection in the Affinity area.		Based on UCML's Quantity Unknown 650 Utilities Review							
			Excluded						
Waste Water 4.16 New network of collection pipework	7,500 Network	1,300	9,750,000	1,874,600	2030600	2017600	1595100	1384500	847600
4.17 Plot connections for all properties to waste water distribution									
network Gas	7,500 Connections	500	3,750,000	721,000	781000	776000	613500	532500	326000

4.40	Luc Deserves Destrict Operations	<b></b>		1			1	1	1		
4.18	Low Pressure Residential Connections		Based on UCML's Utilities Review	Assuming 7,500 nr low pressure							
				residential connections. Includes							
				gas pressure reduction systems and on-site medium pressure							
				mains lay. Excludes off-site mains							
				lay and upstream reinforcements or							
				connection enabling works. Excludes connections to							
				commercial.		23%	17%	17%	12%	21%	10%
					3,375,000	776,250	573750	573750	405000	708750	337500
5	Utilities - Off-Site Requirements										
	Electricity										
5.1	132 kV connection to Primary Substation from Colchester Grid		Based on AECOM								
	· · · · · · · · · · · · · · · · · · ·		IPPD background								
	a de sta l'a s		work								
	substation				9,200,000		100% 9,200,000				
5.2	Adoption of existing overhead electricity transmission infrastructure.		Based on UCML's		9,200,000		5,200,000				
			Utilities Review	Diversion financially unfeasible							
					Excluded						
5.3	Electricity Diversion Works		Based on UCML's Utilities Review			100%					
					1,500,000	1,500,000					
	Potable Water										
5.4	Connection to closest feasible supply source with capacity		Based on AECOM IPPD background								
			work								
	(e.g. trunk main or reservoir)										
						100%					
					4,100,000	4,100,000					
5.5	Budget cost per lowering of the Affinity Water 12" AC Distribution Water Main to	3 Site Entrances	75,000 Based on UCML's								
	accommodate a site entrance.		Utilities Review	Assuming lowering of the							
				distribution water main to							
				accommodate site entrances within Brightlingsea Road, Elmstead Road							
				and Colchester Road.		100%					
					225,000	225,000					
	Waste Water / Foul Water										
5.6	Upgrades to water course discharges		Based on AECOM IPPD background								
			work	Allowance for environmental							
				enhancement / EA regulations.							
				Note: Does not account for							
				university student population		100%					
57	Connection to existing waste water treatment works via new		Based on AECOM		1,050,000	1,050,000					
5.7			IPPD background								
			work	Pumped to Colchester WRC							
	pumping station - primary and secondary collection networks			(5.2 km pipeline). Note: Does not							
				account for university student		4000/					
				population.	5,300,000	100% 5,300,000					
	Gas				3,300,000	3,300,000					
5.8	Extension to Medium Pressure network		Based on AECOM								
			IPPD background	2 km pipeline based on							
			work	£1.022m/km	2,044,000	100% 2,044,000					
5.9	1 No. Medium to Low Pressure reducing station	<b>Ⅰ</b>	Based on AECOM		2,044,000	2,044,000					
0.0			IPPD background								
			work			1731	1874	1863	1472	1277	783
E 10	Re-routing of 12" Medium Pressure Gas Main through the new on-site road network	1 Station	635,000 Based on UCML's		635,000	122,089	132,249	131,403	103,886	90,170	55,203
5.10	ne-routing of 12 metulum riessure das main through the new on-site road fielwork		Utilities Review			100%					
					750,000	750,000					
5.11	Development of access chambers for BT Telecoms network, BT Openreach fibre optic network and private telecoms network throughout development.		Based on AECOM IPPD background								
			work								
						23%	17%	17%	12%	21%	10%
F 40	Openreesh diversion worke ecceptical with Marrie Diseased as difficult France ("T	<b>Ⅰ</b>	Deep las UOM/		2,150,000	494,500	365,500	365,500	258,000	451,500	215,000
5.12	Openreach diversion works associated with Mount Pleasant and Allen's Farm off Tye Road.		Based on UCML's Utilities Review			100%					
					95,000	95,000					
5.13	Openreach diversion works associated with highway works on the A133.		Based on UCML's			100%					
			Utilities Review		200,000	100% 200,000					
					200,000	200,000					
6	Transport										
6.1	New signalised access onto A133 (primary access to site) (TCB2a)	% of total	Based on AECOM								
		provision	IPPD background work, amendments								
			to these costs as								
			advised by the NEA.								
	1	I				100%					
		· · · · · · · · · · · · · · · · · · ·			_						-

1	1	I		1	2,500,000	2,500,000					
6.2 Secondary signalised access onto A133 (TCB2b)		% of total provision	Based on AECOM IPPD background work, amendments								
			to these costs as advised by the NEA.		2,500,000	100% 2,500,000					
6.3 Interim highways improvements measures (including improvements to Greenstead roundabout and A133 Hare Green roundabout) (TCB3)		% of total provision	Based on AECOM IPPD background work, amendments to these costs as advised by the NEA								
					3,000,000	100% 3,000,000					
6.4 A120-A133 Link Road (TCB1)		% of total provision	Based on Jacobs HIF review & funding bid	9			100%				
6.5 On site RTS route and related improvements/facilities (TCB4)		% of total provision	Based on Jacobs RTS Study 2019	Cost relates to higher investment scenario. Low end of the range (as allowances for risk/contingency added separately). Allowance as a proportion of overall funding requirements.	41,000,000	20%	41,000,000	20%	20%	20%	0%
					16,600,000	3,320,000	3,320,000	3320000	3320000	3320000	(
6.6 Contribution to provisions of off site RTS network (TCB5)		% of total provision	Based on Jacobs RTS Study 2019	Cost relates to higher investment scenario. Low end of the range (as allowances for risk/contingency added separately). Allowance as a proportion of overall funding requirements.		27%	30%	14%	14%	15%	0%
6.7 Park & Ride facilities and interchange with RTS (TCB6)		% of total	Based on Jacobs	To provide for interchange between	38,100,000	10,287,000	11,430,000	5,334,000	5,334,000	5,715,000	-
		provision	RTS Study 2019	modes, including provision of park & ride (as appropriate)	Advised included in on-site	50%		50%			
6.9 Upgrade eviating walking / evaling infrastructure (TCP7a)		% of total	Based on AECOM		RTS (item 6.5)	-	-	-	-	-	-
6.8 Upgrade existing walking / cycling infrastructure (TCB7a)		% of total provision	IPPD background work, amendments to these costs as advised by the NEA.		3,150,000	50% 1,575,000	50% 1,575,000				
6.9 Various combined segregated pedestrian / cycle "Greenways" through site (TCB7b)		% of total provision	Based on AECOM IPPD background work, amendments to these costs as advised by the NEA.			23%	17%	17%	12%	21%	10%
					1,890,000	434,700	321,300	321,300	226,800	396,900	189,000
6.10 Internal road network		% of total provision		Required to facilitate access to site (based on no.resi built per phase). Included in enabling costs	Included in enabling costs						
					included in enabling costs						
7 Per Unit Contributions											
7.1 Investment in early phase bus/transit services (TCB9)	7,500	% of total provision	Based on AECOM IPPD background work, amendments to these costs as advised by the NEA.	3,710,280 allocated by percentage of units per phase		23%	17%	17%	12%	21%	10%
7.2 Travel plan measures (smarter choices, car clubs, charging points, etc) - Straight Line Cost Over Time	7,500	% of total provision	500 Allowance as advised by the NEA	Aligned to Modal Shift analysis (ITP). Delivered from day one with funding annually - based on £500 cost per unit.	3,710,280	853,364	630,748	630,748	445,234	21%	371,028
7.3 Open Space Endowment	7,500	% of total	2,100 Allowance as	C/unit	3,750,000	862,500	637,500	637,500	450,000	787,500	375,000
		provision	advised by the NEA.	, ka shin	15,750,000	23% 3,622,500	17% 2,677,500	17% 2,677,500	12% 1,890,000	21% 3,307,500	10% 1,575,000
7.4 Employment Space	7,500	% of total provision	1,000 Allowance as advised by the NEA.	£/unit	7,500,000	23% 1,725,000	17% 1,275,000	17% 1,275,000	12% 900,000	21% 1,575,000	10% 750,000
Subtotal Total Cost Per Phase					407,513,680	92,822,926	147,972,130	52,658,070	43,349,456	51,149,299	19,561,800
Plus Professional fees at 10% Plus Contingency at 10%			10% 10%			9,282,293 10,210,522	14,797,213 16,276,934	5,265,807 5,792,388	4,334,946 4,768,440	5,114,930 5,626,423	1,956,180 2,151,798
Total Scheme Cost Per Phase						112,315,741	179,046,277	63,716,264	52,452,841	61,890,652	23,669,778
Total costs at 4Q2018 (excluding VAT) Accumulative number of units						112,315,741 1442	179,046,277 1562	63,716,264 1552	52,452,841 1227	61,890,652 1065	23,669,778 652
Total % of units						19%	21%	21%	16%	14%	9%
Total Cost per Unit						77,889	114,626	41,054	42,749	58,113	36,303

## Total Infrastructure Requirements by Phase – Colchester Braintree Borders

#### Site 3: Colchester Braintree Borders

Infrastructure	Demand Arising Fro Developme		Rate	Notes	Commentary/assumptions	Total	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	Phase 7	Phase 8
					•		2550	4608	7314	Cummulative 9812	Development 12582	15531	18560	21000
							2550	2058	2706	Phased De 2498	velopment 2770	2949	3029	24
Education														
Primary Schools: 2 Form Entry (including 56 place EY+C facility)	2	22 FE	3,150,00	<ol> <li>Requirement as advised by the NEA.</li> </ol>	2FE facilities and EY + C Assuming 210 places per FE and 56 places per EY.		2nr 2FE +EY	2FE + EY	2nr 2FE +EY	2FE + EY	2nr 2FE +EY	2nr 2FE +EY	2FE + EY	
					Excludes temporary accommodation.	82,170,000	14,940,000	7,470,000	14,940,000	7,470,000	14,940,000	14,940,000	7,470,000	
Secondary Schools	2	20 FE	3,690,00	<ol> <li>Requirement as advised by the NEA.</li> </ol>	Assuming 150 places per FE. Excludes temporary accommodation.	70 000 000	8FE 29,520,000		6FE			6FE		
Standalone Early Year Facilities (56 place, above those co-located		14 Facility	1,170,00	00 Requirement as	Assuming 56 places per facility. 11 EY	73,800,000	29,520,000		22,140,000			22,140,000		
with Primary)				advised by the NEA.	facilities within primary schools, 25 in total required by development. Excludes temporary accommodation.									
						16,380,000	2 2,340,000	2,340,000	1 1,170,000	3 3,510,000	1	3 3,510,000	2 2,340,000	
						16,380,000	2,340,000	2,340,000	1,170,000	3,510,000	1,170,000	3,510,000	2,340,000	
Healthcare & Community														
General Practitioners	462	20 GPs	3,00	0 Based on Colchester Braintree Borders	Demand arising 28 GPs. Assuming 1800 population per GP. Assuming a population									
				Social Infrastructure Standards EXD/013C	of 50,400 (2.4/unit). Assuming 165 m2 /									
				Braintree Council Website			4	4	4	4	4	4	3	
Dentists	145	50 Dentists	3,00	0 Based on Colchester	Demand arising 29 Dentists. Assuming	13,860,000	1,980,000	1,980,000	1,980,000	1,980,000	1,980,000	1,980,000	1,485,000	495,0
				Braintree Borders Social Infrastructure	1760 population per dentist. Assuming a population of 50,400 (2.4/unit). Assuming									
				Standards EXD/013C Braintree Council	50 m2 / Dentist.									
				Website		4,350,000	4 600,000	4 600,000	4 600,000	4 600,000	4 600,000	4 600,000	3 450,000	300,0
Community Space and Libraries	540	00 m2	2,50	Colchester Braintree	n Demand arising 1512 m2 of Library Space Assuming 30 m2 per 1000 persons.	! <u>.</u>								
				Borders Social Infrastructure	Demand arising 3024m2 of Community Space. Assuming 60 m2 per 1000 persons	5.								
				Standards EXD/013C Braintree Council	Assuming a population of 50,400 (2.4/unit)									
				Website. Community Space Provisions as	As advised by the NEA, the cost for Community Space and Library Facilities									
				advised by the NEA an their advisers.	d has been phased in accordance with unit delivery.		400/	10%	100/	1.00/	100/	14%	14%	
						13,500,000	12% 1,639,286	10% 1,323,000	13% 1,739,571	12% 1,605,857	13% 1,780,714	14%	14% 1,947,214	1 1,568,5
4 Court Sports Centre	190	04 m2	1,45	Infrastucture Standard	Demand arising 4 nr facilities. Assuming s, 0.072 facilities per 1000 persons.									
				Colchester SPG Provision of Open	Assuming 476m2 per facility. Assuming a population of 50,400 (2.4/unit).									
				Space, Sport and Recreational facilities 2006.										
				2006.			1		1		1	1		
4 Lane Swimming Pool	73	35 m2	2.20	0 Based on ECC Social	Demand arising 3 nr facilities. Assuming	2,760,800	690,200		690,200		690,200	690,200		
·			_,	Infrastucture Standard Colchester SPG	s, 0.048 facilities per 1000 persons. Assuming 245m2 per facility Assuming a									
				Provision of Open Space, Sport and	population of 50,400 (2.4/unit).									
				Recreational facilities 2006.										
						4 017 000	1		1 539,000			1		
						1,617,000	539,000		539,000			539,000		
Open Space														
Open space	40	03 ha	140.00	0 Based on ECC Social	Assuming a population of 50,400 (2.4/unit)									
			,	Infrastructure Standards, based on a	Including; 8ha total open space per 1000									
				average of Braintree, Colchester and										
				Tendring LPA. Uplifted to 8ha per 1000 people	9									
				as advised by the NEA										
						56,448,000	60.48 8,467,200	60.48 8,467,200	56.45 7,902,720	100.80 14,112,000	52.42 7,338,240	32.26 4,515,840	40.32 5,644,800	0
Environment/waste - Allowance to include any noise attenuation and on-site recycling points	21,00	0 units	50	00	Covers the provision of acoustic bunding /									
					fencing to mitigate the impact of external sources of noise such as highways and									
					public transport and localised solid waste recycling area.									
						10,500,000	2550 1,275,000	2058 1,029,000	2706 1,353,000	2498 1,249,000	2770 1,385,000	2949 1,474,500	3029 1,514,500	24 1,220,0
Utilities - Scheme-Wide Enabling Works														
			18,57	0 See Breakdown Below	w. Assuming Site Area as defined in the AECOM IPPD background work of 1,169ha	389,975,250 a	47,354,138	38,217,575	50,251,097	46,388,485	51,439,593	54,763,667	56,249,287	45,311,
					plus an allowance for an additional 10% of this area to allow for works outside of the									
					core development area and within the site boundary. Excludes any allowance for archaeological findings									
					archaeological findings.									
	Substation	115				Includes the below items								

1	[]	1			1	r							
Site Preparations and Earthworks General demolition and site clearance 1,286 ha = m²	12,860,000 m <sup>2</sup>	1	1		12,860,000	1,561,571	1,260,280	1,657,103	1,529,728	1,696,295	1,805,911	1,854,902	1,494,2
Strategic Earthworks; cut and fill	12,860,000 m <sup>2</sup>	1	1		12,860,000	1,561,571	1,260,280	1,657,103	1,529,728	1,696,295	1,805,911	1,854,902	1,494,2
Highways Primary and secondary road network	12,860,000 m <sup>2</sup>	10	0		128,600,000	15,615,714	12,602,800	16,571,029	15,297,276	16,962,952	18,059,114	18,549,019	14,942,0
Drainage Foul and surface water network	12,860,000 m <sup>2</sup>	2	2		25,720,000	3,123,143	2,520,560	3,314,206	3,059,455	3,392,590	3,611,823	3,709,804	2,988,4
Landscaping Cost captured in open-space													
Noise attenuation Cost captured in open-space													
Waste Management	04.000 Nr.	050			5 050 000	007.500	514 500	070 500	004.500	000 500	707.050	757.050	010
Provision for recycling on site, excluding new amenitys Energy	21,000 Nr	250			5,250,000	637,500	514,500	676,500	624,500	692,500	737,250	757,250	610,0
104 No. 11 kV to 400 V distribution substations 12 No. 11 kV ring circuits from primary substation to connect to	104 Substations Ring Circuits	315,000			32,760,000	3,978,000	3,210,480	4,221,360	3,896,880	4,321,200	4,600,440	4,725,240	3,806,4
distribution substations. 400 V LV circuits from distribution substations to end users	12 21,000 Circuits/Unit	315,000 1,300			3,780,000 27,300,000	459,000 3,315,000	370,440 2,675,400	487,080 3,517,800	449,640 3,247,400	498,600 3,601,000	530,820 3,833,700	545,220 3,937,700	439,2 3,172,0
Residential Electricity Connections			Based on UCML's Utilities Review	Assuming 21,000 nr residential connections. Excludes off-site mains lay from the POC location and any upstream reinforcement. Excludes connections to commercial.		15%	12%	15%	13%	14%	18%	13%	
Budget cost per Low Voltage (LV) Service Disconnection	Unit	4 900	Based on UCML's	Number of existing properties within the	34,125,000	5,118,750	4,095,000	5,118,750	4,436,250	4,777,500	6,142,500	4,436,250	
Budger cost per Low Voltage (LV) Service Disconnection	Unit	1,800	Utilities Review	core development area likely to be demolished is unknown.									
Potable water					Excluded								
New network of distribution pipework	21,000 Network	1,300			27,300,000	3,315,000	2675400	3517800	3247400	3601000	3833700	3937700	3172
Water mains, connections and infrastructure charges				Assuming the supply of 21,000 nr dwellings. Excluding Infrastructure charge inflations. Excluding connections to commercial.		15%	12%	15%	13%	14%	18%	13%	
Waste Water					32,900,000	4,935,000	3,948,000	4,935,000	4,277,000	4,606,000	5,922,000	4,277,000	
New network of collection pipework Plot connections for all properties to waste water distribution	21,000 Network Connections	1,300			27,300,000	3,315,000	2675400	3517800	3247400	3601000	3833700	3937700	3172
Gas	21,000	500	D		10,500,000	1,275,000	1029000	1353000	1249000	1385000	1474500	1514500	1220
Low Pressure Residential Connections			Based on UCML's Utilities Review	Assuming 21,000 nr low pressure residential connections. Includes gas pressure reduction systems and on-site medium pressure mains lay. Excludes off- site mains lay and upstream reinforcements or connection enabling works. Excludes connections to commercial.		15%	12%	15%	13%	14%	18%	13%	
Jtilities - Off-Site Requirements					8,720,250	1,308,038	1,046,430	1,308,038	1,133,633	1,220,835	1,569,645	1,133,633	
New 2 x 125 MVA Primary Substation			Based on AECOM										
New 2 X 125 MVA Primary Substation	MVA		IPPD background work	c .	22,860,000			100% 22,860,000					
12km 132 kV Overhead Line connection to Colchester substation	% of total provision		Based on AECOM IPPD background work Based on 12km line at £1.022m per Km			100%							
Electricity Diversion Works			Based on UCML's Utilities Review		3,700,000	12,270,000 100% 3,700,000							
Potable Water Connection to closest feasible supply source with capacity (e.g. trunk main or reservoir)			Based on AECOM IPPD background work	s		100%							
Budget cost per lowering of a 100mm distribution water main to	Site Entrance		Based on AECOM		4,100,000	4,100,000							
accommodate a site entrance.		15,000	) IPPD background work	ς Ι	Excluded								
Waste Water / Foul Water Upgrades to water course discharges / Surface Water			Based on AECOM										
	upgrades	5	IPPD background work		2,175,000	100% 2,175,000							
3km connection to existing waste water treatment works			Based on AECOM IPPD background work	ς	2,110,000	2,,000							
					12 200 000	100%							
Gas			Dened 4 - AFC 211		13,300,000	13,300,000							
la sua de la lavo a secono secono de la	1		Based on AECOM IPPD background work	ζ.		100%							
pgrade to low pressure gas mains			-										
	1 Station	635,000	Based on AECOM IPPD background work	ζ.	635.000	5,325,000 100% 635,000							
No. Medium to Low Pressure reducing station Budget cost per lowering of a 180mm Low Pressure Gas Main to accommodate a site entrance.	2 Site Entrance		Based on AECOM IPPD background work Based on UCML's Utilities Review	Assuming 2nr site entrances	5,325,000 635,000 52,000								
Upgrade to low pressure gas mains 1 No. Medium to Low Pressure reducing station Budget cost per lowering of a 180mm Low Pressure Gas Main to accommodate a site entrance. Budget cost per lowering of a 225mm Medium Pressure Gas Main to accommodate a site entrance.		26,000	Based on AECOM IPPD background work Based on UCML's		635,000	100% 635,000 100%							
1 No. Medium to Low Pressure reducing station Budget cost per lowering of a 180mm Low Pressure Gas Main to accommodate a site entrance. Budget cost per lowering of a 225mm Medium Pressure Gas Main to	2 Site Entrance	26,000	Based on AECOM IPPD background work Based on UCML's Utilities Review Based on UCML's Utilities Review Based on AECOM	Assuming 2nr site entrances Assuming 2nr site entrances	635,000 52,000	100% 635,000 100% 52,000 100%							
1 No. Medium to Low Pressure reducing station         Budget cost per lowering of a 180mm Low Pressure Gas Main to         accommodate a site entrance.         Budget cost per lowering of a 225mm Medium Pressure Gas Main to         accommodate a site entrance.         Telecommunications         Development of access chambers for BT Telecoms network,         BT Openreach fibre optic network and private telecoms	2 Site Entrance	26,000	Based on AECOM IPPD background work Based on UCML's Utilities Review Based on UCML's Utilities Review	Assuming 2nr site entrances Assuming 2nr site entrances	635,000 52,000	100% 635,000 100% 52,000 100% 108,000	10%	13%	19%.	13%	14%	14%	
1 No. Medium to Low Pressure reducing station         Budget cost per lowering of a 180mm Low Pressure Gas Main to accommodate a site entrance.         Budget cost per lowering of a 225mm Medium Pressure Gas Main to accommodate a site entrance.         Telecommunications         Development of access chambers for BT Telecoms network,	2 Site Entrance	26,000	Based on AECOM IPPD background work Based on UCML's Utilities Review Based on UCML's Utilities Review Based on AECOM	Assuming 2nr site entrances Assuming 2nr site entrances	635,000 52,000	100% 635,000 100% 52,000 100%	10% 533,120	13% 700,983	12% 647,101	13% 717,562	14% 763,931	14% 784,655	632,6

· · · · · · · · · · · · · · · · · · ·			1		I		1			1	
Transport											
A2 Active Modes link (Church Long, Marka Tay atation) (CRR100)	% of total	Linfront costs/shapp 1									
A3 - Active Modes link (Church Lane - Marks Tey station) (CBB10a)	provision	Upfront costs/phase 1 Based on AECOM									
		IPPD background work. Relates to aspects in									
		MAS (Jacobs 2017).	400,000	100% 400.000							
Park & Ride facilities & interchange with RTS (CBB9)	% of total	Based on Jacobs RTS To provide for interchange between	400,000	400,000							
	provision	Study 2019 modes, including provision of park & ride (as appropriate)									
				10%	90%						
			Advised included in on-site	10%	90 %						
Internal Road Network		based on total scheme percentage	RTS (item 6.11)	-	-						
			Included in enabling costs								
Walking and Cycling connections (CBB10c)		Based on AECOM IPPD background work,									
		amendments to these costs as advised by the									
		NEA. based on total scheme percentage and									
		at £0.5m per km	1,250,000	100% 1,250,000							
Additional bridges overrailway line (2 vehicular & 3 pedestrian/cycle) (not explicit in MAS, now CBB2)		Previously included as separate line items for each bridge, total cost circa £60m.									
(not explicit in MAS, now CBB2)		Based on Colchester									
		Braintree Borders Cost Analysis & Comparison.									
		Previously not included. Based on Jacobs HIF									
		review & funding bid.		40%	1.40/	00/	400/		~~~	0%	
			30,200,000	40% 12,080,000	14% 4,228,000	-	40% 12,080,000	6% 1,812,000	- 0%		
A2 & A4 - Active Modes Connections to Rural Hinterland, Cycle Links (CBB10b)	% of total provision	Based on AECOM IPPD background work,									
		amendments to these costs as advised by the									
		NEA. A4 upfront (cycle links) with remainder									
		hinterland in proportion of units	1,500,000	30% 450,000	10% 150,000	15% 225,000	10% 150,000	10% 150,000	15% 225,000	10% 150,000	
Marks Tey Station and junction package & Stane St reduction (PR1 & PR 2- in MAS, now CBB1)		Based on Jacobs HIF Various work to station and environs review & funding bid.	.,,	,	,		,	,	,	,	
FR 2- III MAS, NOW CBD I)											
			25,800,000	58% 14.964.000	42% 10,836,000						
R2 - A12 Southern junction with Garden Community. R2 in MAS, now		Based on AECOM	23,800,000	14,304,000	10,030,000						
CBB3		IPPD background work, amendments to these									
		costs as advised by the NEA. Delivered in line with A12 improvements.									
				100%							
Widest realignment of A12 as part of improvements. (not explicit in		Delivered in line with A12 improvements.	41,300,000	41,300,000							
MAS, now CBB4)		Based on Jacobs HIF review & funding bid		100%							
A40 approximate around Kelunder (CRRE)		Record on Joseph HIE Delivered in line with A40 improvements	62,100,000	62,100,000							
A12 capacity improvements around Kelvedon (CBB5)		Based on Jacobs HIF review & funding bid		100%							
On site RTS route and related improvements/facilities (PT1a in MAS,		Based on Jacobs RTS Cost relates to higher investment scenario	20,900,000	20,900,000							
now CCB7)		Study 2019 Low end of the range (as allowances for risk/contingency added separately).									
		Allowance as a proportion of overall		con/	201/	200/					
		funding requirements.	32,600,000	60% 19,560,000	20% 6,520,000	20% 6,520,000	0	0	0	0	
Contribution to provisions of off site RTS network (CBB8)		Based on Jacobs RTS Cost relates to higher investment scenario Study 2019 Low end of the range (as allowances for	).								
		risk/contingency added separately). Allowance as a proportion of overall									
		funding requirements.		60%	20%	20%					
			32,400,000	19,440,000	6,480,000	6,480,000	0	0	0	0	
Per Unit Contributions											
Investment in early phase bus/transit services (CBB12)	21,000 % of total provision	Based on AECOM IPPD background work, Based on an approximate average of the									
	provision	amendments to these per unit provision for Bus Service									
		costs as advised by the Subsidies on Site 1 - WOB and Site 2 - NEA. TCB (£500/unit).		75%	25%						
Contribution to A120 (CBB6)	21,000 % of total	1,500 Allowance as advised Delivered from day one with funding	10,500,000	7,875,000	2,625,000						
	provision	by the NEA. annually									
					100/	100					
			31,500,000	12% 3,825,000	10% 3,087,000	13% 4,059,000	12% 3,747,000	13% 4,155,000	14% 4,423,500	14% 4,543,500	3,660,
Travel plan measures (smarter choices, car clubs, charging points, etc) - Straight Line Cost Over Time	21,000 % of total provision	500 Allowance as advised Aligned to Modal Shift analysis (ITP) by the NEA. Delivered from day one with funding									
	provision	annually - based on £500 cost per unit.									
									_ · · · ·		
			10,500,000	12% 1,275,000	10% 1,029,000	13% 1,353,000	12% 1,249,000	13% 1,385,000	14% 1,474,500	14% 1,514,500	1,220,
Open Space Endowment	21,000 % of total provision	2,100 Allowance as advised Delivered from day one with funding annually									
	P. S. Son										

								12%	10%	13%	12%	13%	14%	14%	12%
7.5		01.00	A	1 000	All		44,100,000	5,355,000	4,321,800	5,682,600	5,245,800	5,817,000	6,192,900	6,360,900	5,124,000
7.5	Employment Space	21,00	) % of total provision			Allowance of £1,000 per unit. In practice, may be partially covered by other elements such as service charges									
								12%	10%	13%	12%	13%	14%	14%	12%
							21,000,000	2,550,000	2,058,000	2,706,000	2,498,000	2,770,000	2,949,000	3,029,000	2,440,000
1	Subtotal Total Cost Per Phase						1,101,766,050	367,548,545	104,961,090	155,493,642	103,369,047	98,743,485	126,075,172	92,404,889	53,170,181
F	Plus Professional fees at 10%			10%				36,754,854	10,496,109	15,549,364	10,336,905	9,874,348	12,607,517	9,240,489	5,317,018
1	Plus Contingency at 10%			10%				40,430,340	11,545,720	17,104,301	11,370,595	10,861,783	13,868,269	10,164,538	5,848,720
	otal Scheme Cost Per Phase							444,733,739	127,002,919	188,147,307	125,076,547	119,479,616	152,550,958	111,809,915	64,335,919
	Total costs at June 2018 prices (excluding VAT)							444,733,739	127,002,919	188,147,307	125,076,547	119,479,616	152,550,958	111,809,915	64,335,919
/	Accumulative number of units							2550	2058	2706	2498	2770	2949	3029	2440
[	otal % of units							12%	10%	13%	12%	13%	14%	14%	12%
	Fotal cost per unit							174,405	61,712	69,530	50,071	43,133	51,730	36,913	26,367



#### Assumptions

#### Education;

#### Primary Schools, Secondary Schools and Early Years Facilities:

- Requirement based on the design information in AECOM's IPPD Draft Report dated July 2019.
- Assumes 210 places per FE for Primary Schools.
- Assumes 150 places per FE for Secondary Schools.
- Assumes a 20% uplift to Secondary School rates to account for 6<sup>th</sup> Form provisions.
- Assumes 56 places per facility for Early Years.
- A 2FE Primary School with 56 place Early Years facility (2FE + EY) assumes a cost of 2FE Primary plus the cost of a standalone 56 place Early Years facility.
- The phasing of the costs is based on the phasing as provided in AECOM's IPPD Draft Report dated July 2019.
- We have based our estimated cost per education facility on Gleeds benchmark information as appended to this report. See Appendix, A and B.
- Costs exclude risk and professional fees.

#### Health and Community:

#### GPs:

- Assumes a population per household rate in line with the Office for National Statistics (ONS, 2017) average of 2.4 persons per household, generating a population of 30,000 people in West of Braintree, 18,000 people in Tendring Colchester Borders and 50,400 people in Colchester Braintree Borders.
- Assumes 1800 people per GP, as defined by the NHS. Outlined in West of Braintree Social Infrastructure Standards EXD/013E, Tendring Colchester Borders Social Infrastructure Standards EXD/013B and Colchester Braintree Borders Social Infrastructure Standards EXD/013C on Braintree Council's Website.
- Assumes an allocation of 165m2 of healthcare space per GP as per AECOM's IPPD background work.
- The phasing of the costs is based on the phasing as provided in the AECOM's IPPD background work.
- We have based our estimated cost per healthcare facility on Gleeds benchmark information as appended to this report. See Appendix C.
- Costs exclude risk and professional fees.

#### Dentists:

- Assumes a population per household rate in line with the Office for National Statistics (ONS, 2017) average of 2.4 persons per household, generating a population of 30,000 people in West of Braintree, 18,000 people in Tendring Colchester Borders and 50,400 people in Colchester Braintree Borders.
- Assumes 1760 people per Dentist, as defined by the existing ratio of Dentists to population across England 2015. Outlined in West of Braintree Social Infrastructure Standards EXD/013E, Tendring Colchester Borders Social Infrastructure Standards EXD/013B and Colchester Braintree Borders Social Infrastructure Standards EXD/013C on Braintree Council's Website.
- Assumes an allocation of 50m2 of healthcare space per Dentist as per AECOM's IPPD Background Work.
  The phasing of the costs is based on the phasing as provided in the AECOM's IPPD Background Work.
- Costs exclude risk and professional fees.

#### **Community Space and Libraries:**

- Assumes a population per household rate in line with the Office for National Statistics (ONS, 2017) average of 2.4 persons per household, generating a population of 30,000 people in West of Braintree, 18,000 people in Tendring Colchester Borders and 50,400 people in Colchester Braintree Borders.
- Assumes 30m2 of Library Space per 1000 people as defined by Essex County Council Social Infrastructure Standards, Arts Council. Outlined in West of Braintree Social Infrastructure Standards EXD/013E, Tendring Colchester Borders Social Infrastructure Standards EXD/013B and Colchester Braintree Borders Social Infrastructure Standards EXD/013C on Braintree Council's Website.
- Assuming 60 m2 of Community Space per 1000 people as advised by the NEA.
- Assumes provision of 1800m2 facilities based on AECOM's IPPD Background Work for libraries at 600m2 facilities, proportionally increased to include community space.
- The phasing of the costs is based on the phasing as provided in AECOM's IPPD Background Work.
- As advised by the NEA, Community Space and Library costs have been phased in accordance with unit delivery.
- Costs exclude risk and professional fees.

#### 4 Court Sport Centres:

- Assumes a population per household rate in line with the Office for National Statistics (ONS, 2017) average of 2.4 persons per household, generating a population of 30,000 people in West of Braintree, 18,000 people in Tendring Colchester Borders and 50,400 people in Colchester Braintree Borders.
- Assumes 0.072 facilities per 1000 people, as defined by Essex County Council Social Infrastructure Standards, Colchester SPG Provision of Open Space, Sport and Recreational facilities 2006. Outlined in West of Braintree Social Infrastructure Standards EXD/013E, Tendring Colchester Borders Social Infrastructure Standards EXD/013B and Colchester Braintree Borders Social Infrastructure Standards EXD/013C on Braintree Council's Website.
- Assumes provision of 476m2 facilities based on AECOM IPPD Background Work.
- The phasing of the costs is based on the phasing as provided on AECOM's IPPD Background Work.
- Costs exclude risk and professional fees.

#### 4 Lane Swimming Pools:

- Assumes a population per household rate in line with the Office for National Statistics (ONS, 2017) average of 2.4 persons per household, generating a population of 30,000 people in West of Braintree, 18,000 people in Tendring Colchester Borders and 50,400 people in Colchester Braintree Borders.
- Assumes 0.048 facilities per 1000 people, as defined by ECC Social Infrastructure Standards, Colchester SPG Provision of Open Space, Sport and Recreational facilities 2006. Outlined in West of Braintree Social Infrastructure Standards EXD/013E, Tendring Colchester Borders Social Infrastructure Standards EXD/013B and Colchester Braintree Borders Social Infrastructure Standards EXD/013C on Braintree Council's Website.
- Assumes provision of 245m2 facilities based on AECOM's IPPD Background Work.
- The phasing of the costs is based on the phasing as provided in AECOM's IPPD Background Work.
- Costs exclude risk and professional fees.

#### **Open Space:**

- Assumes a population per household rate in line with the Office for National Statistics (ONS, 2017) average of 2.4 persons per household, generating a population of 30,000 people in West of Braintree, 18,000 people in Tendring Colchester Borders and 50,400 people in Colchester Braintree Borders.
- Based on ECC Social Infrastructure Standards outlined in West of Braintree Social Infrastructure Standards EXD/013E, Tendring Colchester Borders Social Infrastructure Standards EXD/013B and Colchester Braintree Borders Social Infrastructure Standards EXD/013C on Braintree Council's Website.
- Uplifted to 8ha per 1000 population as advised by the NEA.
- Assumes a blended rate across the open space.

- The phasing of the costs is based on the phasing as provided in AECOM's IPPD Background Work.
- Costs exclude risk and professional fees.

#### Environment/Waste:

- Allowance of £500/unit to include noise attenuation and on-site recycling points.
- Covers the provision of acoustic bunding / fencing to mitigate the impact of external sources of noise such as highways and public transport and localised solid waste recycling area.
- Costs exclude risk and professional fees.

#### Site-Wide Enabling Costs

- Based on the requirements outlined in AECOM's IPPD Background Work and UCML guidance on utilities provisions.
- Site-Wide Enabling Costs are based on the Core Developable areas as outlined in AECOM's IPPD Draft Report dated July 2019. We have included an additional 10% of the core developable area as an allowance for works outside of the core developable area and within the site boundary.
- In the case of Tendring Colchester Borders (TCB), the site area is less the University area of 15.4ha and the Park & Ride area South of the A133 of 2.78ha which will be brought forward separately to the core Garden Community as advised by the NEA.
- Costs exclude risk and professional fees.

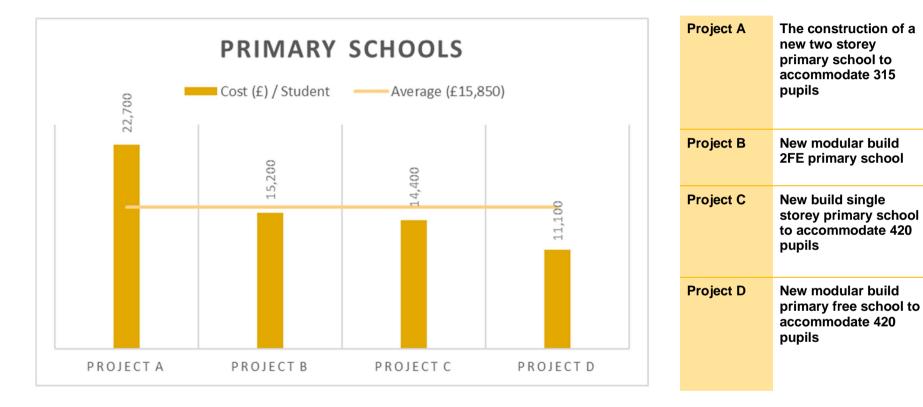
#### Utilities

- Based on the requirements outlined in AECOM's IPPD Background Work and UCML guidance on utilities provisions.
- In the absence of phasing information associated with the UCML items, we have assumed that residential connection costs are phased by unit delivery and all other costs are attributed to Phase 1.
- We have assumed 5nr site entrances to West of Braintree (Site 1), 3nr site entrances to Tendring Colchester Borders (Site 2) and 4nr Site Entrances to Colchester Braintree Borders (Site 3).
- We have assumed 3nr fibre providers for each site.
- Costs exclude risk and professional fees.

#### Transport

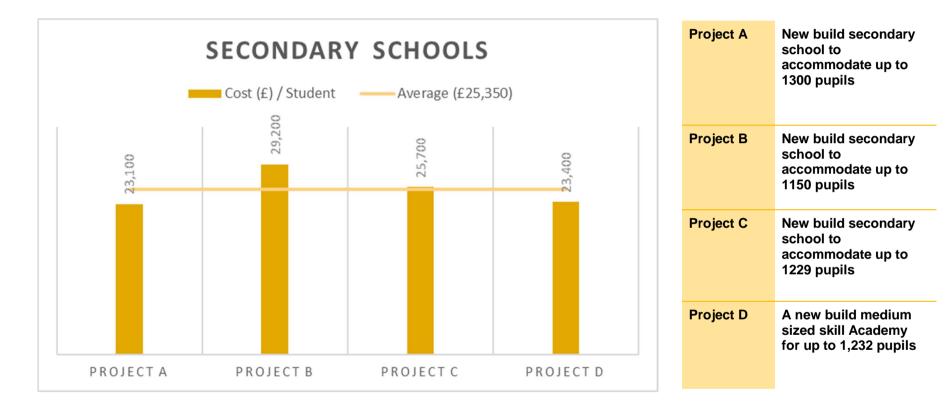
- Transport costs are based on AECOM's IPPD Background Work. Some amendments have been made to the design as advised by the NEA.
- Rapid Transit System Costs are as advised in the Essex Highways Rapid Transit System for North Essex: From vision to plan document dated July 2019.
- RTS Costs are based on the lower end of the range provided for the higher investment scenario. It is assumed that these costs exclude risk and professional fees.
- Per unit contributions are as advised by the NEA.
- Costs exclude risk and professional fees.

# Appendix A Benchmark Data Primary School



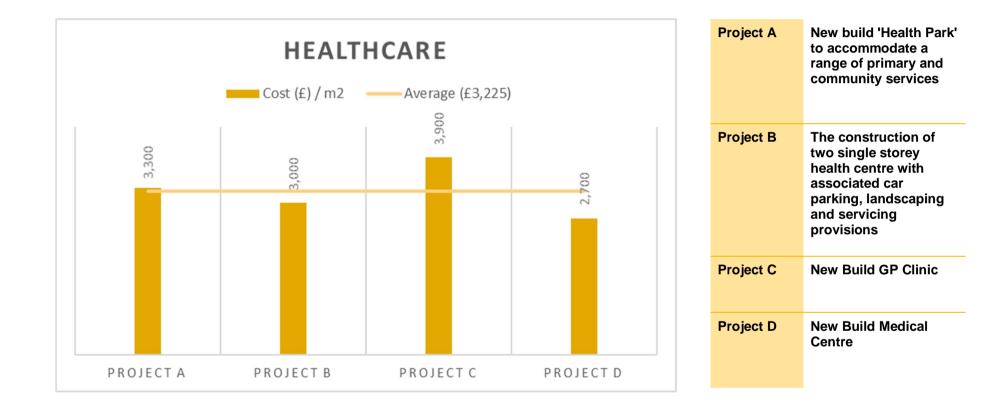
Please note: Costs exclude risk and professional fees.

# Appendix B Benchmark Data Secondary Schools



Please note: Costs exclude risk and professional fees.

# Appendix C Benchmark Data: Healthcare



# **Appendix D** Schedule of Information Used

Document	Author	Date 35	Gleed
North Essex Garden Communities - Infrastructure Planning, Phasing and Delivery Draft Report (IPPD Background Work)	AECOM	Up to July 2019	
EXD/013E AECOM Benchmark Social Infrastructure Standards (Site 1 - West of Braintree)	AECOM		
EXD/013B AECOM Benchmark Social Infrastructure Standards (Site 2 - Tendring Colchester Borders)	AECOM		
EXD/013C AECOM Benchmark Social Infrastructure Standards (Site 3 - Colchester Braintree Borders)	AECOM		
The Essex County Council Developers' Guide to Infrastructure Contributions	Essex County Council	2016	
North Essex Garden Communities - Concept Feasibility Study. Volume 3 - Garden Communities Concept Options & Evaluation	AECOM	Jun-16	
EB/013/1/2North Essex Local Plans (Section 1) Viability Assessment Main Report	Hyas	Apr-17	
Essex Highways - Rapid Transit System for North Essex: From vision to plan	Essex County Council, Ringway Jacobs	2017	
UCML Utilities Review	UCML	2019	

# Appendix E Social Infrastructure Requirements

# Social Infrastructure Requirements

Social infrastructure will form an integral part of any future Garden Community. The provision of recreation, culture, health, education and community facilities ensures that residents' well-being is enhanced and walkable, vibrant and accessible communities created. As such, an indicative understanding of the likely social infrastructure requirements of the Garden Community is important to determine with respect to generating a cost estimation for use in the viability assessment. For this exercise AECOM's Social Infrastructure Model (SIF) was used (with the exception of education calculations), with the following assumptions and standards applied.

The following household and tenure assumptions have been applied to assess the population impacts of the proposed housing growth across each site and option.

# Housing Tenure Mix

Housing tenure mix was determined based on a review of the housing mix assumptions from policy or evidence base of each local authority.

65%	35%	70%	30%
Market Owned	Affordable	Social Rented Affordable	Private Rented

# Housing Size Mix

Assumption that 80% of future dwellings would be houses and 20% flats - reflecting current ratio in Essex County.

To determine the housing size mix, a review of the SHMA for Colchester and Braintree allowed for the identification of a target tenure. The average between both local substruction was critical to determine final housing mix.

authorities was utilised to determine final housing mix. Flats (no. of bedrooms) Houses (no. of bedrooms) 1 2 3 4+ 1 2 3 4+

Market Owned	7%	%9	5%	2%	28% 24% 20% 8%
Social Rented Affordable	7%	%9	%9	1%	29% 23% 24% 4%
Private Rented	7%	%8	4%	2%	28% 32% 14% 6%
All Units	7%	%9	5%	2%	28% 24% 20% 8%

# Average Household Size by Unit Type The average household size was determined by utilising the 2011 Census data by

collating all three local authorities , to ensure appropriate proportions of households and population are accounted for.

# Social Infrastructure Standards

The Household tenure, size and mix assumptions have been used to inform the population profiles of each site and development option. I hese have been assessed against the following bespoke list of planning standards from a list of national and local resources.

Topic		Standard	Ref.
	early year demand per 2 bed+ Flat	0.045	Essex County
Early Years	early year demand per 2 bed+ House	060'0	Council - Developers' Guide
	places per nursery	56	Contributions
	Sq.m per 56 place nursery	337	2016
	Pupil Demand per 2 bed+ Flat	0.150	Essex County
Primary Schools **	Pupil Demand per 2 bed+ House	0.300	Council - Developers' Guide to Infractructure
	Primary School Pupils in 1 Form Entry	210	Contributions 2016
	Pupil Demand per 2 bed+ Flat	0.100	Essex County
Secondary Schools **	Pupil Demand per 2 bed+ House	0.200	Council - Developers' Guide to Infractructure
200	Secondary School Pupils in 1 Form Entry	150	Contributions 2016
Sixth Form	Proportion of 16-17 year olds in	32%	AECOM Calculation of Sixth form roll
	Sixth Form		2016 against 16-17 population

Primary Health Centre Dental Practice			
Practice	reopie per GP	1,800	SHN
	People per Dentist	1,760	Existing ratio of Dentists to Population across England 2015
Acute Hospital P	People per Bed	510	Existing ratio of Hospital Beds to population across England 2015
Library Space; s based on branch p	sq.m per 1,000 person	30	Arts Council
Police Station S	Population per Station	25	Previous AECOM Experience
Fire Station S	Population per Station	1,180	Previous AECOM Experience
Ambulance Station S	Population per Station	65	Previous AECOM Experience
Indoor Sports Facility (4 court p hall)	facility per 1,000 person	0.072	Colchester SPG Provision of Open Space, Sport
Swimming Pool (4 fi	facility per 1,000 person	0.048	and Recreational Facilities 2006 (0.072 facilities per 1,000 persons)
Natural Green h Space p	ha per 1,000 person	2.000	Recommend adoption of Braintree and Tendring standard - Colchester was 5ha
Outdoor Sports h	ha per 1,000 person	1.530	
Parks and Gardens h	ha per 1,000 person	1.320	
Amenity Green h Space p	ha. per 1,000 people	0.883	Average of Braintree
Allotments p	ha. per 1,000 people	0.227	Colchester and Tendring I PA
Children's h Playspace p (Informal) p	ha. per 1,000 people	0.208	5
Children's Playspace (formal) p	ha. per 1,000 people	0.142	
Green Corridor	ha per 1,000 person	0.750	Tendring Open Space Strategy (2009)