

NORTH ESSEX GARDEN COMMUNITIES

INFRASTRUCTURE PLANNING, PHASING AND DELIVERY

FINAL REPORT

July 2019

3.1 Concept Framework

The Tendring Colchester Borders Concept Framework defines a spatial option for the long term delivery of a Garden Community and is framed by the following key principles:

- **Land use, capacity and placemaking** - A landscape led framework provides 7 development parcels each with its own characteristics and each with a particular role to play in the new community as a whole.
- **Employment** - Employment land includes an extension to the University's Knowledge Gateway, and a Business Park adjacent to the A120 with a mix of employment uses supported by Park and Ride, and served by a Mass Rapid Transit network, and employment floorspace within the district and local centres
- **Access and movement** - a key element of the access and movement strategy is the integration of a mass rapid transit system that connects Colchester Town and its stations with the University and with the new Garden Community. A new junction on the A120 will be required to provide a highway link to the A133 and to provide access to the Garden Community. The link road is proposed to form a development edge which will define the eastern extent of the new community which could be designed as a 'Parkland Avenue', with junctions to provide access into core development areas.
- **Open Space**- The landscape framework extends the green landscape of the urban edge of Colchester into the new suburb to provide a strong landscape link that connects existing communities and Salary Brook with the new Garden Community. The Framework emphasises a central 'east-west' orientated corridor between Greenstead, Salary Brook and new Country Park towards the rural eastern edge of the Suburb and on to Elmstead Market to the east. There is also potential to link across the A120 to Ardleigh Reservoir.
- **Phasing and delivery** - An informed position on how the development could be phased and delivered within the site constraints and opportunities, including key infrastructure requirements and delivery commentary.

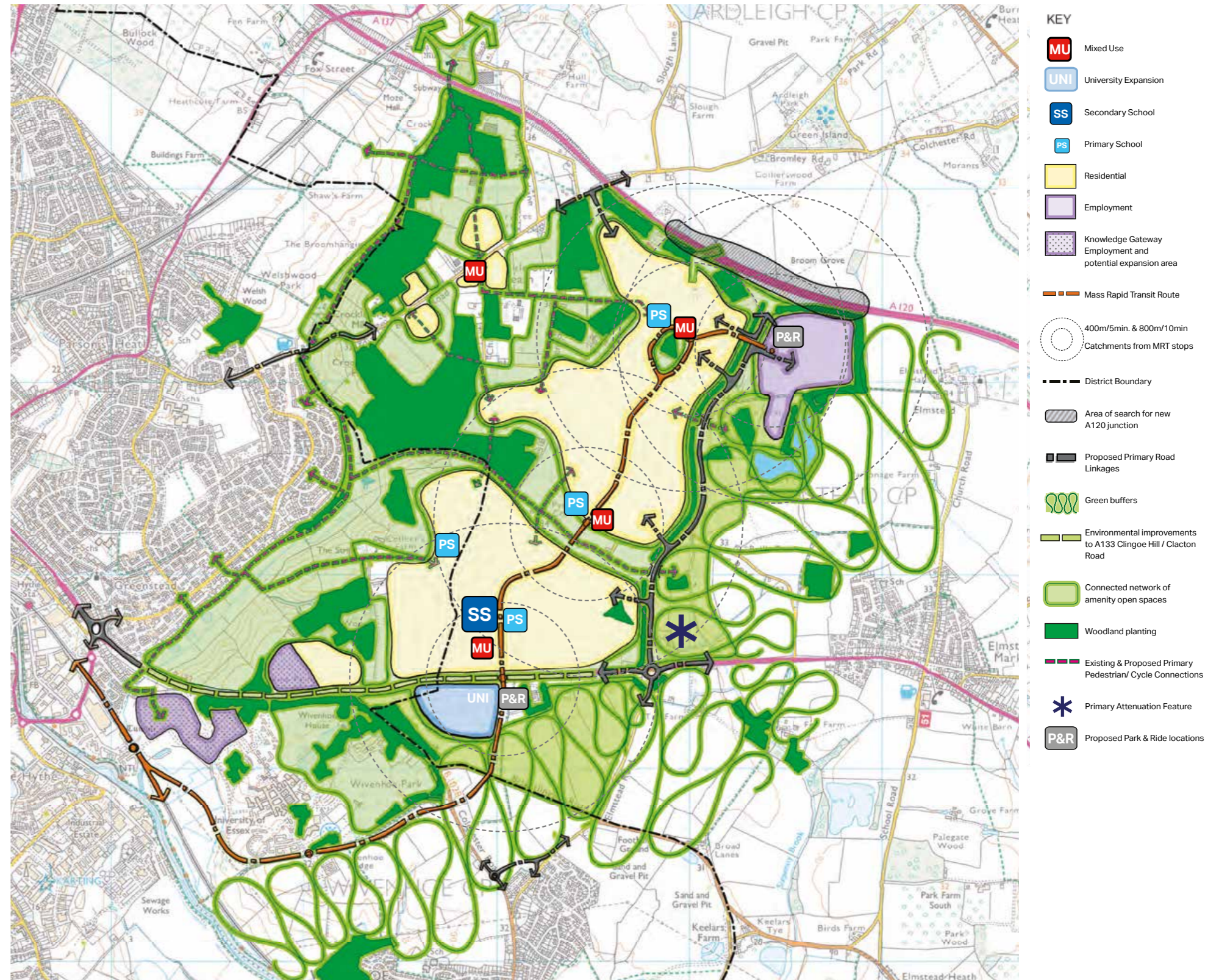


Figure 8: Tendring Colchester Borders Concept Framework. Source: David Lock Associates (2017)

3.2 Indicative masterplan and land use budget

The plan that forms the basis of this current exercise is an iteration of the Tendring Colchester Borders Concept Framework. The modifications shown in this revised plan are minimal and derive from an update to the approach to infrastructure provision and to take account of more detailed work on the need for employment land, outlined by Cebr in their July 2019 report.

The other principal change is the re-calibration of open space, across the site, with a target level of provision that is more in keeping with the standard assumed across all three Garden Community sites.

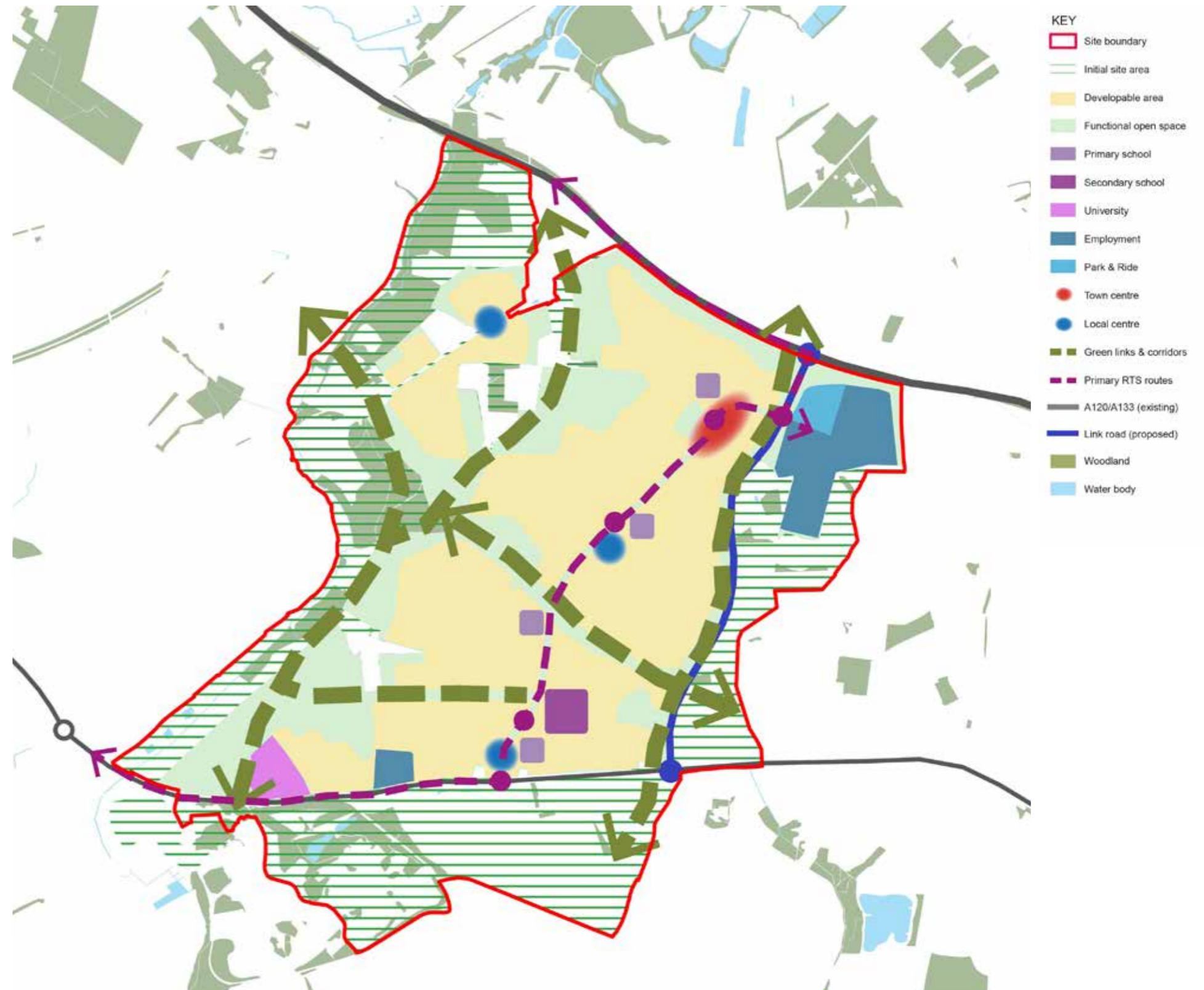


Table 4: Tendring Colchester Borders Land Use Budget

	Area	Dwellings
Residential (ha)	196.06	
Dwellings in Residential		6,960
Mixed Use (ha)	9.00	
Dwellings in Mixed Use		540
Primary School (ha)	15.00	
Secondary School (ha)	10.00	
Employment (ha)	24.50	
Park and Ride	3.67	
Open Space (ha)	144.73	
Infrastructure (5%)	21.21	
Total	424.17 Ha	7,500

Figure 9: Tendring Colchester Borders Indicative masterplan (derived from Concept Framework)

3.3 Movement and connectivity baseline

Whilst Phase 1 is well located to access the local road and bus networks, access for active modes will require enhancing. Some existing junctions will also require improvements in order to mitigate the impact of development, unless the A133 – A120 link road is delivered in parallel with Phase 1.

Key Findings - Roads



Current Situation

- The site is located on the eastern fringe of Colchester between the A133 to the south and the A120 to the north providing opportunities for connection with the A120 trunk road.
- Bromley Road and Harwich Road both pass through the site providing connections onto the A137 for links to and from Colchester town centre.
- In addition, numerous roads (predominantly rural roads) run through the site, providing wider vehicular access to the area.

Future and Wider Issues

- The development of the Tendring Colchester Borders site will require direct connections to the A120 and A133 which could be delivered phased with development in the form of new junctions.
- A number of existing junctions and links surrounding the site operate near to or at capacity during the peak periods. Improvements will therefore need to be brought forwards to these links and junctions in tandem with sustainable connections to minimise the impacts on the existing highway network.

Key Findings - Public Transport



Current Situation

- Local bus routes operate within the vicinity of the site at a relative high frequency, whilst more strategic bus routes provide low frequency inter-urban connections.
- The closest rail station to the site is Hythe station, located approximately 2.3km southwest of the centre of the site but only 800m from the southern boundary. It offers services on the Sunshine Coast line (GEML branch) providing up to two trains per hour between London and Clacton-on-Sea, and another train per hour in either direction between London and Walton-on-the-Naze. Both services connect with Colchester Mainline Station from where connections on the wider GEML are achievable with up to 10 services per hour to London.

Future and Wider Issues

- The potential for greater public transport connectivity has been identified in the concept framework and further explored by Jacobs' North Essex Rapid Transit study suggesting main corridors of movements between the 3 North Essex sites and their main local employment centres such as in the Tendring District and Colchester.

Key Findings - Active Modes



Current Situation

- Existing provision for active modes (walking and cycling network) is very limited on site. However, PROWs exist across the site in various locations.
- Other dedicated walking and cycling corridors are located close to the site such as the NCN 51 (long-distance cycle route) and Colchester cycle network running along the western edge of the site.
- Bromley Road allows movements across the A120 for cyclists and pedestrians, reducing the severance effect of this road and good pedestrian footway links are in place on the A133 linking the University site and west towards the town centre.
- The nature of the roads that cross the site mean pedestrian footway connections are limited; in many cases to one side of the carriageway or not present at all in the case of the rural roads.

Future and Wider Issues

- Building on the garden communities principles, Tendring Colchester Borders has the potential to plan for an important number of internalised movements to be undertaken by walk or cycle thanks to high-quality and dedicated infrastructure on-site.
- For wider hinterland/commuting movements, significant improvements would be required to increase the quality of the existing infrastructure and encourage cycling as an alternative to the car towards Tendring in particular.

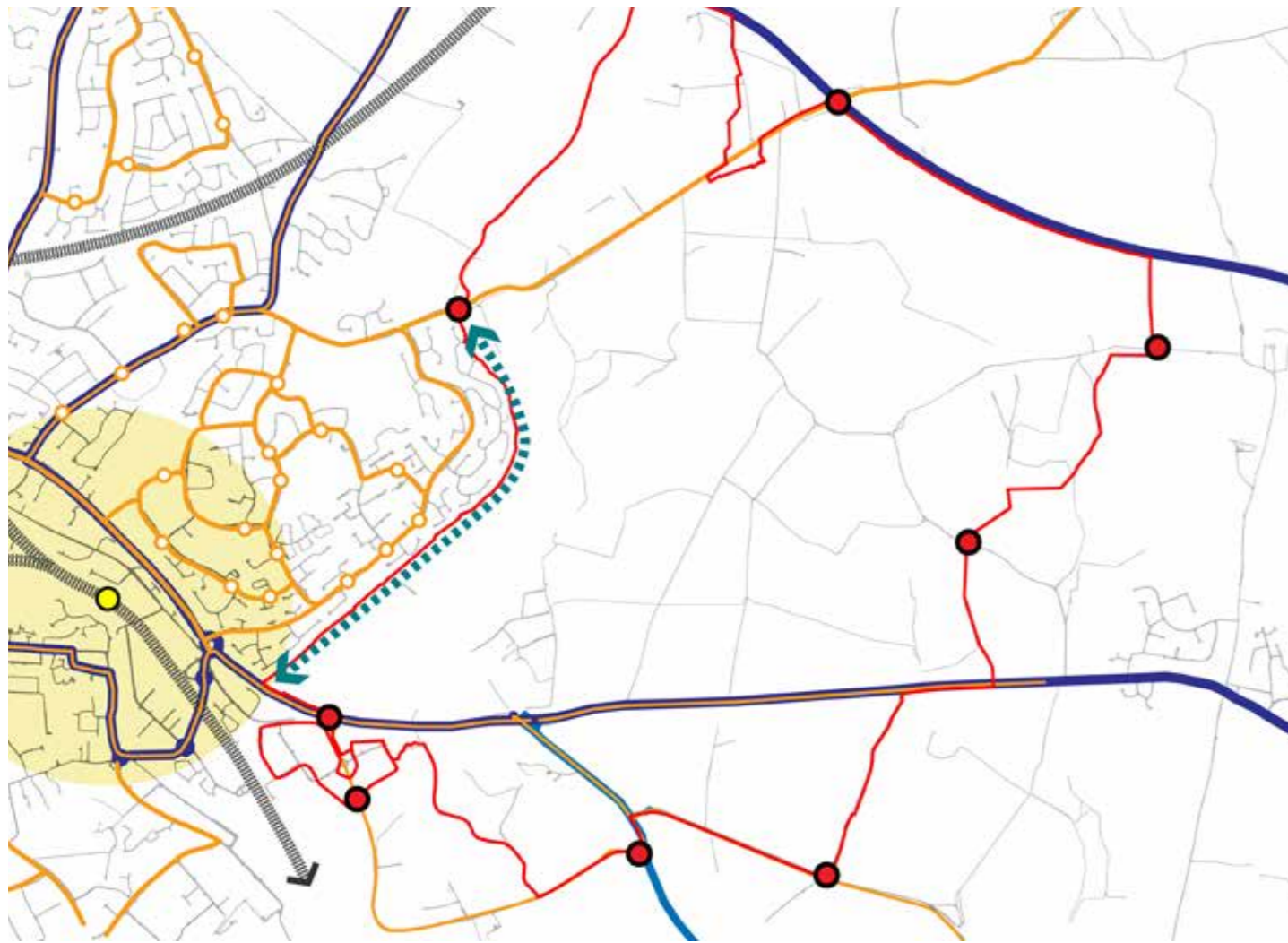


Figure 10: Tendring Colchester Borders Movement and connectivity baseline. AECOM.

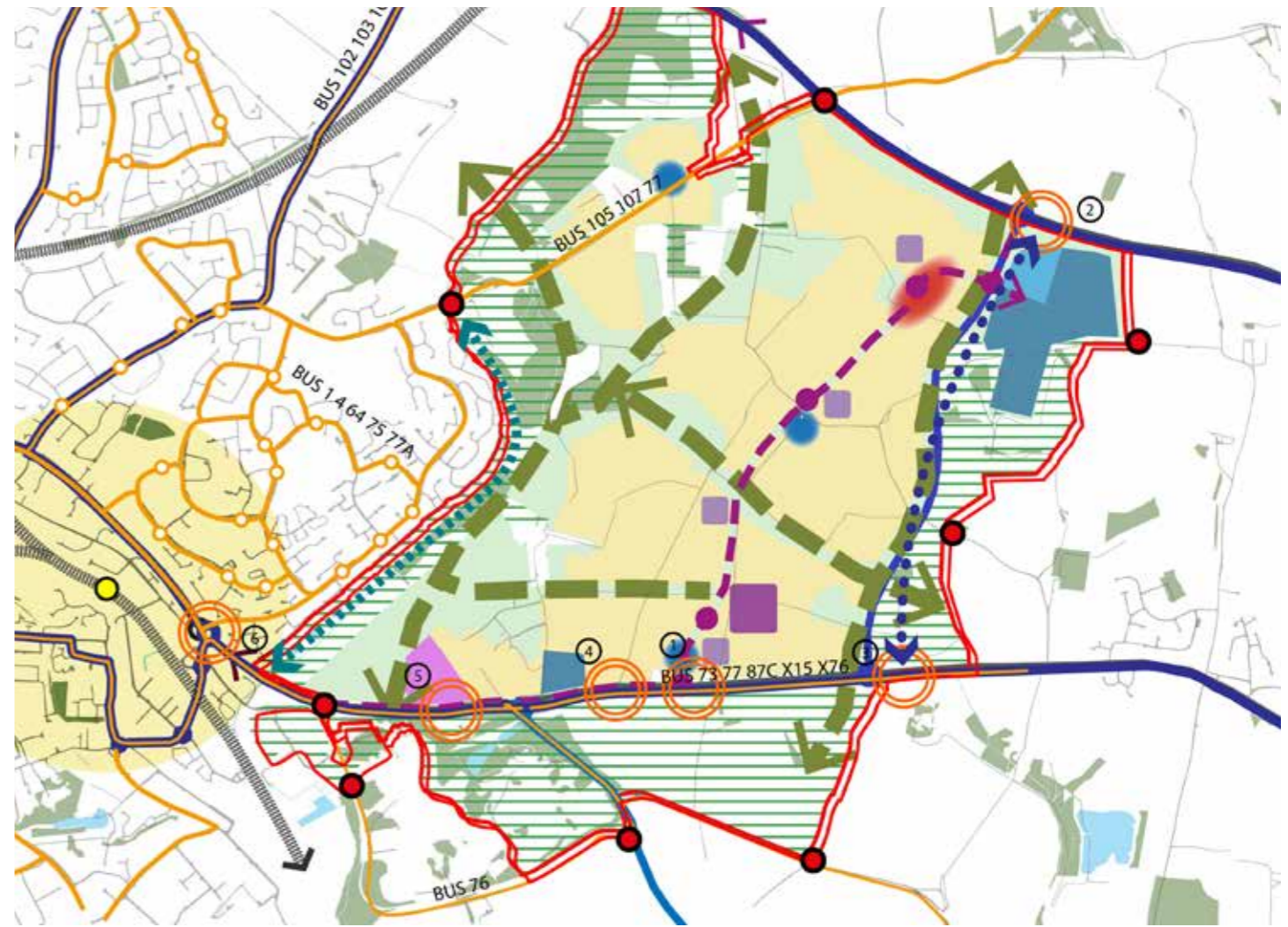
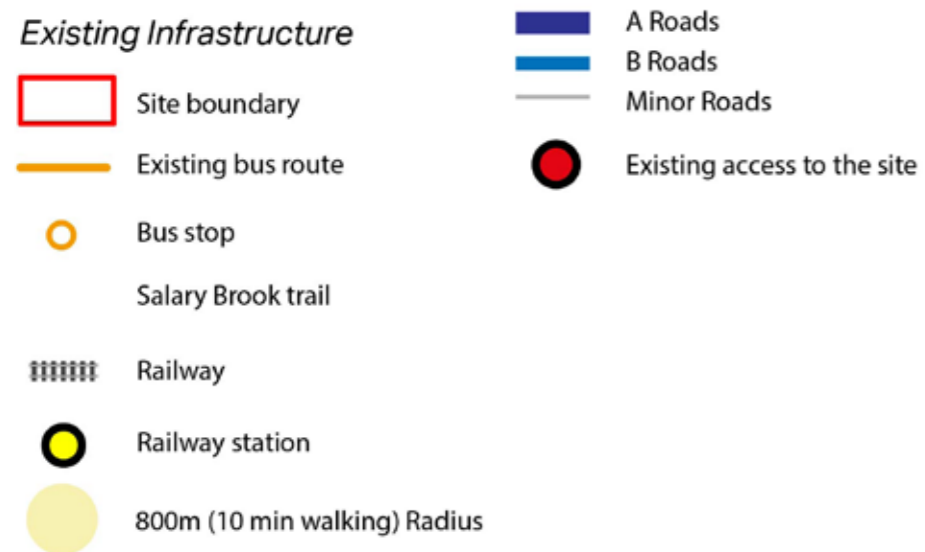
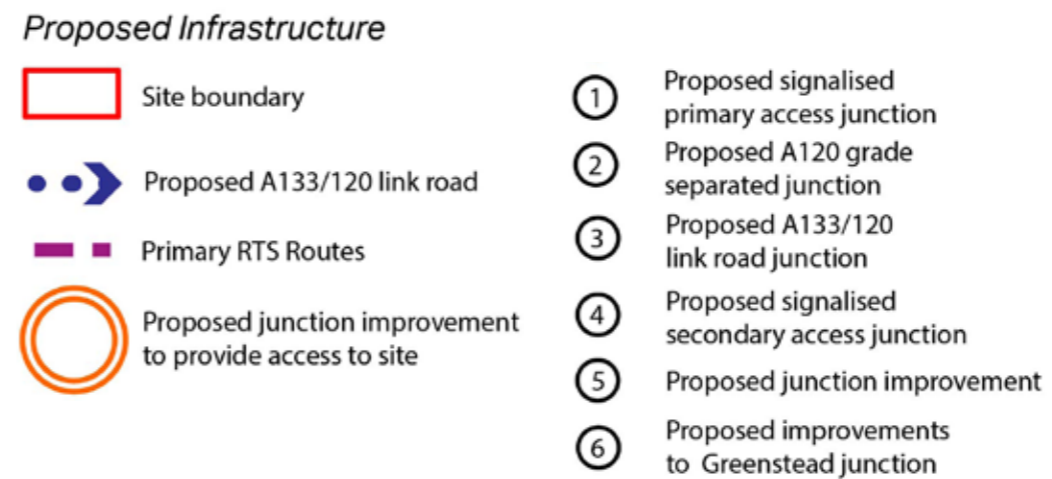


Figure 11: Tendring Colchester Borders Movement and connectivity potential interventions. AECOM.



3.4 Utilities baseline

This section provides a high level analysis of utilities based on preliminary conversations with service providers and desk-based study. Further discussions will be required as masterplans are worked up and more detail emerges.

Key Findings - Electricity



Current Situation

- A meeting was held with UKPN to discuss issues relating to capacity of power available in the four areas under consideration. These informal meetings are referred to as "surgeries" by UKPN and are designed to offer some headline advice ahead of any formal engagement.
- UKPN advised that they expect a capacity demand somewhere between 5MW and 10 MW would trigger the need for a new primary substation.
- There is some good information in the evidence base for this area. General information is provided in the UKPN Regional Development Plan (RDP), and this is amplified through a meeting with UKPN in September 2014. Some network reinforcement will be needed in the period to 2031 to ensure that the Regulated reliability criteria are maintained under winter loading conditions.

Future and Wider Issues

- Development east of the Salary Brook could be supported by upgrading Colchester Primary substation, but distribution may be more costly owing to the need to install new circuits under the river but other supply options could be made available to the area, subject to further study. Specifically, the substation at Lawford could be upgraded which would avoid the river crossing.

Key Findings - Waste Water



Current Situation

- The Colchester Waste Water Treatment Plant, now referred to Water Recycling Centre (WRC), is near capacity. There is a high level strategy to expand the plant, but expenditure will only be committed in response to developer demand. Expansion will have a fairly long lead-in time, so there may be some constraint on early development.
- There are a number of small WRC's with some capacity in this area. These include WRC's at Fingringhoe and Great Bromley. These could serve early development, but before the end of the plan period (2033), waste water would have to be pumped to Colchester WRC at Hythe, or a new treatment plant would have to be built. Pumping to Hythe would involve a river crossing.

Future and Wider Issues

- Most sewers are running with limited spare capacity, and infrastructure upgrades will be needed to support new development. This offers the opportunity to explore new approaches.
- Development in North Colchester may trigger the need for a new WRC within this region also; there could be an opportunity to install a WRC with sufficient capacity to serve both sites, benefiting from economies of scale and providing a more sustainable water cycle.

Key Findings - Gas



Current Situation

- According to an email from National Grid Gas in September 2014, the high and medium pressure network is expected to be able to deliver the predicted additional demand from new development, but the low pressure network will require reinforcement where connections to new development are required.

Future and Wider Issues

- A new pipeline connecting the existing Medium Pressure main to a new pressure reducing station will be required.

Key Findings - Telecommunications



Current Situation

- Evidence limited with additional investigation under masterplanning required.

Future and Wider Issues

- Telecommunication network will be made available to the development at no cost, following a commitment by BT Openreach to serve all developments of more the 30 homes with high speed broadband.

Key Findings - Water Supply



Current Situation

- There is some general information in the Anglian Water development plan covering the period 2015 to 2020. The region east of Colchester (referred to in the Anglian Water development plan as "South Essex") is predicted to be in water deficit condition by 2030.

Future and Wider Issues

- Water will need to be delivered from other areas within the Anglian Water region, or supplemented by neighbouring water companies, namely Affinity Water to the south and Severn Trent to the west. The Anglian water predictions are based on average growth trends; any accelerated growth will bring the date forward. There is no specific information about the proposed development area. There are no major supply projects planned during the current review period (to 2020) – the focus is firmly on demand reduction by tackling leakage and installing water meters.
- The Ardleigh Reservoir, located to the north of the site, could provide additional supply, however this is subject to agreement with the relevant stakeholders. It would also require upgrades to existing as well as new infrastructure.

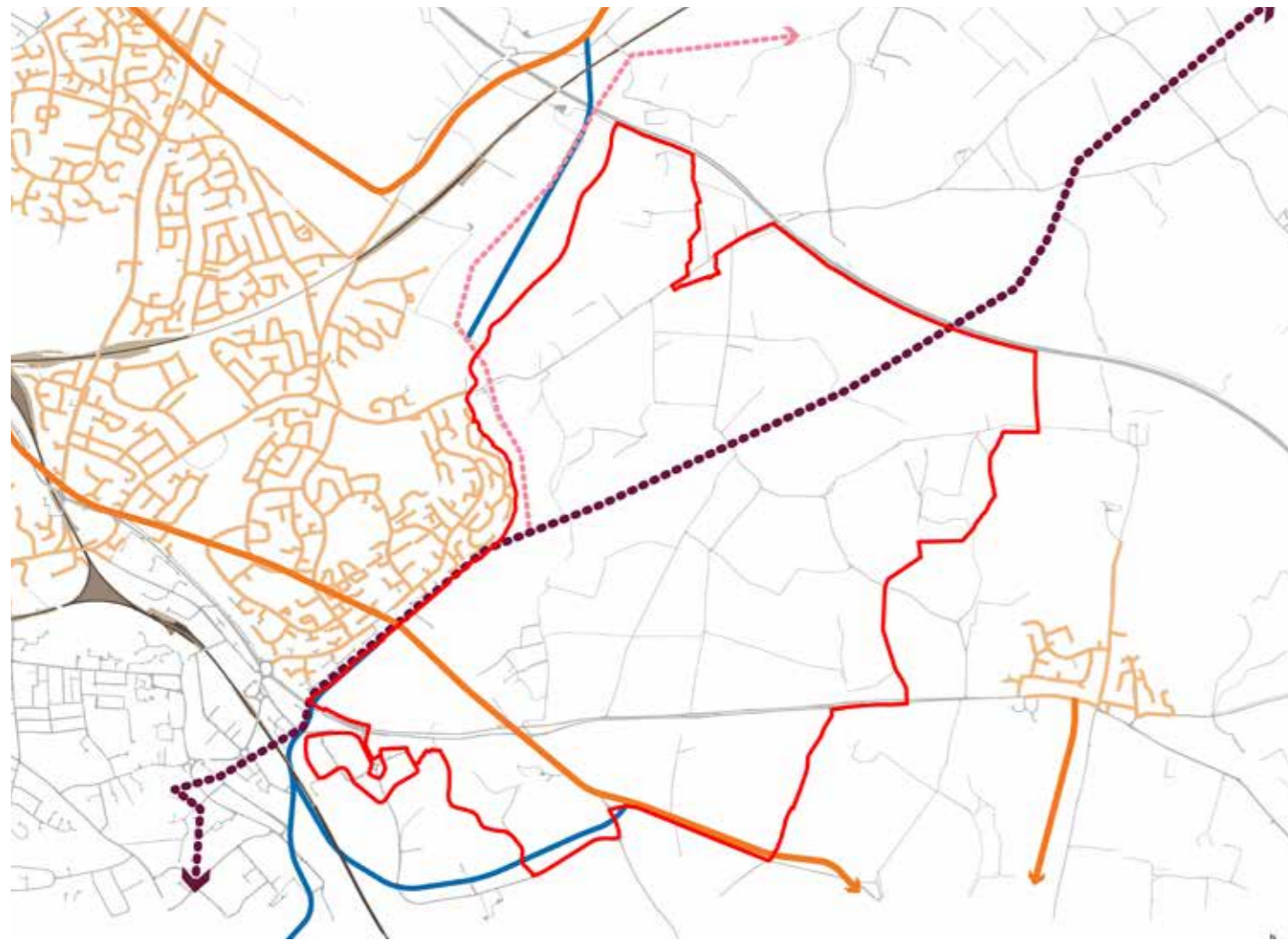


Figure 12: Tendring Colchester Borders Utilities baseline. AECOM.

- High pressure Gas
- Medium Pressure Gas Pipe
- - - 33,000 V Tower Line
- - - 132,000 V Tower Line



Figure 13: Tendring Colchester Borders Utility interventions. AECOM.

- High pressure Gas
- Medium Pressure Gas Pipe
- - - 33,000 V Tower Line
- - - 132,000 V Tower Line
- Medium pressure gas supply
- Sewage treatment
- ▲ Primary substation supply

3.5 Infrastructure requirements by phase

Project List

Infrastructure delivery forms a key element of the Garden Community principles. Table 5 contains the estimated infrastructure required to support development at Tendring Colchester Borders and the figures below show phasing assumptions spatially. Please note the infrastructure highlighted is indicative and not based on a detailed masterplanning exercise.

In accordance with the Garden Community approach, the programme assumes the front-loading of several infrastructure items so that they are provided before the benchmarked trigger point.

Table 5: Tendring Colchester Borders Infrastructure requirements

Infrastructure	Demand arising from development	Unit of demand	Commentary/assumptions	Cumulative Development Schedule					
				Phase 1 1,442	Phase 2 3,004	Phase 3 4,556	Phase 4 5,783	Phase 5 6,848	Phase 6 7,500
Education									
Primary Schools: 2 Form Entry (including 56 place EY+C facility)	8	FE	2FE facilities and EY + C Assuming 210 places per FE and 56 places per EY. Excludes temporary accommodation.	2FE + EY	2FE + EY	2FE + EY		2FE + EY	
Secondary Schools	8	FE	Assuming 150 places per FE. Excludes temporary accommodation.		8FE				
Standalone Early Year Facilities (56 place, above those co-located with Primary)	5	Facilities	Assuming 56 places per facility. 4 EY facilities within primary schools, 9 in total required by development. Excludes temporary accommodation.	1	1		2		1
Healthcare & Community									
General Practitioners	1,650	m ²	Demand arising 10 GPs. Assuming 1800 population per GP. Assuming a population of 18,000 (2.4/unit). Assuming 165 m ² / GP.	2	2	2	1	2	1
Dentists	550	m ²	Demand arising 11 Dentists. Assuming 1760 population per dentist. Assuming a population of 18,000 (2.4/unit). Assuming 50 m ² / Dentist.	3	2	1	2	2	1
Community Space and Libraries	1,800	m ²	Demand arising 540 m ² of Library Space. Assuming 30 m ² per 1000 persons. Demand arising 1080m ² of Community Space. Assuming 60 m ² per 1000 persons. Demand arising 1nr 1800 m ² facilities. Assuming a population of 18,000 (2.4/unit).	19%	21%	21%	16%	14%	9%
4 Court Sports Centre	952	m ²	Demand arising 2 nr facilities. Assuming 0.072 facilities per 1000 persons. Assuming 476m ² per facility. Assuming a population of 18,000 (2.4/unit).	1			1		
4 Lane Swimming Pool	245	m ²	Demand arising 1 nr facility. Assuming 0.048 facilities per 1000 persons. Assuming 245m ² per facility.. Assuming a population of 18,000 (2.4/unit).	1					
Open Space									
Open space	144	ha	Assuming a population of 18,000 (2.4/unit). Including; 8ha total open space per 1000 population.	38.88	47.52	1.44	28.80	20.16	7.20
Environment/waste - Allowance	7,500	units	Include allowance per unit to cover 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.	1442	1562	1552	1227	1065	652

				Cumulative Development Schedule					
Infrastructure	Demand arising from development	Unit of demand	Commentary/assumptions	Phase 1 1,442	Phase 2 3,004	Phase 3 4,556	Phase 4 5,783	Phase 5 6,848	Phase 6 7,500
Utilities - Scheme-Wide Enabling Works									
Site Preparations and Earthworks			Assume Site Area of 403ha 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.	19%	21%	21%	16%	14%	9%
General demolition and site clearance 443 ha = m ²	4,430,000	m ²							
Strategic Earthworks; cut and fill									
Highways									
Primary and secondary road network									
Drainage									
Foul and surface water network									
Landscaping									
Cost captured in open space									
Noise attenuation									
Cost captured in open space									
Waste Management									
Provision for recycling on site, excluding new amenitys	7,500	Nr							
Energy									
33 No. 11 kV to 400 V distribution substations	33	Substations							
7 No. 11 kV ring circuits from primary substation to connect to distribution substations.	7	Ring Circuits							
400 V LV circuits from distribution substations to end users	7,500	Circuits/Unit							
Residential Electricity Connections									
Budget cost per Low Voltage (LV) Service Disconnection		Unit							
Potable water									
New network of distribution pipework									
Water mains, connections and infrastructure charges									
Waste Water									
New network of collection pipework									
Plot connections for all properties to waste water distribution network									
Gas									
Low Pressure Residential Connections									
Utilities - Off-Site Requirements									
Electricity									
132 kV connection to Primary Substation from Colchester Grid Substation					100%				
Electricity Diversion Works				100%					

				Cumulative Development Schedule					
Infrastructure	Demand arising from development	Unit of demand	Commentary/assumptions	Phase 1 1,442	Phase 2 3,004	Phase 3 4,556	Phase 4 5,783	Phase 5 6,848	Phase 6 7,500
Potable Water									
Connection to closest feasible supply source with capacity (e.g. trunk main or reservoir)				100%					
Budget cost per lowering of the Affinity Water 12" AC Distribution Water Main to accommodate a site entrance.			Assuming lowering of the distribution water main to accommodate site entrances within Brightlingsea Road, Elmstead Road and Colchester Road.	100%					
Waste Water / Foul Water									
Upgrades to water course discharges			Allowance for environmental enhancement / EA regulations. Note: Does not account for university student population.	100%					
Connection to existing waste water treatment works via new pumping station - primary and secondary collection networks			Pumped to Colchester WRC (5.2 km pipeline). Note: Does not account for university student population.	100%					
Gas									
Extension to Medium Pressure network				100%					
1 No. Medium to Low Pressure reducing station	Station	% of total provision		19%	21%	21%	16%	14%	9%
Re-routing of 12" Medium Pressure Gas Main through the new on-site road network				100%					
Telecommunications									
Development of access chambers for BT Telecoms network, BT Openreach fibre optic network and private telecoms network throughout development.				19%	21%	21%	16%	14%	9%
Openreach diversion works associated with Mount Pleasant and Allen's Farm off Tye Road.				100%					
Openreach diversion works associated with highway works on the A133.				100%					
Transport									
New signalised access onto A133 (primary access to site)		% of total provision		100%					
Secondary signalised access onto A133		% of total provision		100%					
Interim highways improvements measures (including improvements to Greenstead roundabout and A133 Hare Green roundabout)		% of total provision		100%					
A120-A133 Link Road		% of total provision			100%				
On site RTS route and related improvements/facilities		% of total provision		20%	20%	20%	20%	20%	
Contribution to provisions of off site RTS network		% of total provision		27%	30%	14%	14%	15%	
Park & Ride facilities and interchange with RTS		% of total provision		50%		50%			
Upgrade existing walking / cycling infrastructure		% of total provision		50%	50%				
Various combined segregated pedestrian / cycle "Greenways" through site		% of total provision		19%	21%	21%	16%	14%	9%
Internal road network		% of total provision	Include in enabling costs						

Cumulative Development Schedule

Infrastructure	Demand arising from development	Unit of demand	Commentary/assumptions	Phase 1 1,442	Phase 2 3,004	Phase 3 4,556	Phase 4 5,783	Phase 5 6,848	Phase 6 7,500
Per Unit Contributions									
Investment in early phase bus/transit services		% of total provision		19%	21%	21%	16%	14%	9%
Travel plan measures (smarter choices, car clubs, charging points, etc) - Straight Line Cost Over Time		% of total provision	Aligned to Modal Shift analysis (ITP). Delivered from day one with funding annually.	19%	21%	21%	16%	14%	9%
Open Space Endowment		% of total provision		19%	21%	21%	16%	14%	9%
Employment Space		% of total provision		19%	21%	21%	16%	14%	9%