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AECOM

NORTH ESSEX GARDEN COMMUNITIES

EVALUATION OF ALTERNATIVES

COLCHESTER METRO TOWN

April 2017

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6.1 Review

01 Introduction

1.1 Introduction

1.1 Introduction

Colchester Borough Council, Braintree District Council and Tendring District Council are collaborating, alongside Essex County Council, to identify an agreed strategic approach to the allocation and distribution of large scale housing led mixed use development, including employment opportunities and infrastructure provision, in the form of potential “Garden Communities”.

There has been a resurgence in the interest and attention being paid to the potential of Garden Communities and how they fit into the 21st Century Context. With the TCPA as strong advocates at the forefront of this movement, many places have sought to appreciate how a modern interpretation of the original Garden City Principles might address the urgent need to increase the level of housing development in the UK. The intention of the Garden Communities programme is to provide high quality homes, new transport improvements, good schools, jobs and community amenities to be delivered in a strategic and sustainable way. The four councils are in agreement that the Town and Country Planning Association’s (TCPA) Garden City Principles provide a valuable initial framework for achieving new settlements that are inclusive and provide genuinely affordable, well designed homes, local jobs and schools, integrated transport systems, high standards of green infrastructure and promotion of health within and beyond the emerging local plan period for each authority of 2032/2033. In response the councils are exploring the potential to establish new settlements in the form of North Essex Garden Communities.

Colchester Metro

This report assesses Colchester Metro Town (Figure 1), which is an alternative approach to a single site new Garden Community suggested by CAUSE (Campaign Against Urban Sprawl in Essex). It is based on the principle of using the Colchester-Clacton electrified railway corridor to create a sustainable and integrated chain of settlements. CAUSE’s assessment postulates that the planned expansion of a number of existing settlments could deliver 6,000 to 8,000 dwellings within a 10 minute walk of an existing railway station. The principal settlements are:

1. Thorpe-Le-Soken
2. Weeley
3. Great Bentley
4. Alresford

Settlement growth will be principally residential with supporting services (such as local community facilities). Significant new employment within these settlements is not anticipated, instead Colchester and Clacton-on-Sea will provide employment opportunities, with access via rail.

AECOM Approach

AECOM has reviewed CAUSE’s analysis and methodology and uses this to determine the development potential around each station at each of the four settlements.

As a first step, a 10 minute walknet around each station has been determined, utilising GIS to model walking networks around each station based on current networks. The walknet is determined based on data from the Department for Transport and was built up to include all roads (based upon data from the Ordanance Survey), Public Rights of Way and Bridleways (Essex County Council) within 1 km of the station. This is therefore a more defined and smaller area than that presented by CAUSE.

Any parts of the network deemed inaccessible for walking were removed from the analysis as constraints (for example the railway line and primary roads). In addition an assumed walking speed of 3.1 mph was used in creating a Service Area for a 10 minute walking time around each station. To compute this, each route section length within the network dataset was assigned a walking time (distance/assumed speed), and these lengths were accumulated to calculate what extent of the dataset could be covered in 10 minutes of walking based on existing networks.

Once the walknet was established, an assessment of the total developable land was conducted. An initial review of the Call for Sites within Tendring identified parcels of land actively being promoted by existing landowners within the 10minute walknet. This land is considered developable and included within the analysis. In addition, understanding the theoretical nature of this assessment, all other land within the walknet was included following a constraints assessment to remove all undevelopable land (land with environmental or physical constraints).

Key Findings

This assessment has determined that, based on a 10 minute walknet using existing networks as the principal structuring infrastructure from which new development would be planned, there is a potential for a cumulative 2,277 dwellings based on a density of 35 dwellings per hectare (dph) across the four settlements. However, developing at such a density, although still only modest, would significantly alter the existing character of each village, in which a more conservative density of 16dph (as identified in most of the Call for Sites) would produce 1,318 dwellings.

At a cumulative yield of only 2,277 dwellings across the four locations, Metro Town does not provide a comparable level of housing to the Garden Community options currently being considered by the North Essex councils (i.e. West of Braintree, Marks Tey and West of Tendring/East Colchester). In addition because the development is spread across four villages and across multiple sites and potential landholdings, deliverability maybe more protracted.

Figure 1: Colchester Metro Town

This chapter provides baseline synthesis and key findings associated to Thorpe-Le-Soken.

It concludes with a high level assessment of development capacity and infrastructure requirement.

02 Thorpe-Le-Soken

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2.1 Site Overview and Landuse

The Thorpe-Le-Soken area of investigation comprises predominantly agricultural land, as the main part of the village (Thorpe-Le-Soken) is approximately 800m north. The small rural villages of Weeley Heath and Little Clacton lie to the west (approximately 3km) and south of the area respectively. Within the area of investigaton residential and commerical properties are few in number and scattered, albeit with a small clustering around the railway station. The B1414 runs north/ south through the centre of the 800m buffer zone, with the wider immediate area itself only served by B-classified roads.

Figure 2: Thorpe-Le-Soken Context

2.2 Call for Sites

Key Findings

- The Call for Sites process for Tendring undertaken to support the development of the new Local Plan identified 4 sites associated with the Thorpe-Le-Soken area of investigation, which collectively amount to 18.18ha of potentially developable land.
- The individual site details submitted for the Call for Sites is shown below in Table 1.
- Call for Sites Reference RS2.7 received planning application for 40 dwellings in 2015, It was decided and approved May 11 2015
- Call for Site Reference RS2.10 has a capacity for 145 homes, and has been identified as a broad area for growth. It was originally promoted for inclusion in the 2012 Draft Local plan, but discounted due to concerns of Thorpe-Le-Soken for major growth. It has since been identified as a broad area for growth.
- Most of the Call for Sites recommend a density of 16-20 dwellings per hectare (dph).
- All land identified through the call for sites process falls outside both the 800m buffer zone and the more defined 10 minute walk net of the railway station under current conditions.

Call for Sites Reference	Location	Proposed Use	Site Area (ha)
RS2.7	Land North of Abbey Street	Residential	2.48
RS2.8	Land North of New Town Road	Residential	3.3
RS2.9	Land Off Lonsdale Road	Residential	4.3
RS2.10	Land East of Landermere Road and West of Byng Crescent	Residential	8.1
Total Site Area: 18.18ha			

Table 1: Thorpe-Le-Soken Call for Sites

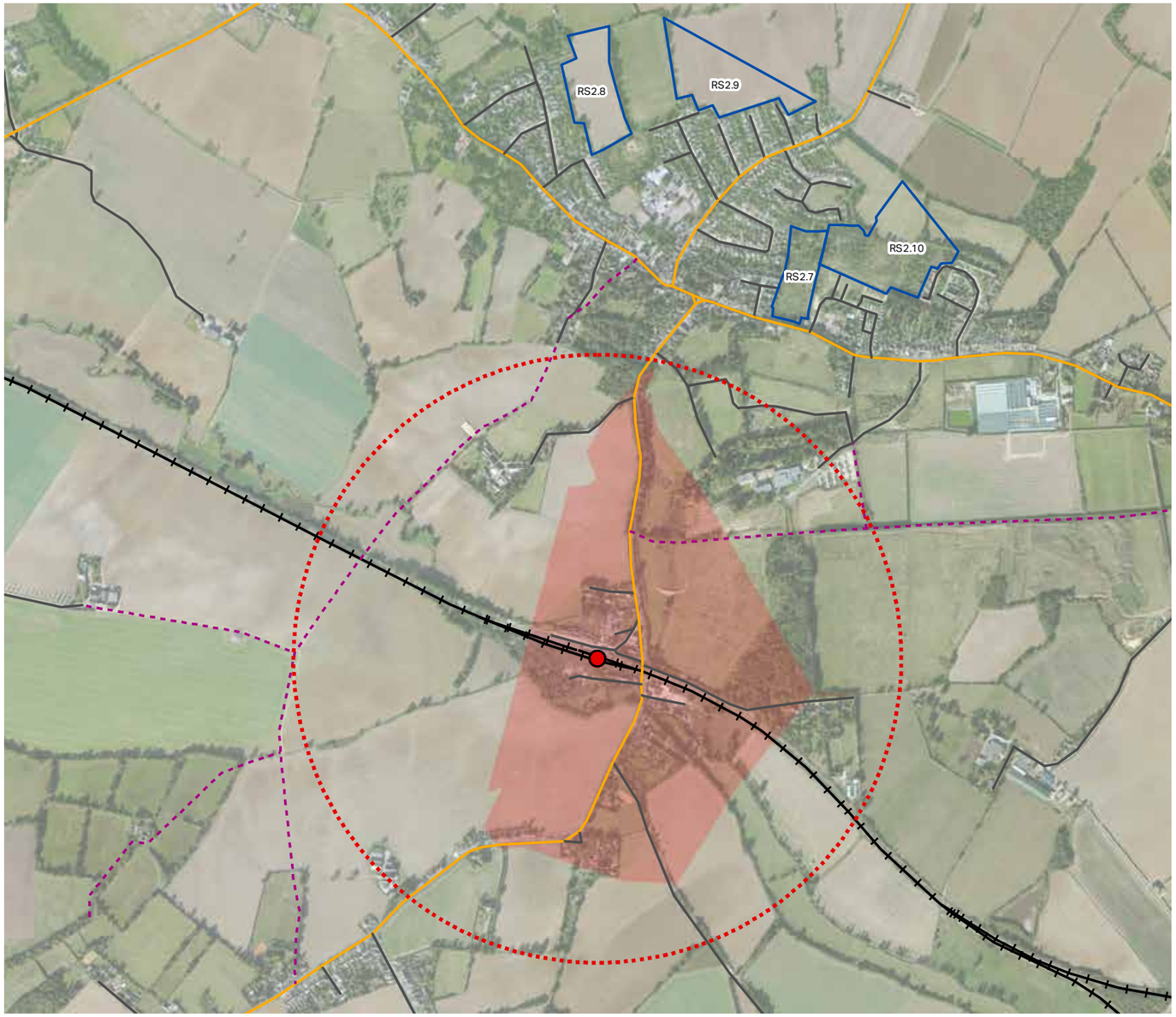


Figure 3: Thorpe-Le-Soken Landuse Source: Tendring Draft Local Plan (July 2016), Local Plan Inspectors Report (2007), SHMA (2016), Tendring SHLAA (2014)

2.3 Surrounding Settlement Hierarchy

Key Findings

- Thorpe-Le-Soken is identified as a Rural Service Centre. The Local Plan designates it as an opportunity for small-scale growth. The village has a population of less than 2,000, but due to the rural nature of the local authority, this makes it the largest settlement in the immediate vicinity
- The closest neighbouring settlements are Frinton, Walton and Kirby Cross to the east, which together form a small urban settlement.

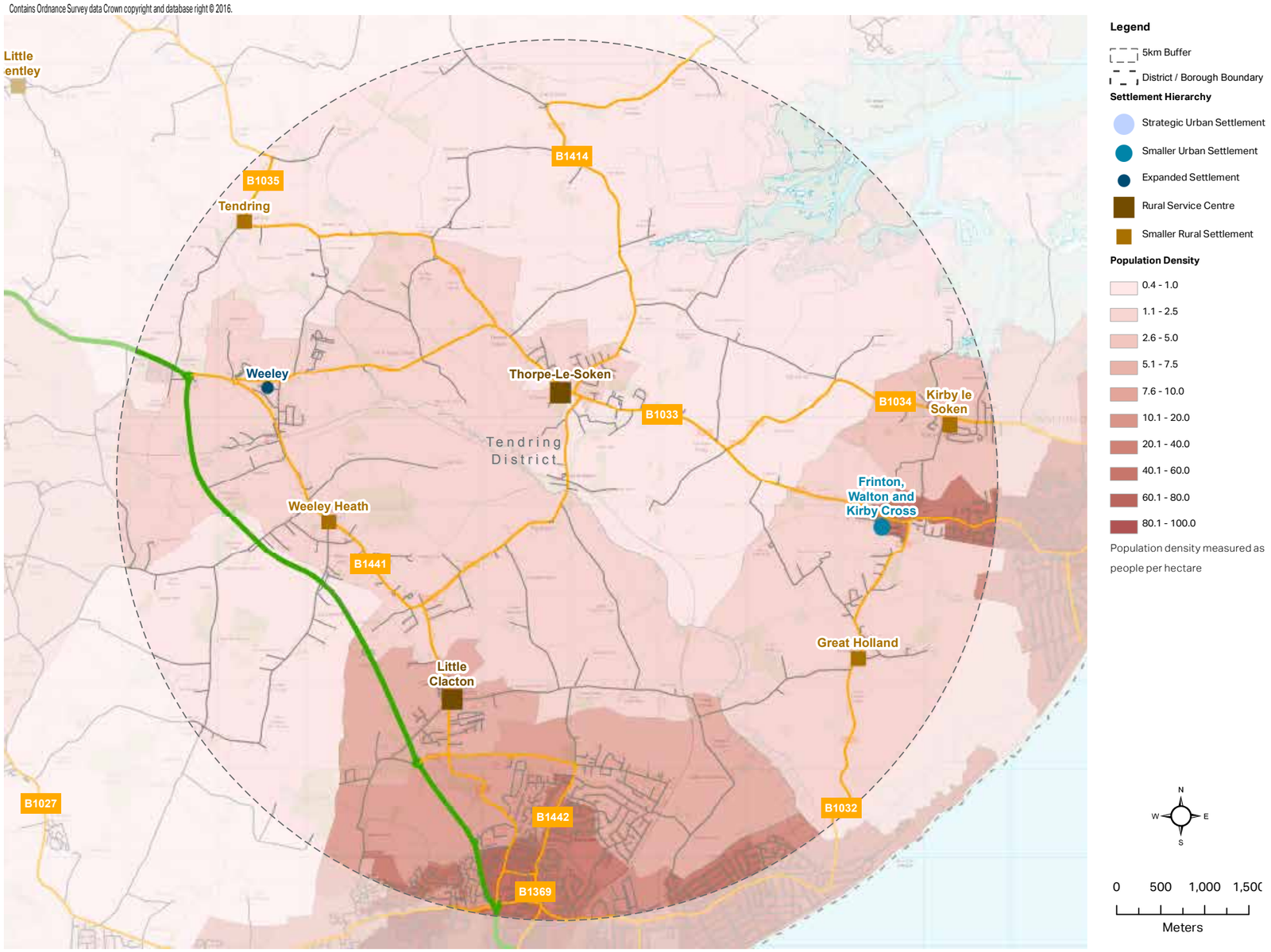


Figure 4: Thorpe-Le-Soken Settlement Hierarchy. Source: AECOM

2.4 Economic Context

Key Findings

- The area of investigation is centred around Thorpe-Le-Soken railway station, in which the immediate vicinity around the station is mainly agricultural land, but with some commercial land adjacent to the station.
- To the north of the area of investigation is Thorpe-Le-Soken's High Street, with a variety of commercial and retail premises. This comprises the main retail centre within the area of investigation. This is defined in the 2007 Local Plan Proposals map as a Local Centre.
- Tendring Technology College lies to the north of the area of investigation.
- Tendring's Economic Growth Strategy (October 2013) identifies this location as a Tier Two Location as part of the Rural Hinterland, which:
  - The rural parts of the district are not seen as taking on significant economic growth over the next decade with greater emphasis to improving sector and business support.
- To the south of the station in the area of investigation is a small collection of light industrial businesses
- The closest principal employment centres are Clacton-on-Sea, approximately 8km to the south and Colchester, approximately 16km to the west.

Sources

- Tendring District Local Plan (2007) & Proposals Map
- Tendring Economic Strategy (October 2013)

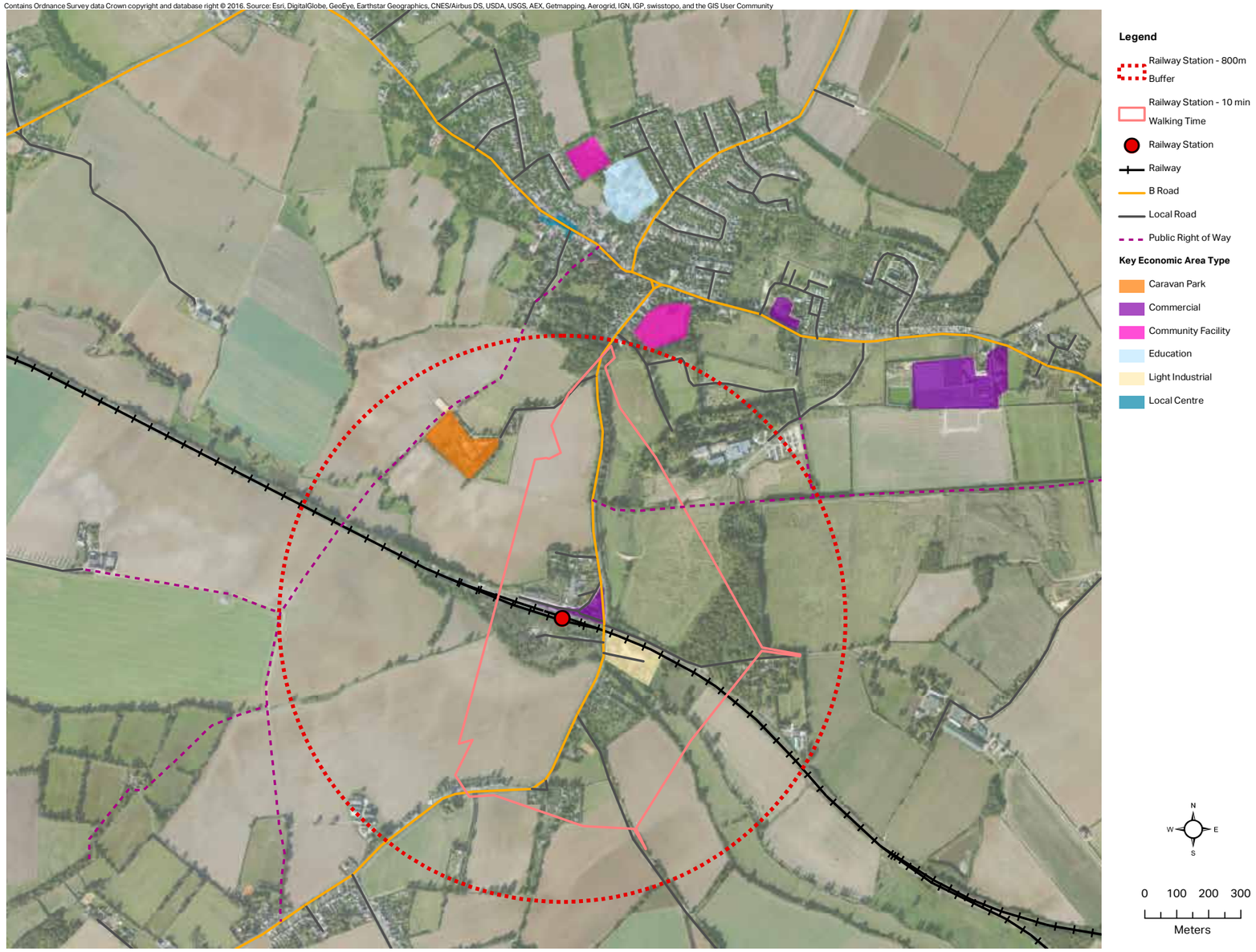


Figure 5: Thorpe-Le-Sojen Economic Context. Source: AECOM.

2.5 Utilities

Key Findings

Electricity

- There are no primary substations within a 10 km radius of Thorpe-Le-Soken. If the demand for the development exceeds the capacity of the existing infrastructure in the area, a new primary substation will be required. A 33 kV overhead line exists to the east of Thorpe-Le-Soken which, capacity and route permitting, can be extended to supply a new primary substation.

Water supply

- Affinity Water forecast that the region will have a supply/demand surplus during their current 25 year planning period; 2015-2040.

Gas

- Intermediate and High pressure networks have adequate capacity. Medium and Low pressure networks will require reinforcement and extension to service new developments.

Waste Water

- Thorpe-le-Soken is within the Wastewater Treatment Works (WwTW) catchment for Clacton-Holland Haven. This is currently assessed as having sufficient volumetric capacity (headroom between the permitted dry weather flow and the demand. In addition, there is headroom within the process capacity, relating to the volume of water a WwTW is capable of treating to the required quality standards set by the discharge permit. Upgrades to the wastewater collection infrastructure between Thorpe-le-Soken and the Clacton-Holland Haven WwTW will be needed if the current capacity is insufficient for the proposed additional demand. Similarly, upgrades to the infrastructure discharging the treated effluent from Clacton-Holland Haven WwTW may be required.

Telecommunications

- BT Openreach has made a commitment to supply high speed fibre optic broadband to all development over 30 dwellings at no cost to the developer.

Sources

- Affinity Water
- BT Openreach (October 2016)
- UKPN Distributed Generation map
- National Grid Gas (September 2014)

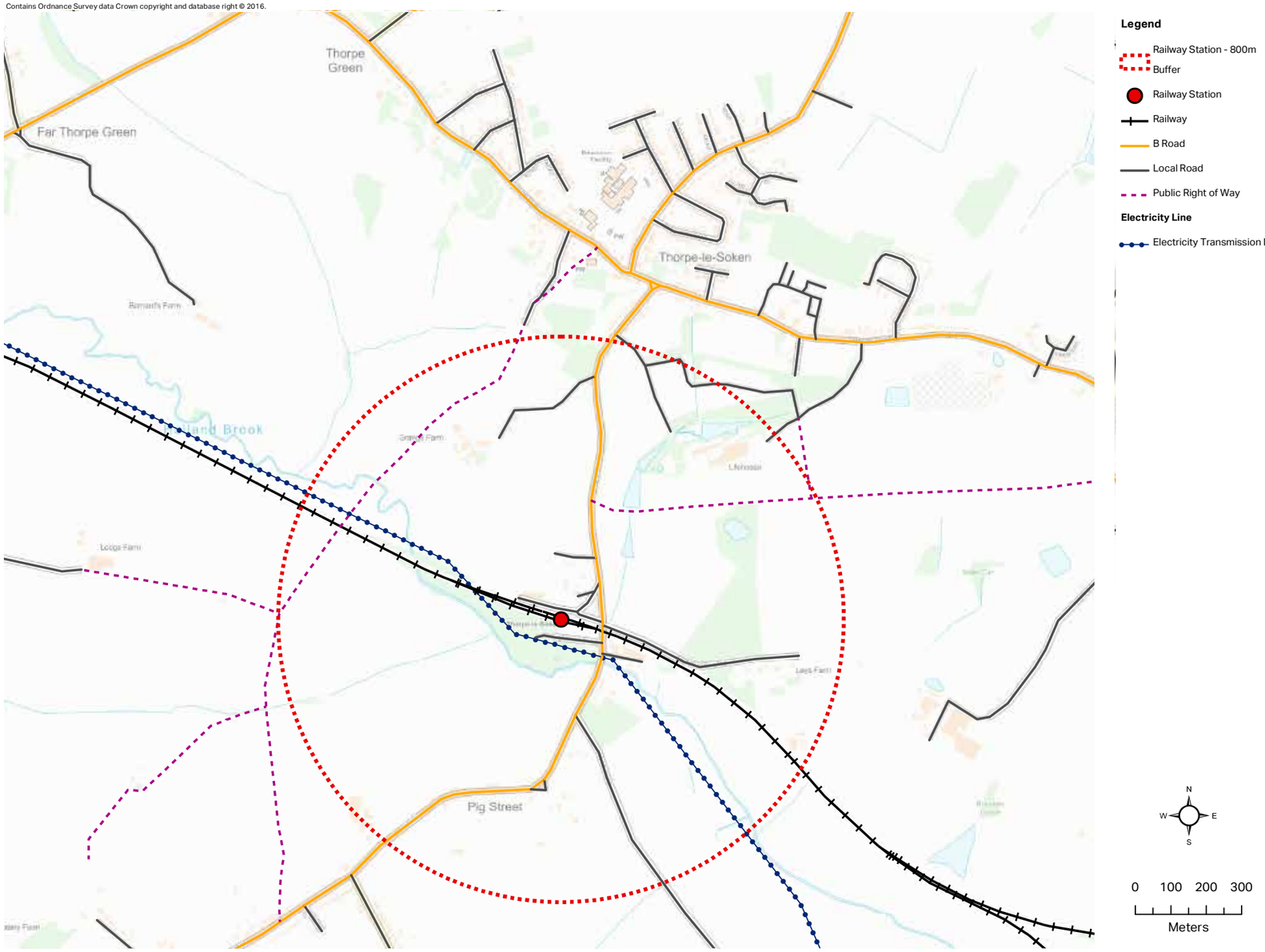


Figure 6: North Colchester Utilities. Source: Anglian Water / National Grid

2.6 Landscape Character, Sensitivity and Condition

Key Findings

- The existing topography is broadly defined by Holland Brook, with the site situated in the valley bottom.
- There is a cluster of buildings situated to the north of the train station with the village of Thorpe-Le-Soken situated a short distance to the north.
- Forming part of Clacton and the Sokens Character Area it is described as an area of gently undulating agricultural plateau, drained by Holland Brook Valley System. Arable fields are divided by low gappy hedgerows, with occasional hedgerow trees. There are remnants of ancient oak and sweet chestnut coppice woodland.
- Good access is provided by a number of A and B roads that provide a backbone for the ribbon of development that dominates the area around Clacton and Frinton.
- Thorpe-le-Soken is a rural settlement important in medieval times and has a wealth of historic buildings.
- Forming part of the Northern Thames Basin National Character Area, the geology of the area is largely London Clay overlain by loamy soils.

Sources

- Tendring Landscape Character Area Assessment Volume 2

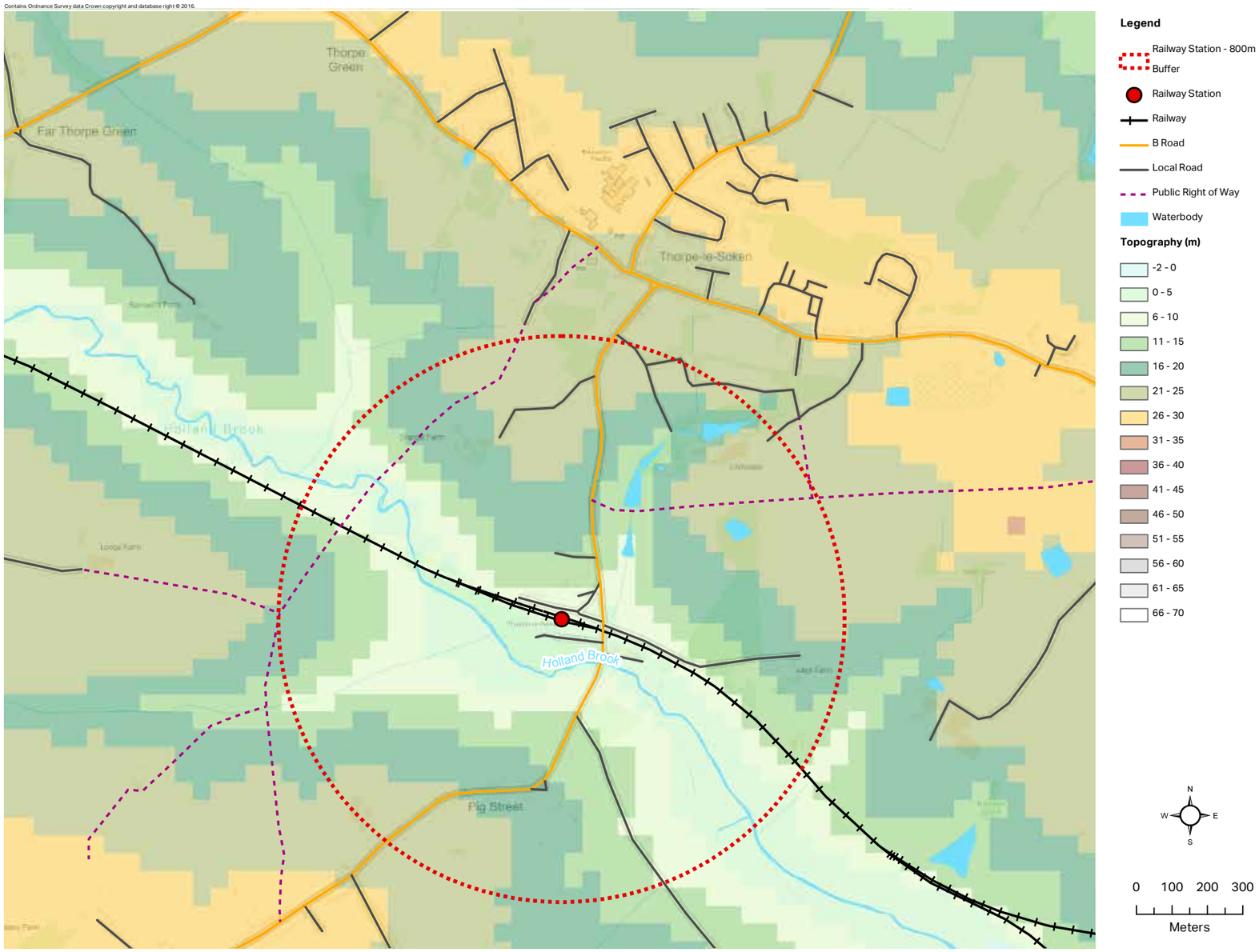


Figure 7: Thorpe-le-Soken Landscape and Topography. Source: Natural England / Environment Agency

2.7 Agricultural Land Classifications

Key Findings

- The quality of agricultural land is predominantly good moderate (Grade 3)
- Outside the Area of Investigation to the north, south and east is very good agricultural land (Grade 2)
- Along the rail line running through the area of investigation the land is designated as poor (grade 4)

Sources

- Natural England, National Character Areas - GIS Digital Boundary

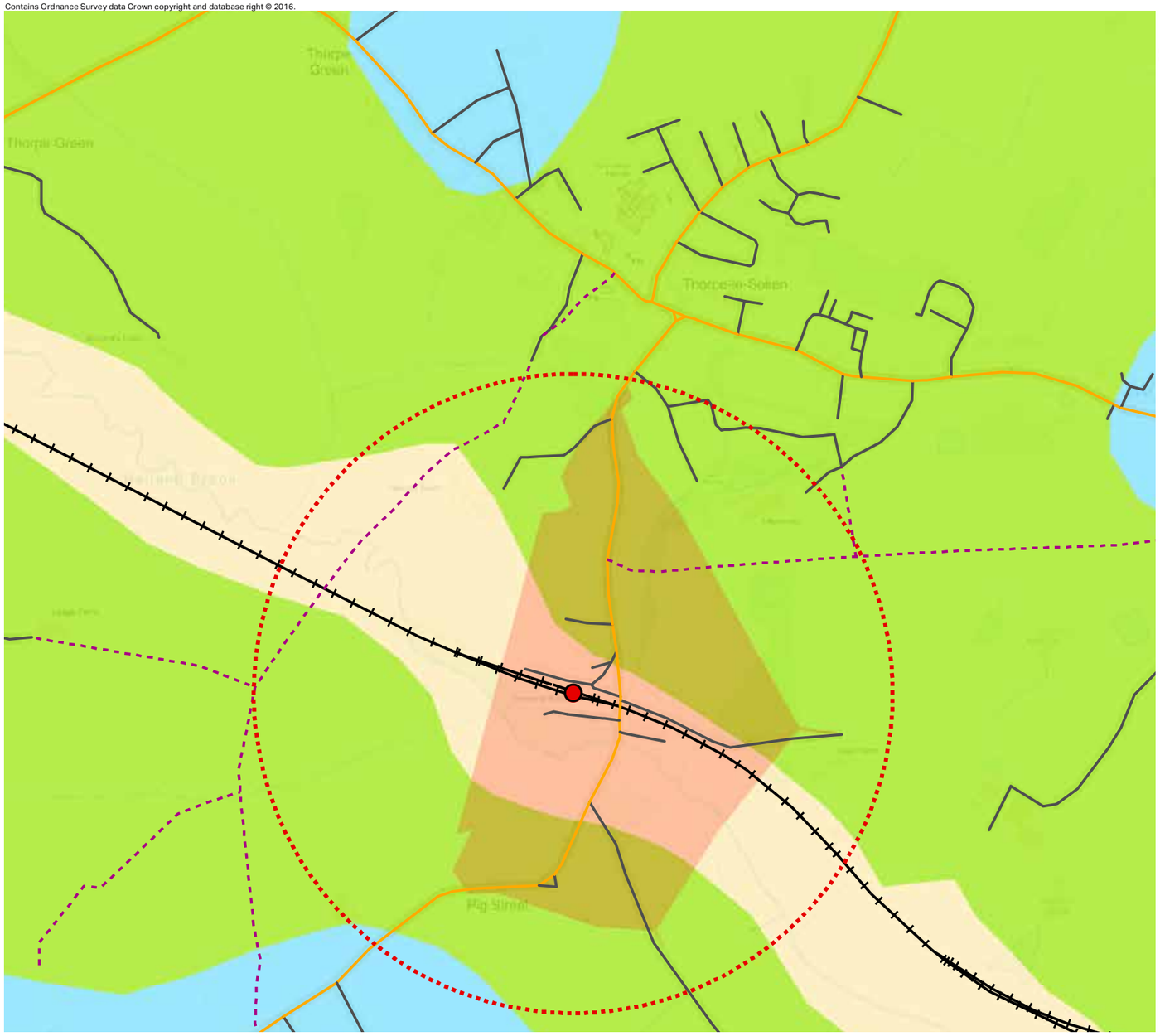


Figure 8: Thorpe-Le-Soken Agricultural Land Classifications. Source: Natural England.

2.8 Ecological Designations

Key Findings

- The area around the site study area has a rich and varied ecological baseline with a mosaic of habitats including, ancient woodland, arable fields, water bodies and semi-improved grassland
- Of particular importance is the nationally recognised and protected Weelyhall Wood SSSI, which is to the west of the site. Weeleyhall Wood is one of the largest ancient woods in the Tendring peninsula. It contains one of the best examples in Essex of base-poor springline alder woodland, a type of woodland which is rare in the county, as well as good examples of lowland hazel-pedunculate oak and some wet ash-maple woodland, and chestnut coppice-with-standards derived from these last two.
- There are a number of Local Wildlife Sites (LoWS) both in and around the site study area. These are designated for a number of habitats including woodland, meadows, road side verges.
- The LoWS should be retained within any new development and green linkages made between them and to existing habitat located on the periphery of the site.

Sources

- Natural England Designated Sites Citations
- Essex Wildlife Trust for LoWS

Figure 9: Thorpe-Le-Soken Ecological Designations. Source: Natural England / Environment Agency

2.9 Parks, Recreation and Historic Environment

Key Findings

- Thorpe Hall is a Grade II listed garden registered under the Historic Buildings and Ancient Monuments Act 1953 within the Register of Historic Parks and Gardens by English Heritage, shown on figure 10 in purple.
- The landscape provides a comprehensive network of Public Rights of Way offering access to the countryside throughout the site.
- There are several Grade II listed buildings close to the area of investigation, such as a cluster around the High Street and B1414.
- Outside of this cluster of historic buildings and the registered garden to the north of the site, the area is relatively free of historic features

Sources

- OS Terrain 50
- Natural England GIS Digital Boundary Datasets
- Historic England

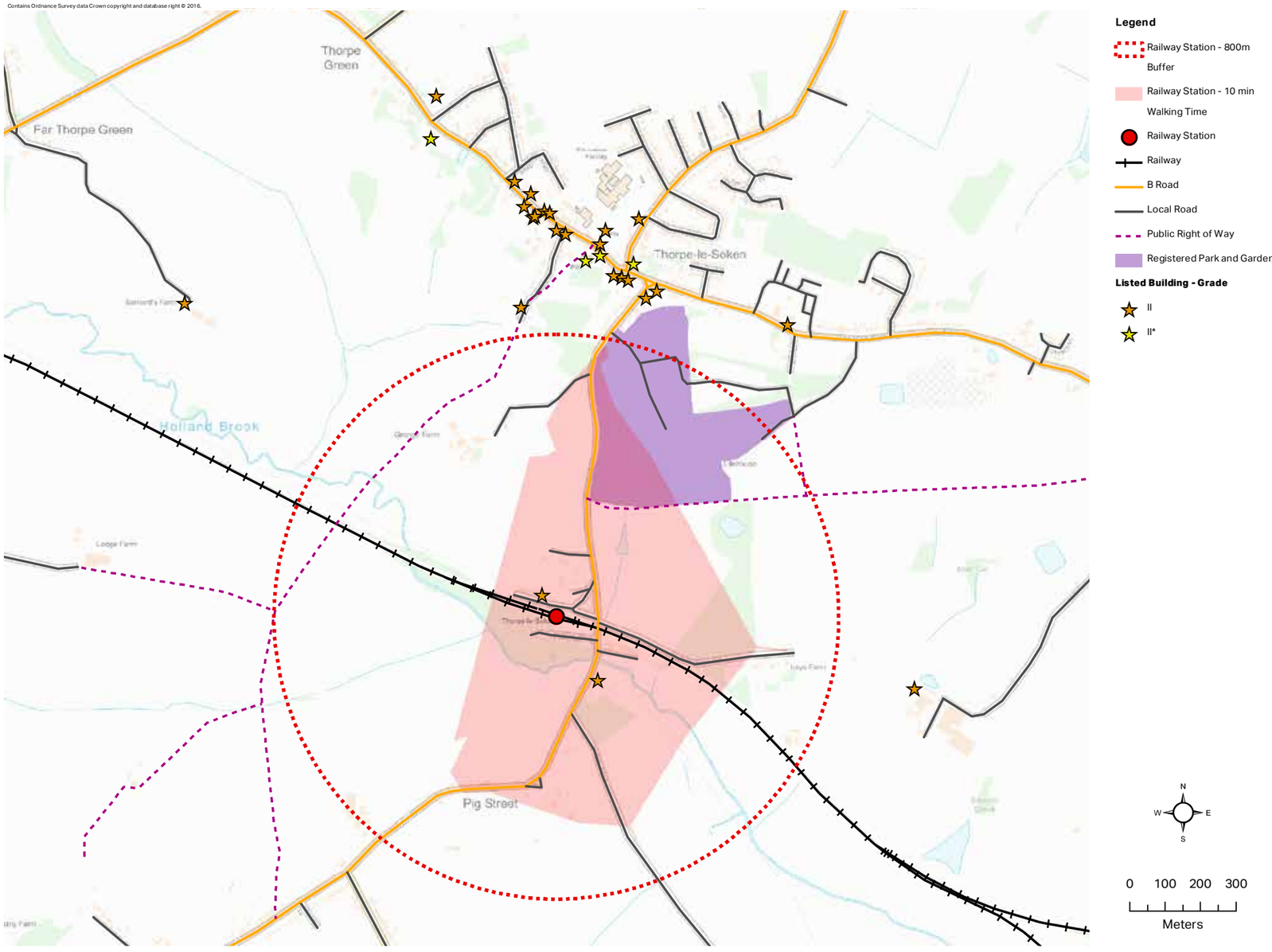


Figure 10: Thorpe-Le-Soke Recreational and Heritage Assets. Source: English Heritage / Natural England

2.10 Water Cycle

Key Findings

- The area of investigation is located within the Holland Brook catchment. The brook flows from north-west to south-east through the centre of the area. Holland Brook then continues flowing south-eastwards into the North Sea at Holland-on-Sea. A small stream runs from a series of ponds in the north-east of the study area and flows south through the study area before crossing under the railway and discharging into Holland Brook. A number of ditches drain into the Holland Brook from both the north and south banks and ponds sit dotted around the area.
- The terrain is relatively flat in the surrounding area and is generally of pastoral or arable land use with small pockets of woodland.
- The Holland Brook is classed as a heavily modified watercourse with moderate ecological status and good chemical status.
- Land drains to a priority water which is considered to 'probably be at risk' from agricultural diffuse pollution. The entire site is within a surface water and groundwater Nitrate Vulnerable Zone. There are no water abstraction licenses recorded within the area or groundwater source protection zones.
- Flood risk from rivers is limited to the corridor along the Holland Brook where parts of the study area sit within Flood Zone 2 and Flood Zone 3. These flood risk classes do not however take into account flood defences and it is identified that flood defences exist along the Holland Brook within the area. In addition, this area benefits from the issuing of flood warnings and flood alerts by the Environment Agency. Surface water flooding is limited to highways and the natural flow lines of the topography. The area is not considered to be at high risk of groundwater flooding.
- Potable water is supplied by Affinity Water and falls within their East region, within the Brett water resource zone. This zone usually takes 100% of its supply from groundwater sources, although it can also import water from the Ardleigh reservoir, which is jointly owned with Anglian Water. It is considered to be a 'serious water stress' area, however the Brett water resource zone is predicted to remain in surplus at least up to 2040. This is based on average growth trends and there is no specific information on the proposed development area. There are no major intervention options being assessed and Affinity Water's strategy in the area concentrates on improving water efficiency, metering and leakage prevention.
- Thorpe-le-Soken is within the Wastewater Treatment Works (WwTW) catchment for Clacton-Holland Haven. This is currently assessed as having sufficient volumetric capacity (headroom between the permitted dry weather flow and the demand. In addition, there is headroom within the process capacity, relating to the volume of water a WwTW is capable of treating to the required quality standards set by the discharge permit.

Sources

- Environment Agency Catchment Data Explorer, Environment Agency website (27th February 2017)
- Environment Agency WIYBY online maps, Environment Agency website (27th February 2017)
- Environment Agency Long Term Flood Risk Information, Gov.uk website (27th February 2017)
- Final Water Resource Management Plan 2015-2020, Affinity Water (June 2014)
- Haven Gateway Water Cycle Study Stage 2 Report, Haven Gateway Partnership (November 2009)
- Level 1 Strategic Flood Risk Assessment Final Report, URS (May 2015)
- Waste Water Treatment Works Needs Assessment in Essex and Southend-on-Sea Final Report, URS (June 2014)

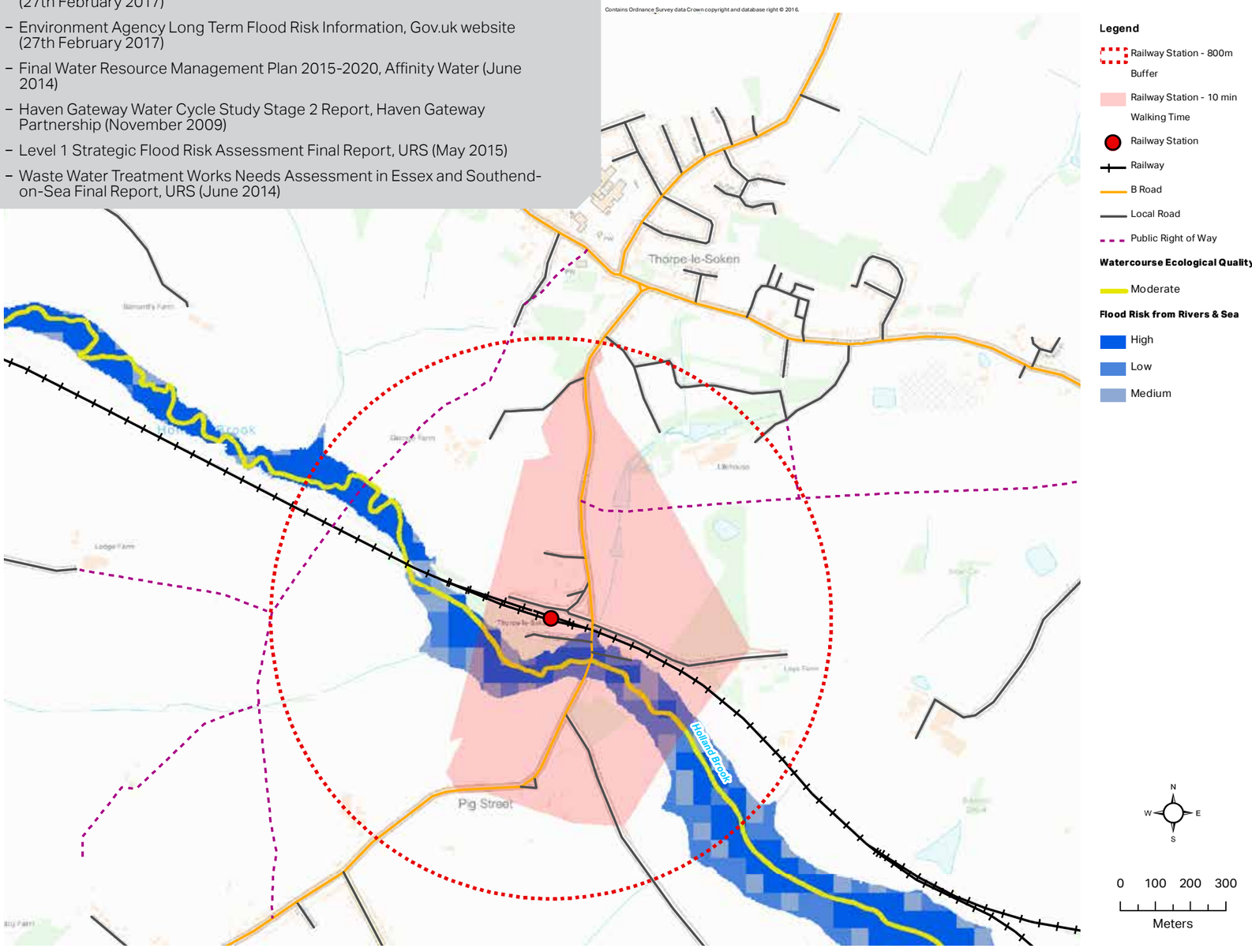


Figure 11: Thorpe-Le-Soken Ecological Designations. Source: Natural England / Environment Agency

2.11 Movement and Connectivity

Key Findings

Travel Patterns

- 2011 Census Data - mode share data for the Lower Super Output Areas (LSOAs) in which the settlement of Thorpe-le-Soken sits, demonstrates a strong reliance on individual motorised modes with 74% of all work related trips undertaken by either car or motorbike. Despite the presence of a rail station, public transport trips only represent 7% of all work related trips. Walking and Cycling work related trips account for 9%.
- The majority of journeys to work are between 5 and 20km (38%) with journeys under 5km representing 16% and journeys over 20km representing 18%. This would suggest that a large proportion of trips would require a motorised form of transport based on current home-work trips.
- Tendring District is characterised by a substantial self-containment of travel patterns with 60% of people living and working in Tendring. The main travel movements to work outside of Tendring are toward Colchester, with 20% of Tendring's working population commuting to this neighbouring authority.

Road

- Thorpe-le-Soken is served by a network of B roads which include:
  - The B1033 running East-West towards Weeley and Kirby Cross and to the A133
  - The B1414 running North-South towards Little Clacton and the A120
- The Tendring local plan modelling identifies the B1414 Station Road/ B1033 Frinton Road and B1033 High Street/B1414 Landermere Road junctions as overcapacity in its full development scenario (2032). This includes significant development on sites at East Colchester, Hare Green, Weeley and Clacton-on-Sea. However, it is important to note that the Local Plan modelling does not assume major development in or surrounding Thorpe-le-Soken in its model reporting.

Rail

- Thorpe-le-Soken mainline station is served by the Sunshine Coast line, an electrified double track branch line from the Great Eastern Main Line connecting Colchester (mainline and town stations) with Clacton-on-Sea and Walton-on-the-Naze.
- During a typical weekday AM peak (6am-8am), Thorpe-le-Soken station is served by up to 4 trains per hour (including 'fast' services) thanks to train services departing from both Walton-on-the-Naze and Clacton-on-Sea toward Colchester and vice versa. From 8am to 9am, the number of services reduces to 2 trains per hour, same as during the rest of the day.
- During a typical weekday AM peak (6am – 8am), Thorpe-le-Soken station is served by 2 trains per hour departing towards Clacton-on-Sea. The number of services towards Clacton-on-Sea reduces to one service an hour after the AM peak with an approximate journey time of 9 minutes.
- Minimum journey times to Colchester from Thorpe-le-Soken are currently 19 minutes on a fast service calling at Wivenhoe and Colchester only, and 26 minutes on a multi stop service including all stops on the line. A journey to London Liverpool Street typically takes approximately 1h25minutes.
- The station is located approximately 1km south of the main existing urban centre, which would likely mean that many existing residents would require a complimentary (first leg) mode of transport to access the station.
- It is understood that the Sunshine Coast line currently operates within capacity. The Anglia Route study (March 2016) identifies improvements on the Sunshine Coast line to 4 trains per hour by 2043. In theory, based on the current rail services that serve Thorpe-le-Soken station, future rail frequencies could be in the region of 6 trains an hour (one every 10 minutes). However this will require further discussion with Network Rail.
- Movements from Thorpe-le-Soken beyond Colchester on the Great Eastern Main Line are likely to be constrained by the lack of capacity on this line.

Public Transport

- The area is served by routes 105/107on the strategic bus network, operating approximately a combined service of one bus per hour between 7am and 6pm towards Colchester and between 8am and 7pm towards Walton-on-the-Naze. Bus stops for this service are located in within the centre of Thorpe-le-Soken village (Tescos and Abbey street) and do not service the rail station.
- Other local bus services serve Thorpe-le-Soken such as bus route 3/4 between Clacton-on-Sea and Harwich, operating a combined 1 service per hour on between 6am and 6pm. Bus stops for this service is located at Thorpe-le-Soken station. These routes in theory could provide at interchange with the longer distance services on routes 105/107 at Thorpe Memorial bus stop, but would offer a low frequency and unreliable proposition to residents.

Active Modes

- No dedicated walking and cycling routes are located in the area. The nearest route is National Route 51 identified on Keelars Lane, some 4,5km from Thorpe-le-Soken. The route passes through Oxfordshire, Buckinghamshire, Bedfordshire, Cambridgeshire, Suffolk and Essex. The section between Harwich and Colchester forms part of the North Sea Cycle Route, also known as EuroVelo 12
- The Rail station is located outside the main urban settlement and no dedicated route for active modes is identified linking this station both locally or to the wider area.
- The area is characterised by a network of quiet country C-roads which are potentially suitable for cycling, however they are not currently designated as such.

Sources

- North Essex Garden Communities Baseline Compendium, June 2016
- Tendring Local Plan Modelling Support, December 2015
- Tendring Infrastructure Delivery Plan, Tendring Council, 2013
- Anglia Route Study, Network Rail, March 2016
- The scope for high-quality rail services to support sustainable development, Jonathan Tyler (Passenger Transport Networks, York) – a report for CAUSE – Campaign Against Urban Sprawl in Essex, 2015
- Google Maps, consulted February 2016

Figure 12: Thorpe-le-Soken Transport Existing Conditions

Opportunities and Constraints

Travel Patterns

- Opportunity to plan towards a more sustainable modal split for this area and others in Tendring will allow mitigation of the impact on the network by not reproducing the current high level of car usage and ownership.
- Existing modal splits need to be challenged and reflect transit-oriented development (TOD) , one of the main Garden Communities principles. For that, opportunities to encourage sustainable travel in and around Thorpe-le-Soken should be sought, including improvements to walking and cycling infrastructure and public transport provision.
- Understandably in the context of this area, greater walk and cycle distances are potentially viable, such as up to 2.5km for cycling to a station. However the principles of TOD dictate that these should be much reduced, the station is therefore outside of the identified 800m active modes catchment for a large proportion of the proposed development sites. The presence of a rail station should be an asset to capitalise on for the future development of Thorpe-le-Soken to improve sustainable movements to main employment areas and reduce the need for car usage and ownership.
- Given the rather rural location of the area under investigation, innovative car sharing / car hire schemes should be explored, but at this time are unlikely to be particular viable to operators unless a critical mass can be assumed through large scale development that is linked together.
- Given the current share of work trips for less than 5km (16%), this represents a potential target for short journeys to be undertaken by walking or cycling if the infrastructure requirements are met, such as safe and secure cycling routes and parking to encourage those trips.

Road

- The Local Plan modelling does not include development sites identified around Thorpe-le-Soken nor around other areas under investigation as part of CAUSE scope. This would suggest that even without development in Thorpe-le-Soken the highway network is contained and will require mitigation measures to ensure development can be accommodated. This would require further modelling assessment in future to ensure the impact of the CAUSE proposal is adequately assessed and mitigated measures put forward.

Opportunities and Constraints

- There are limited options for accessing development around the station other than from the B1414 Station Road. However the road infrastructure appears to be of sufficient order to provide capacity for development from it.
  - Footways are present on one side of the northern sections of this road. there will be a need to provide improved pedestrian footways on both sides of the carriageway for the entire length of the road to serve development. Cycle lanes will also be required.
  - It is unlikely that the preservation of the ditches and hedgerows will be possible with the upgrading of this road and new access arrangements in place.
  - Upgrades to the B1414
  - New junctions to provide access
  - Upgrades to local junctions such as Station road / B1033 will likely be required road to accommodate increases in traffic.

Rail

- The nature of the location currently points to an over reliance on car travel, despite the presence of the rail station, and upgrades to the Sunshine Coast line would be of great benefit.
- The Anglia Route study (March 2016) identifies improvements on the Sunshine Coast line to four trains per hour by 2043 whilst a possible tram-train solution should be explored to enable possibly even greater frequencies, quality of service and desirability for passengers to use and realistically give up their car to make their journey to work.
- Additional capacity on the sunshine coast line has been identified in this context[1], CAUSE supports the development of a tram-train service on the Sunshine Coast line with opportunities to link different sites with Colchester at a greater frequency and allows street running trains to serve Colchester town centre for greater public transport integration.
- Opportunities to develop a walking/cycling network integrated with the station is essential to increase public transport mode share in Thorpe-le-Soken and make rail trips more attractive to main employment areas in Tendring and Colchester.

1 The scope for high-quality rail services to support sustainable development, Jonathan Tyler (Passenger Transport Networks, York) – a report for CAUSE – Campaign Against Urban Sprawl in Essex, 2015

Opportunities and Constraints

Bus

- In addition to rail improvements, opportunities exist to look at a strategic bus network connecting development sites identified under this scope depending on the critical mass achieved over all these areas.
- Local bus services require greater frequencies to provide an attractive 'second tier' of public transport to support the rail station and provide a 1st leg trip to the station of residents of new settlement which lie outside of the 800m active modes catchment.

Active Modes

- The location of the station in relation to the main settlement and the lack of clear safe and secure walking and cycling route towards the station is currently a constraint for people to consider rail as an attractive alternative to car.
- Direct routes, linking the existing settlement and new development sites would be required.
- Limiting car parking at the station would also ensure that 1st leg trips by car can be made less attractive compared to other 1st leg trips such as by bus or active modes. Improved safe and secure cycle parking and infrastructure should be provided at the station.
- Given the size of sites under investigation in Thorpe-le-Soken, opportunities should be explored to develop a consistent network of greenways and quietways across the existing and extended settlement providing key connections to the station and other main local destinations.
- Landownership may be problematic in ensuring the small development are linked appropriately.
- In a number of cases the addition of formal cycle lanes may prove difficult given the nature of the road network (available space, speeds, role). Formal Cycle lanes are one of the main solutions to ensuring that residents will take up active modes for both short and longer distance movements.
  - Provision of a cycle lane on B1414
  - Improved footway provision as a minimum on the B1414

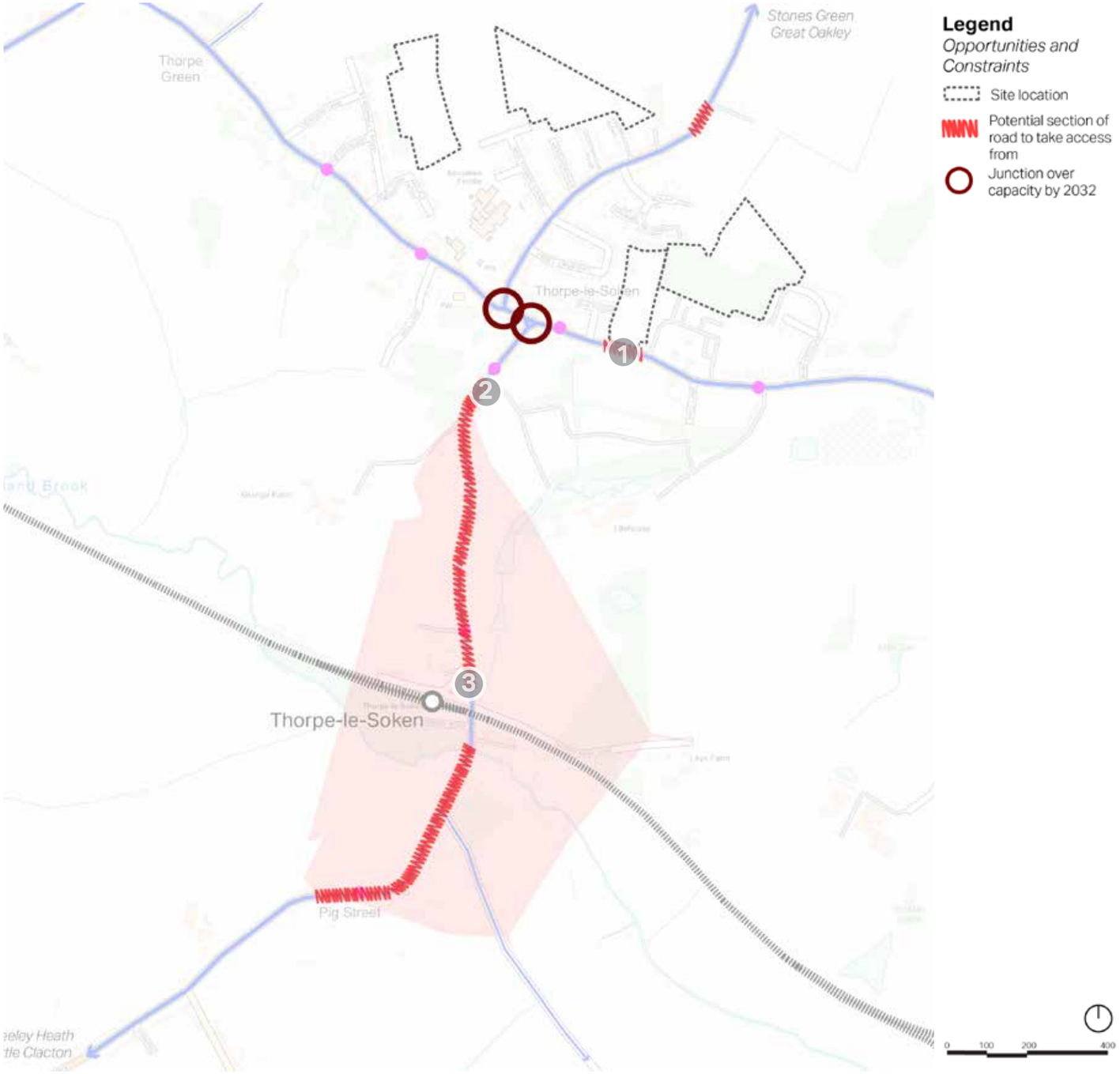


Figure 13: Thorpe-le-Soken Transport Opportunities and Constraints

2.12 Social Infrastructure - Education

Essex County Council has developed a Commissioning School Places in Essex 2015-2020, published February 2016 and Meeting the Demand for School Places in Essex - 10 year Plan 2016-2025 (2016). Both documents provide information related to future pupil numbers and where further expansion will be required to meet housing demands.

The 5km buffer to the area of investigation is within Tendring District; this area is therefore assessed in determining the current situation, committed infrastructure and future issues.

Key Findings - Primary

Current Situation within 5km Buffer

8 Primary Schools

114 Surplus Places

Committed Infrastructure within 5km Buffer

- There are no planned primary school infrastructure within the area of investigation. However there are two potenital primary school projects proposed in the wider 5km area, both of which are uncommitted.

FE	Location	Delivery Commitment	Mechanism
unknown	Engaines - Little Clacton	Uncommitted	-
unknown	St Andrews CE	Uncommitted	

Table 2: Committed Primary Infrastructure. Source: Meeting the Demand for School Places in Essex - 10 Year Plan 2016-2025

Future and Wider Issues

- The Commissioning Plan forecasts an increase of 190 primary school pupils for Tendring between 2015-2020. With the additional pupils, this translates to a forecast surplus of 358 places across Tendring.
- Any potential growth at Thorpe-Le-Soken would likely create a demand for primary school places, therefore proposals coming forward would need to consider the delivery of future education infrastructure provision.
- Essex County Council are seeking contributions from housing developers towards the cost of providing the additional places required for the pupils generated by new housing.

Key Findings - Secondary

Current Situation within 5km Buffer

0 Secondary Schools

Committed Infrastructure within 5km Buffer

- There are no secondary schools committed for Tendring, instead it appears there will be school closures with the closing of Tendring Enterprise Studio School. The closure of the school will reduce the number of places available for Years 10, 11, 12 and 13 in Tendring area.

Future and Wider Issues

- The Commissioning Plan forecasts an increase of 182 secondary school pupils for Tendring between 2015-2020. With the additional secondary pupils, this translates to a forecast surplus of 346 places across Tendring to 2020.
- Pupil numbers across the remaining secondary schools are forecast to remain relatively stable over the next 5 years. While new housing will be monitored, it appears that there are sufficient school places to meet increase demand.
- Essex County Council are seeking contributions from housing developers towards the cost of providing the additional places required for the pupils generated by new housing.

Key Findings - Further Education

Current Situation within 5km Buffer

1 Further Education

Committed Infrastructure within 5km Buffer

- There is no identified Further Education infrastructure identified within the 5km radius of the area of investigation

Future and Wider Issues

- The minimum age at which young people in England can leave learning increased in 2013, requiring young people to continue education or training to the end of the academic year in which they turn 17. This has been followed with a policy beginning in 2015 where all young people must remain in learning to their 18th birthday, This is referred to as Raising the Participation Age (RPA).
- This puts more pressure on the local authorities to ensure and provide options for young people to learn the skills required. Local authorities have the duty to:
  - Promote effective participation in education or training to young people;
  - Ensure that sufficient places are available to meet the reasonable needs of all young people and encourage them to participate; and
  - Make available to young people support that will allow them to participate in education or training.

Sources

- Department of Education, Edubase Portal (May 2016)
- Commissioning School Places in Essex 2015-2020

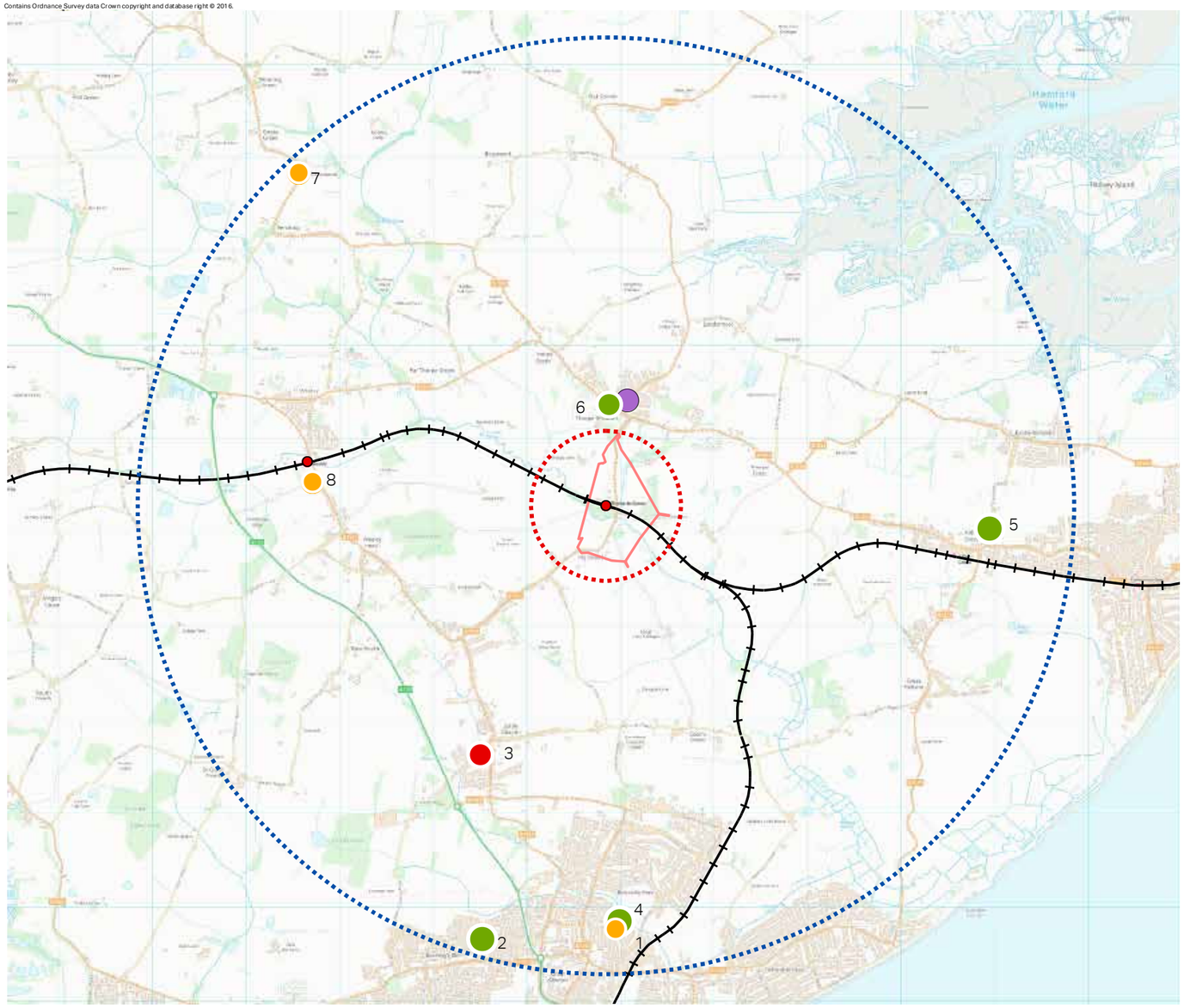


Figure 14: Thorpe-Le-Soken Edcuation Context. Source: Edubase (2016)

Primary School Capacity Analysis

Primary School Name	Capacity	Surplus / Deficit	Label
Burrsville Infant Academy	220	39	1
Cann Hall Primary School	450	33	2
Engaines Primary School	266	-15	3
Great Clacton Church of England (Voluntary Aided) Junior School	240	0	4
Kirby Primary Academy	210	33	5
Rolph CofE Primary School	218	15	6
Tendring Primary School	140	1	7
Weeley St Andrew's CofE Primary School	218	8	8
TOTAL	**1,962**	**1,848**	

Further Education

School Name
Tendring Technology College

Social Infrastructure - Health

Key Findings

Current Situation within 5km Buffer

4
GP
Practices

0
Hospitals

GPs

- There are 4 GP practices identified within 5km of Thorpe-Le-Soken.
- There is an overall deficit provision of GPs across the wider 5km buffer zone with -4,736 patient spaces. However, this is a theoretical assessment, and the actual pressures may be more pressing. It can be seen that at least 3 of the current facilities have a poor patient to GP ratio, in which further development will put increased pressure on existing capacity.

Hospitals

- There are currently no hospitals identified within 5km the area of investigation

Key Findings

Committed Infrastructure within 5km Buffer

- Following a review of the Tendring Infrastructure Delivery Plan (2013), there are no identified healthcare infrastructure projects within a 5km radius of the area of investigation

Key Findings

Future and Wider Issues

- The Area of Investigation sits within North Essex Clinical Commissioning Group, which is an NHS organisation set up by the Health and Social Care Act 2012 to organise the delivery of NHS services in England.
- The CCGs receives funding and are commissioned by NHS England to provide primary care services (including GPs), in turn the CCGs commission most services in their areas to trusts that include hospital and community healthcare.
- This assessment will review the strategy for North East Essex CCG to understand the future issues facing healthcare in Essex.

North Essex Clinical Commissioning Group

- North Essex CCG 5-year plan will look to put people at the centre by commissioning around the needs of people, rather than the service.
- It is projected that demand for older people's services over the next 5-10 years will increase by roughly 20,000 people (those over the age of 55).
- In addition, the health and social care system faces considerable financial challenges over the coming years. The CCG will look to commission integrated health and social care services, promote prevention and early intervention, and promoting self-care to begin diminishing the burden.

Sources

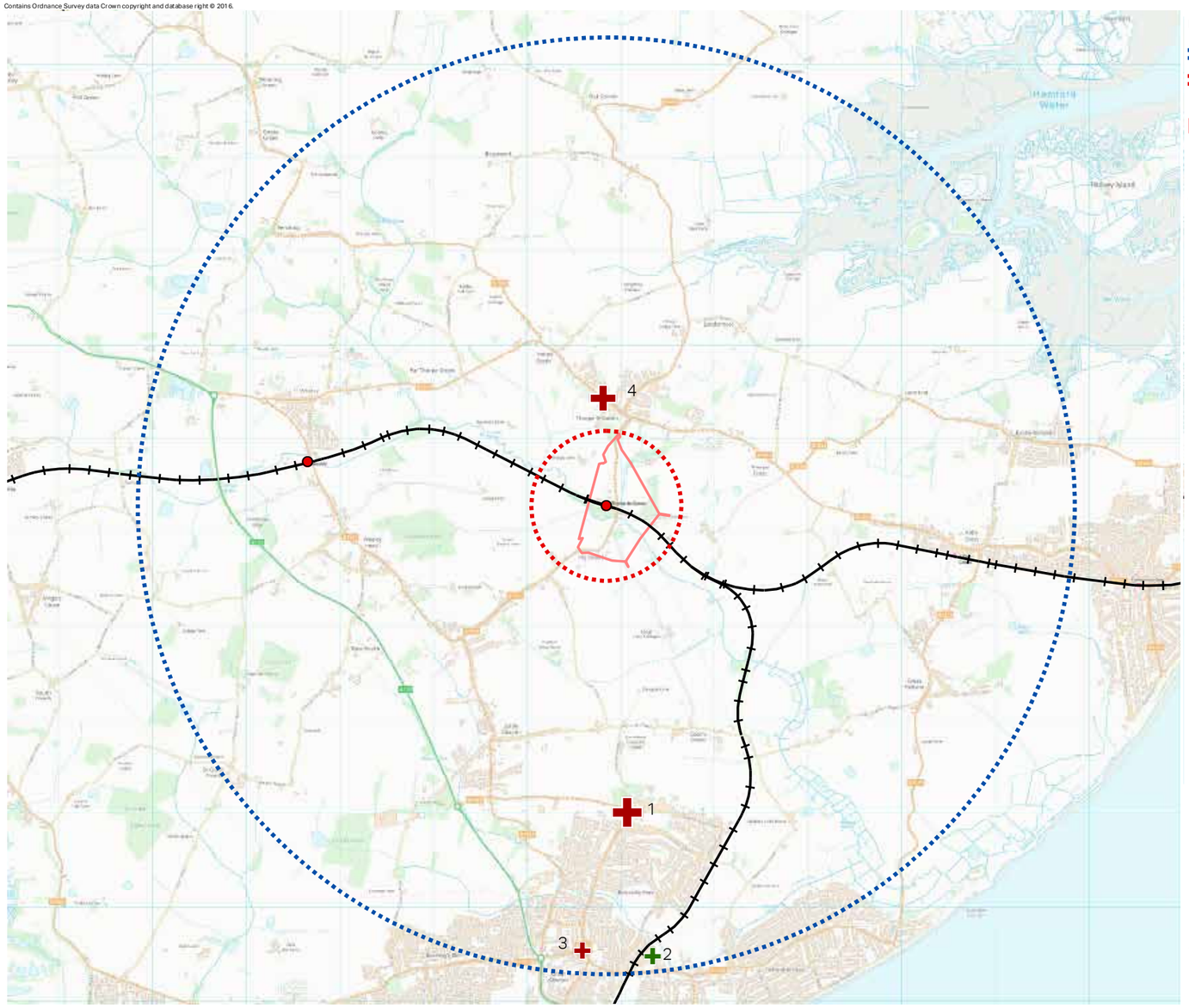
- NHS England, MyNHS Portal datasets (May 2016)
- Health and Social Care Information Centre (HSCIC) dataset (January 2016)

Sources

- Tendring Infrastructure Delivery Plan (2013)

Sources

- North Essex Clinical Commissioning Group



GP Capacity Analysis

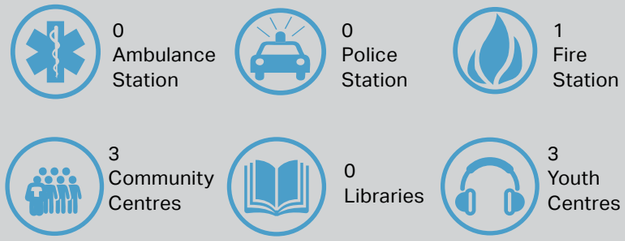
Practice Name	GP's	Patients	Capacity	Surplus / Deficit	Label
CRUSADER SURGERY	1	5181	1800	-3381	1
EPPING CLOSE	2	3291	3600	309	2
GREAT CLACTON MEDICAL PRACTICE	4	7405	7200	-205	3
THORPE SURGERY	3	6499	5400	-1099	4
TOTAL	**10**	**22,376**	**1800**	**-4736**	

Figure 15: Thorpe-Le-Soken Health Infrastructure Context. Source: MyNHS, HSCIC

Social Infrastructure - Community Facilities and Emergency Services

Key Findings

Current Situation within 5km Buffer



Emergency Services

- Across the wider 5km buffer zone, the analysis identifies 1 Fire station (Station 19) in Weeley.

Libraries

- There are no libraries within the 5km wider area of the area of investigation.

Youth Centres

- There are three youth centres within 5km of the area of investigation.

Community Centres

- There are three community centres within 5km of the development.

Key Findings

Committed Social Infrastructure within 5km Buffer

- A review of Tendring's infrastructure Delivery Plan (2013) has not identified any planned projects within the 5km radius of the area of investigation.

Key Findings

Future and Wider Issues

- A review of ambulance services has identified a change in the future model of ambulance provision by the early 2020s within the East of England's Ambulance Services. This involves a hub and spoke service in order to meet demand from existing population. Traditional ambulance stations act as the main hubs of service, with smaller 24/7 posts acting as the spoke.
- Further work would be needed to determine whether the capacity of the existing emergency services can cope with the forecast increase in population.
- Further work would be needed to determine whether the capacity of the existing community facilities can cope with the forecast increase in population. However, it is likely that future development would need to provide some community offer.

Sources

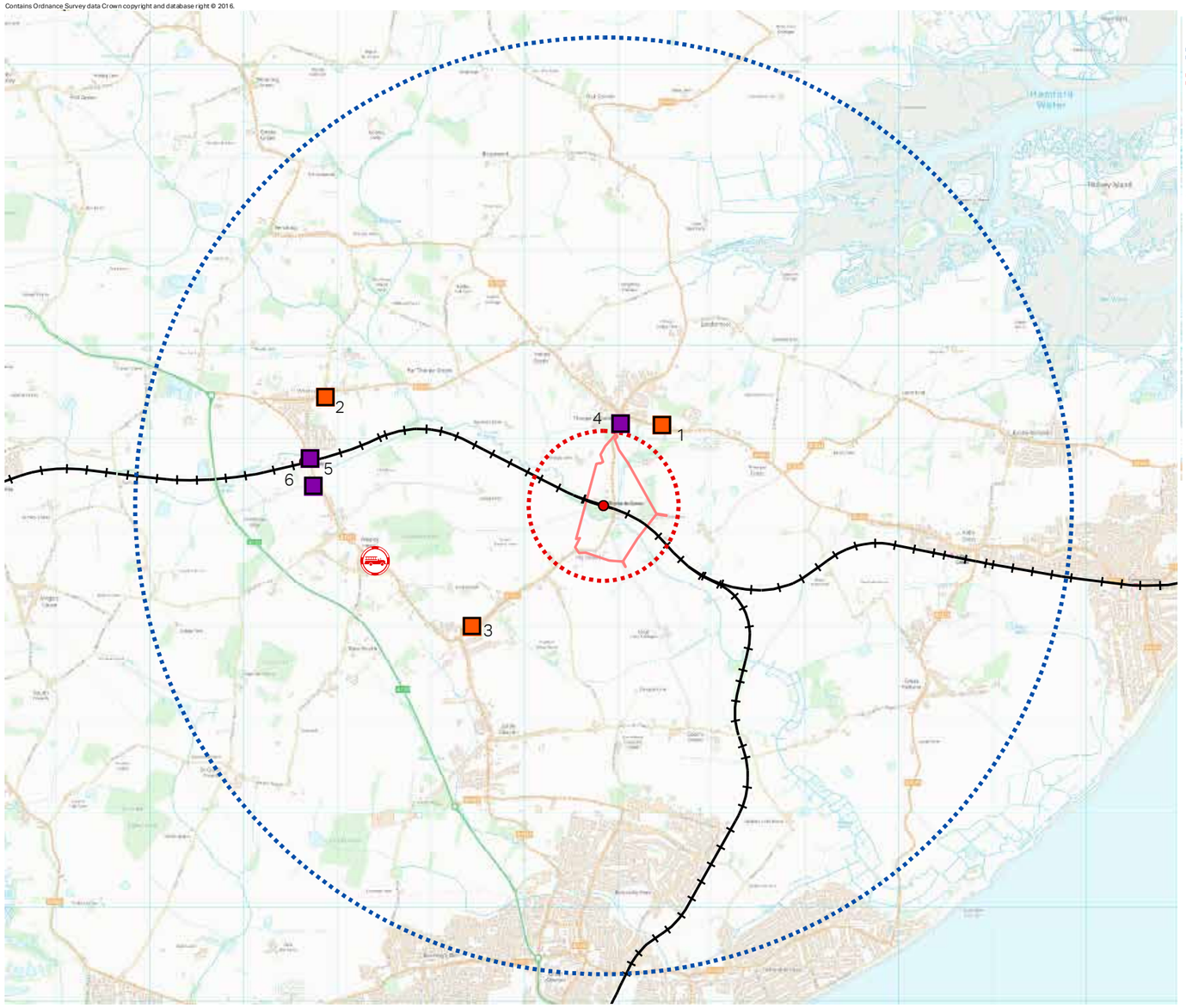
- East of England Ambulance Services, Essex Police, Essex County Fire & Rescue Services
- Google maps to identify community facilities, libraries and youth centres

Sources

- Tendring IDP (2013)

Sources

- East of England Ambulance Services
- Essex Police
- Essex County Fire & Rescue Services



Legend

- Railway Station - 5km Buffer
- Railway Station - 800m Buffer
- Railway Station - 10 min Walking Time
- Railway Station
- Railway

Community Facility

- Community Centre
- Youth Centre
- Fire

Community Service Facilities

Name of Facility	Type	Label
Scouts	Youth Centre	1
Air Training Corps Weeley	Youth Centre	2
Air Cadets Weeley Heath	Youth Centre	3
Thorpe-Le-Soken Sports and Social Club	Community Centre	4
Willow Park Resource Centre	Community Centre	5
Weeley Village Hall	Community Centre	6

Emergency Service Facilities

Name of Facility	Type
Station 19 Weeley	Fire

N
W
E
S

0 0.5 1
Kilometers

Figure 16: Thorpe-Le-Soken Community Facilities and Emergency Services. Source: East Of England Ambulance Services, Essex Police, Essex County Fire & Rescue Services, Google Maps to Identify Community Facilities, Libraries and Youth Centres

2.13 Development Capacity

Key Drivers

Overview

The total potential site area surrounding Thorpe-Le-Soken station is approximately 19 hectares comprising agricultural land. This is based on a refined 10minute walknet under current conditions. 13.13ha is considered developable (residential/employment/ mix-use land), while approximatly 6ha would be needed for primary infrastructure (roads, etc) and green infrastructure.

Landuse

- It is anticipated that there is capacity available for up to 405 homes at 35 dwellings per hectare
- At least 1.16 ha of mixed-use space would be required. This would largely fulfil demand for retail, the care sector, leisure and hospitality uses and non-commercial needs.

Green Infrastructure	Mixed-Use	Employment	Primary Infrastructure	Residential
12%	6%	2%	20%	60%

Table 3: Thorpe-Le-Soken Proposed Land Use Parameters (%)

Green Infrastructure	Mixed-Use	Employment	Primary Infrastructure	Residential
23,164 sq.m	11,582 sq.m	3,861 sq.m	38,607 sq.m	115,822 sq.m

Table 4: Thorpe-Le-Soken Proposed Land Use Parameters (#)

An assumed breakdown of potential land use has been applied by AECOM for each of the sites in order to determine the residential growth arising from developable land. It's been assumed that 60% of developable land would be for residential, 20% for primary infrastructure (roads, etc), 12% for green infrastructure and 8% for employment or community facilities.

- The land use parameter breakdown would vary for each site, depending on individual characteristics and setting. This approach provides a reasonable set of parameters, based on future growth occurring within established villages.
- The population of Thorpe-Le-Soken is approximately 2,000 people (2011 Census). A housing yield of 405 dwellings would result in a population of 931 people (based on an average household size of 2.3 (ONS)). This would be a growth of nearly 50% on the existing village population.

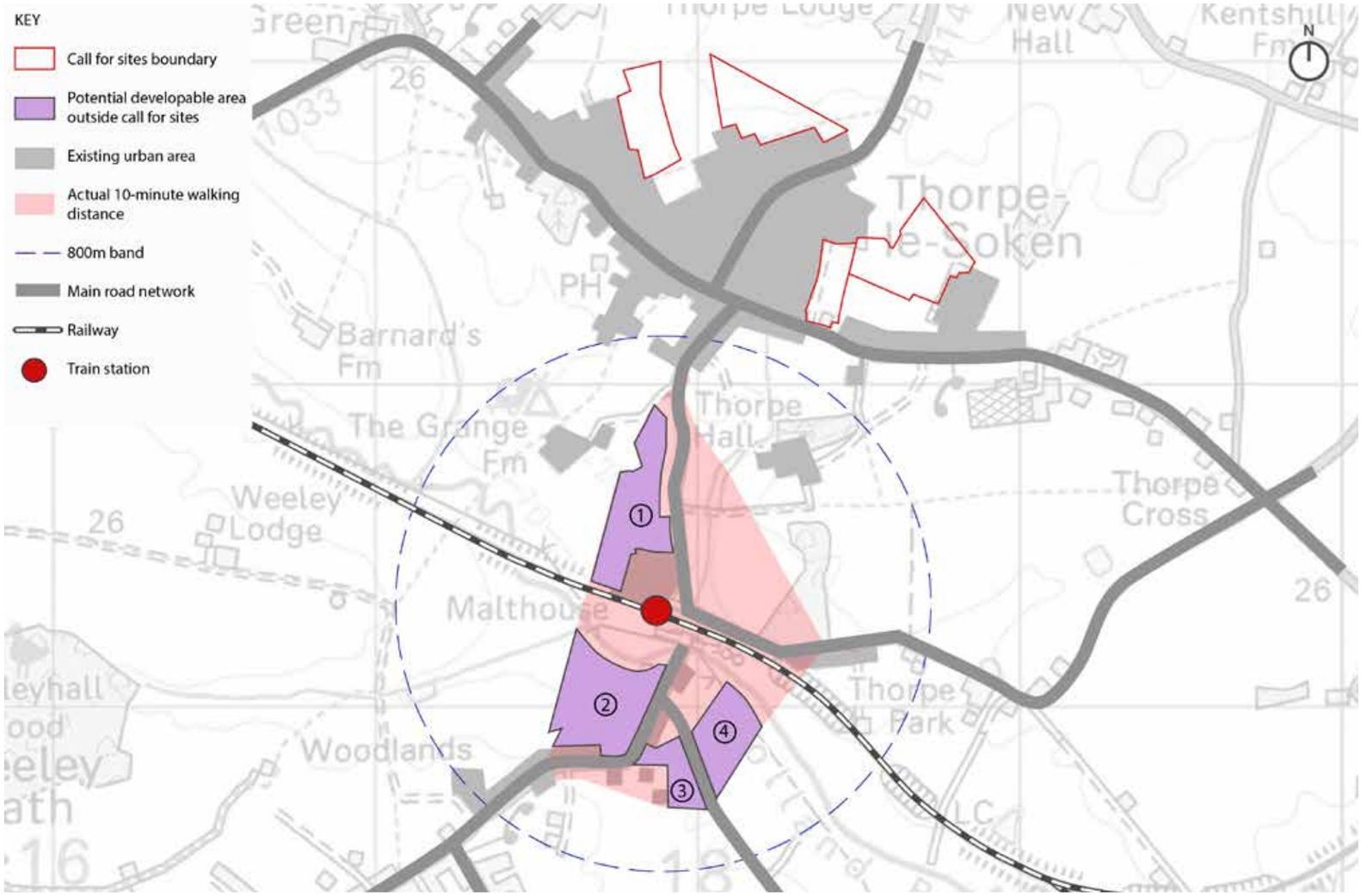


Figure 17: Developable Area Diagram

19.30 ha
Total Site Area

1.16 ha
Mixed-Use (Community Facilities)

3.86 ha
Primary Infrastructure

405
35 dph

13.13 ha
Total Developable Area (residential / mix-use/ employment)

0.39 ha
Employment and Leisure Land

11.58 ha
Residential Developable Area

2.31 ha
Green Corridors and Infrastructure

Note. If we assume that the full 800m buffer of Thorpe le Soken is considered, at an 80% residential development rate the 136.29 ha of land may yield approximately 3,800 homes at 35 dwellings per hectare. However, it is clear that development at this scale would substantially alter the nature and character of the village. It would also dramatically impact the ecology, visual amenity and the existing transport networks in the surrounding area. Furthermore, this figure does not include any land constraints beyond flood risk zones, protected ecology sites and existing urban development and therefore may potentially be lower once these have been factored into the assessment.

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2.14 Indicative Infrastucture Requirement

Project List

The following table identifies the key infrastructure requirements to support the proposed development at Thorpe-Le-Soken alongside utilities and transport improvements. These projects are based on a high level assessment of the infrastructure requirements for the development option and the growth (housing and employment) envisaged. It is assumption based only and related either to the transport strategy outlined above, the social infrastructure standards described in the North Essex Garden Communities Options and Evaluations Report Appendix 2 and applied to the projected population. The utility infrastructure requirements are informed, where possible, through preliminary discussions with the relevant service providers. They are indicative only and are not based on a masterplanning exercise.

Infrastructure	Demand Arising from Development Option	Cost per Unit (£)	Total Cost (£)	Phasing	Justification
Education					
Primary Schools Form Entry	0.2	£3,750	£1,518,750	Phasing of education infrastructure to occur within development period and post according to the housing growth triggers	Minimum requirement, assuming off-site mitigation and no account of existing surplus/deficit in existing surrounding facilities. Education costs and calculations based upon *The Essex County Council Developers' Guide to Infrastructure Contributions - Revised Edition 2016*
Secondary Schools Form Entry	0.2				
Early Year Facilities	0.2				
Healthcare & Community					
General Practioners	0.4	£2,250	£911,250	Phasing of healthcare infrastructure to occur within development period and post development, according to the housing growth triggers for each facility	Minimum requirement, assuming off-site mitigation and no account of existing surplus/deficit in existing surrounding facilities. All AECOM Social Infrastructure Modelling (SIF) standards as set out in Appendix 2 of the original report of the North Essex Garden Communities Options and Evaluations Report..
Dentists	0.4				
Acute Hospital Beds	2				
Library Space	23				
4 Court Sports Centre	0.05				
4 Lane Swimming Pool	0.04				
Open Space					
Outdoor Sport	1.19	£2,750	£2,459,265	Phasing of open space infrastructure to occur within development period and post development, according to the housing growth triggers for each type	Minimum requirement based on standards as set out in Appendix 2 of the original report of the North Essex Garden Communities Options and Evaluations Report..
Children's Play Space	0.27				
Semi Natural Open Space	1.55				
Parks and Gardens	1.02				
Amenity Green Space	0.69				
Allotments	0.18				
Utilities - Scheme-wide Enabling Works					
Energy		Scheme Wide Enabling Works Cost/unit: £16,250 Environment/ Sustainability/ Waste Cost/unit: £500	Scheme Wide Enabling Works Total Cost: £6,581,250 Environment/ Sustainability/ Waste Total Cost: £202,500		
2 No. 11 kV to 400 V distribution substations	0.8 MW			Phasing of energy infrastructure to occur within development and post development period, according to the housing growth triggers	Distribute end-user loads
400 V LV circuits from distribution substations to end users	-				
Potable Water					
New network of distribution pipework	148 M3/day			Phasing of potable water infrastructure to occur within development and post development period, according to the housing growth triggers	New supply pipework
Waste Water					
Connections for all properties to existing waste water collection network	-			Phasing of waste water infrastructure to occur within development and post development period, according to the housing growth triggers	Raw sewage to existing treatment plants
Expansion of existing waste water network to local Water Recyling Centre	-				
Possible expansion of existing local Water Recycling Centre	-				
Gas					
Plot connections for all properties to gas distribution network	-			Phasing of gas infrastructure to occur within development and post development period, according to the housing growth triggers	Connecting to end users

Infrastructure	Demand Arising from Development Option	Cost per Unit (£)	Total Cost (£)	Phasing	Justification
Utilities - Off-Site Requirements					
Energy					
1 No. 11 kV ring circuit from primary substation to connect to distribution substations. 12 km distance	-	-	£9,680,000	Initial Phase	Provide electrical power capacity for development
Potable Water					
5km trunk mains on primary routes and distribution mains to properties for water supply	-	-	£4,000,000	Initial Phase	Distribution of potable water to end users
Telecommunications					
Development of access chambers for BT Telecoms network, BT Openreach fibre optic network and private telecoms network throughout development	-	-	£500,000	Initial Phase	ICT and data networks to end users
Transport - On-Site / Off-Site Requirements					
Upgraded pedestrian & cycle networks	-	-	£600,000	Up to Plan Period	To ensure non-car mode transit is embedded from the outset and to connect with the sub-regional transport connectivity solutions.
Travel plan measures (smarter choices, car clubs, charging points, etc)	-	-	£344,250	Up to Plan Period	
Bus service subsidies & other public transport improvements	-	-	£162,000	Up to Plan Period	
New site access junction	-	-	£6,000,000	Initial phase	To facilitate vehicular connection to the site
Upgrade existing site access junction	-	-	£3,000,000	Initial Phase	
Upgrade to B1414	-	-	£400,000	Initial Phase	
****Total Cost**			**£36,359,265**	(Total Cost at May 2016 Prices but excluding Professional Fees and Design Development and Construction Contingency)	

Table 5: Key Infrastructure Requirements for Thorpe-Le-Soken

This chapter provides baseline synthesis and key findings associated to Weeley.

It concludes with a high level assessment of development capcity and infrastructure requirement.

03 Weeley

3.1 Site Overview and Landuse
3.2 Call for Sites
3.3 Surrounding Settlement Hierarchy
3.4 Economic Context
3.5 Utilities
3.6 Landscape Character, Sensitivity and Condition
3.7 Agricultural Land Classifications
3.8 Ecological Designations
3.9 Parks, Recreation and Historic Environment
3.10 Water Cycle
3.11 Movement and Connectivty
3.12 Social Infrastructure
3.13 Development Capacity
3.14 Infrastructure Requirement

3.1 Site Overview and Landuse

The Weeley area of investigation comprises primarily of agricultural land, with some residential and employment uses. The railway station is located to the south of the village of Weeley and to the north of Weeley Heath. While both settlements are predominately surrounded by agricultural land, they are connected by scattered residential properties along the B1441. There is also a large caravan site adjacent to the railway station which borders the periphery of Weeley Heath. To the west and just outside the area of investigation runs the A133. This connects Weeley with Clacton-on-Sea to the south and the A120 and Colchester to the north west.

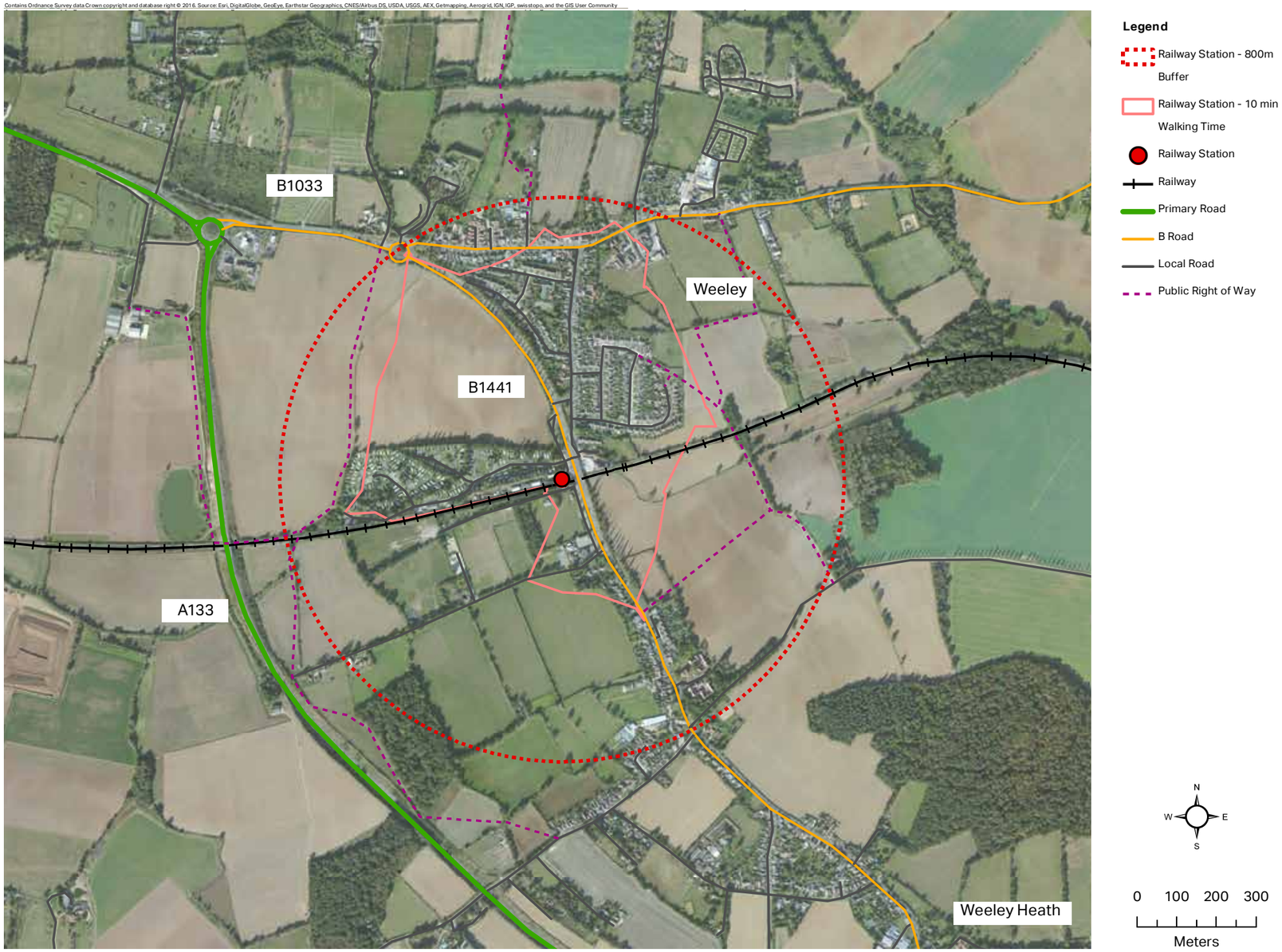


Figure 18: Weeley Context

3.2 Call for Sites

Key Findings

- The Call for Sites process for Tendring undertaken to support the development of the new Local Plan identified 7 sites located within the area of investigation at Weeley, which collectively amount to an accumulative 154.72ha of potentially developable land. However, as shown on Figure 19, some of this falls outside of both the 800m buffer zone and the more defined 10 minute walk net.
- The individual site detail submitted for the Call for Sites is shown below in Table 8.
- The Call for Sites has identified the potential for 1,000 homes on the land directly north west of the railway station between the A133, B1033and B1441. The site is in single ownership and well placed along the strategic road network.
- Land at Hawk Farm has been identified for a potential of 450 homes. Part of the site was promoted for inclusion in the 2012 Draft Local Plan. The remainder of land identified as a potential broad area of growth worth for consideration.
- Land at the Rear of Council Offices has been identified for a potential of 400 homes. Part of the site was promoted for inclusion in the 2012 Draft Local Plan. The remainder of the site identified as a potential broad area for growth that should be considered in the review of the Local Plan.

Call for Sites Reference	Location	Proposed Use	Site Area (ha)
WE1.1	Land between Tendring Park Services and Weeley Bridge	Residential	53
WE1.2	Land at Hawk Farm, North of B1033	Residential	25
WE1.3	Land at Saxon Lodge	Residential	2.39
WE1.4	Land East of Crematorium	Residential	17
WE1.5	Homestead Caravan Centre	Residential	1.5
WE1.6	Land to Rear of Council Offices	Residential	22
WE1.7	St Andrew's Road	Residential	0.83
Total Site Area: 154.72ha			

Table 6: Tendring BC Call for Sites (2014/2015)

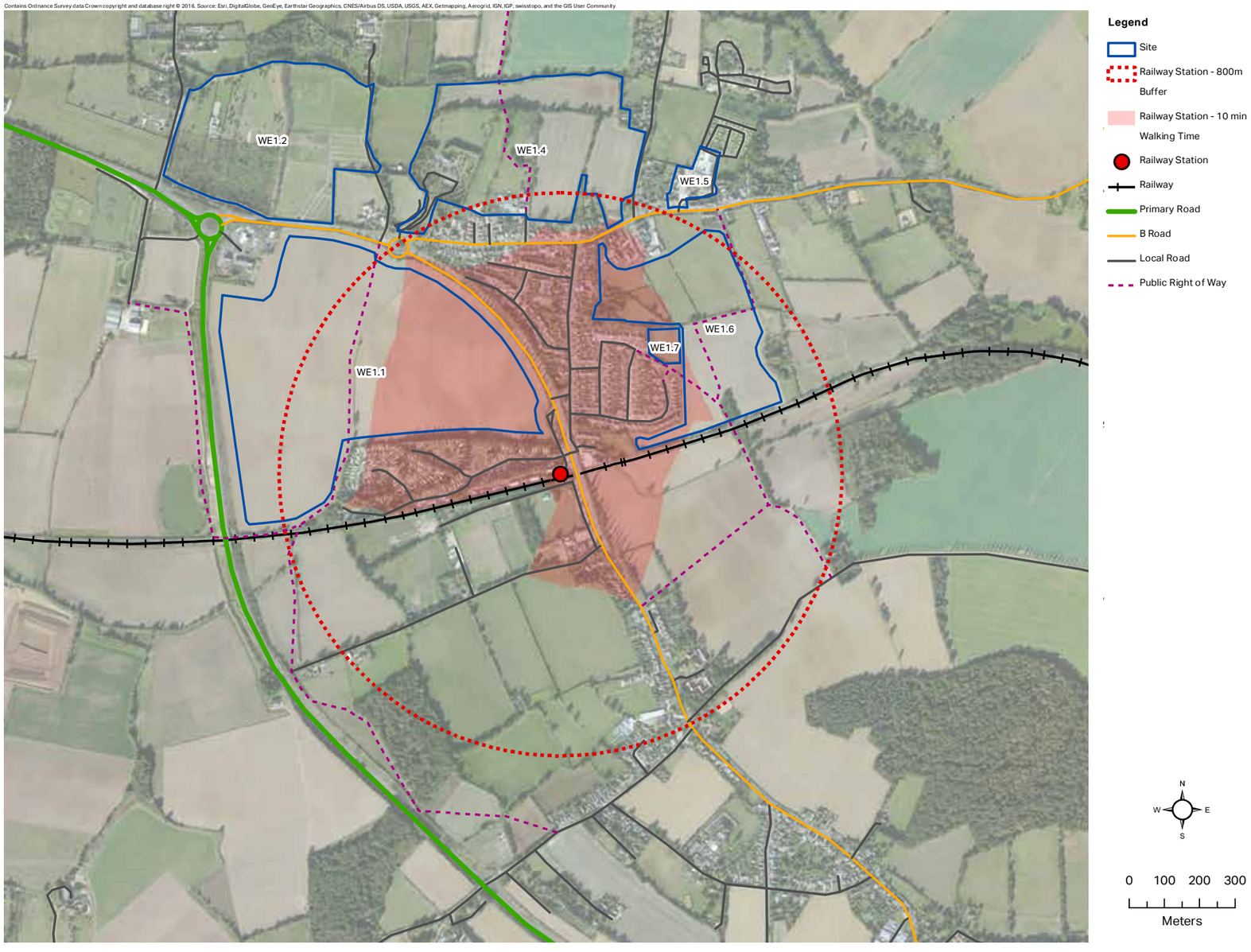


Figure 19: Weeley Economic Context. Source: AECOM.

3.3 Surrounding Settlement Hierarchy

Key Findings

- Weeley is identified in the Local Plan as an Expanded Settlement. The Local Plan identifies that growth around the District's towns and to the east of Colchester as not sufficient to deliver the new homes needed to meet Tendring District's projected housing need. Major development at Weeley has been recommended therefore because of its strategic location at the heart of the District, good transport connections and relatively unconstrained land.
- The Local Plan has identified that Weeley will be the focus for a strategic residential-led development, comprising a number of individual mixed use and residential sites. This will coincide with expanded community facilities, retail and employment space, education and other necessary infrastructure.
- There are not many settlements in the immediate vicinity, illustrating the rural nature of Tendring. Weeley Heath to the south and Tendring to the north form the two closest small rural settlements. Clacton-on-Sea, a Key Employment Centre, is located approximately 8km to the south.

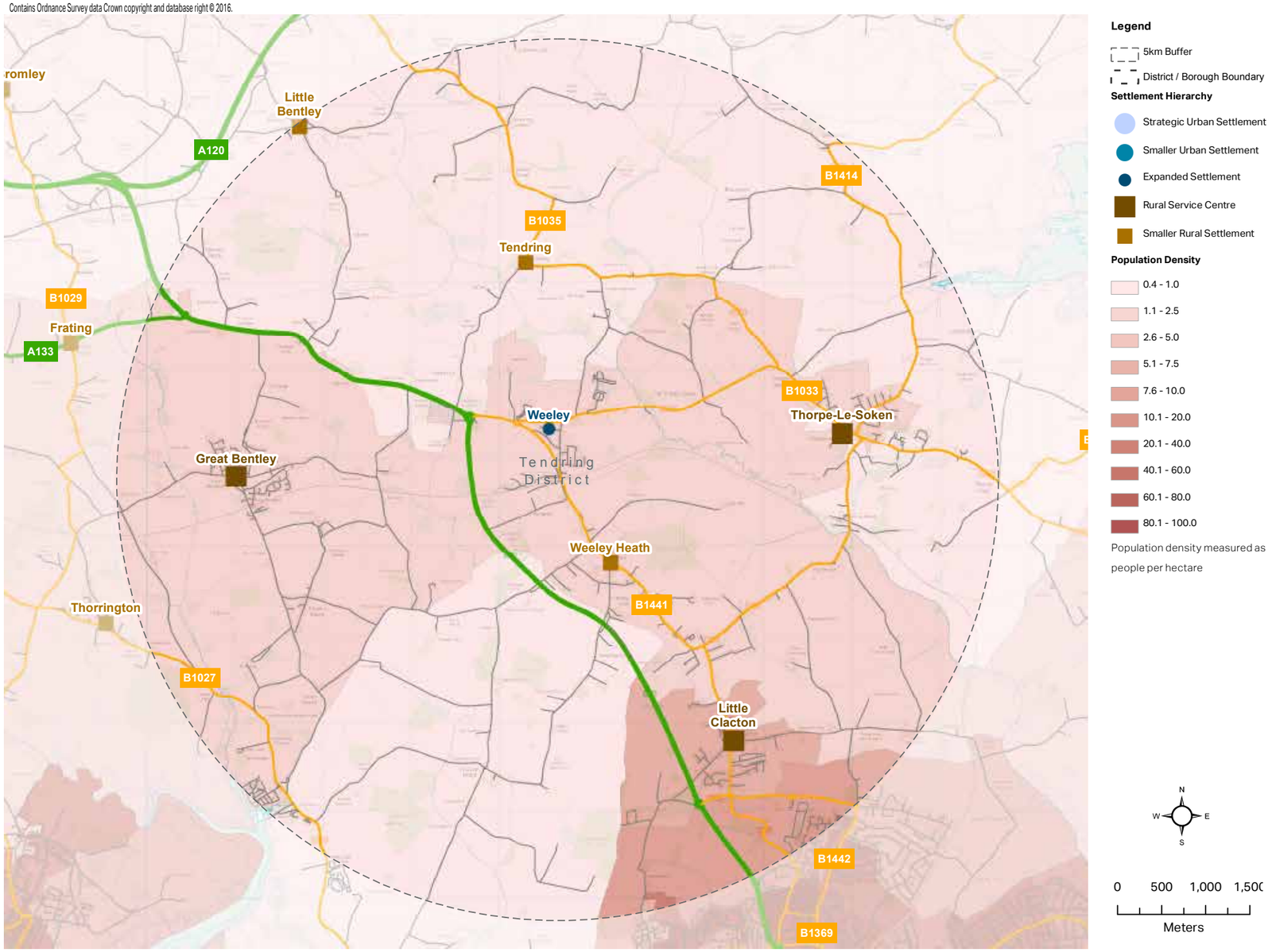


Figure 20: Tendring Settlement Hierarchy. Source: AECOM

3.4 Economic Context

Key Findings

- The area of investigation is centred around Weeley railway station, in which the station is adjacent to The Weeley Bridge Holiday Park (Static Caravans).
- To the north west of the area of investigation where the B1033 and A133 meet, there is a collection of businesses including a petrol station, several restaurants and a hotel.
- The B1033 is the primary commercial and retail street in Weeley with a mix of residential, commercial, and retail businesses located along the road.
- To the south of Weeley Railway station the land is primarily agricultural, with some community, residential and commercial businesses along the B1441.
- Tendring's Economic Growth Strategy (October 2013) identifies this location as a Tier Two Location as part of the Rural Hinterland, in which:
  - The rural parts of the district are not seen as taking on significant economic growth over the next decade with greater emphasis to improving sector and business support.

Sources

- Tendring District Local Plan (2007) & Proposals Map
- Tendring Economic Strategy (October 2013)

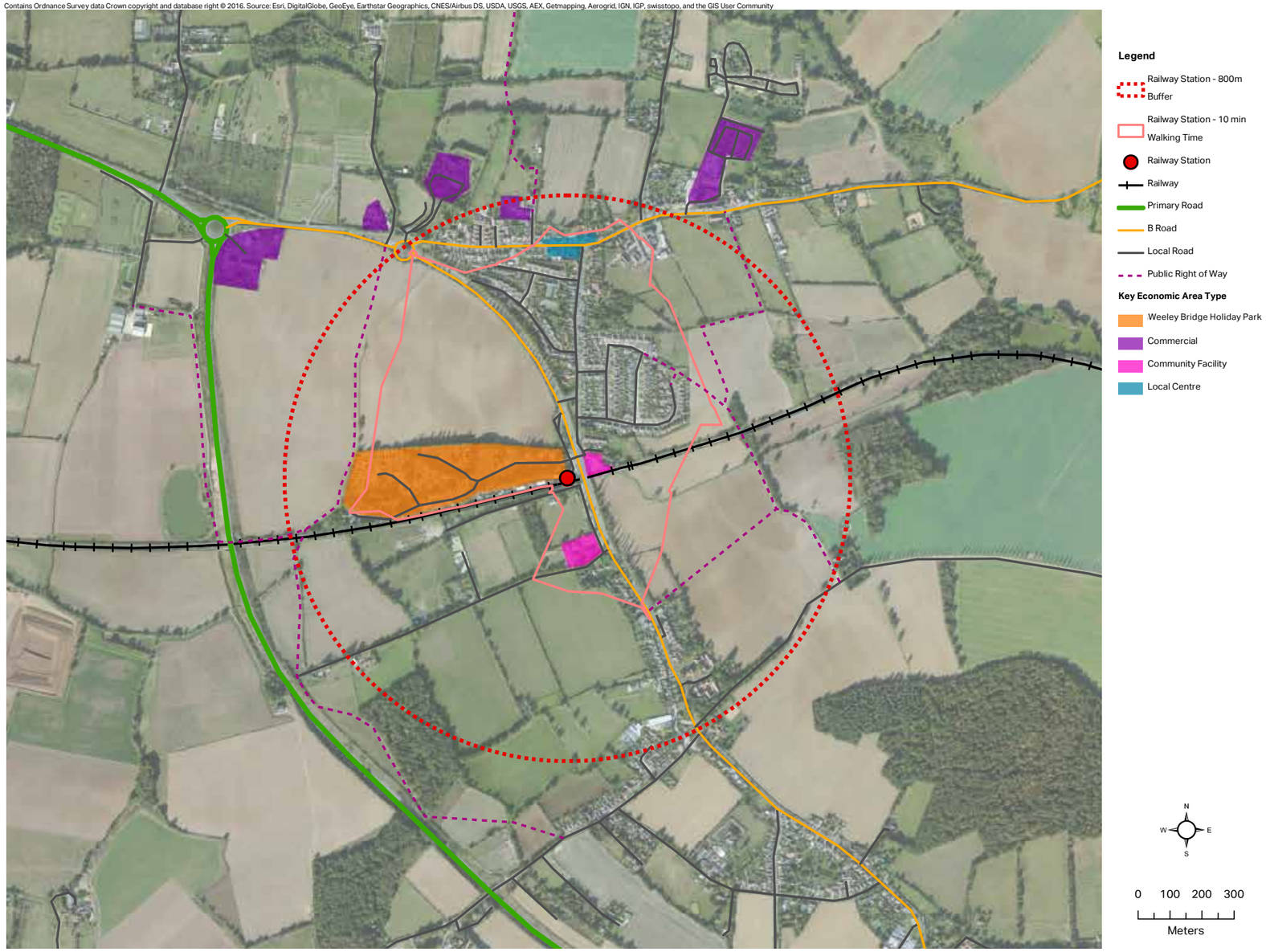


Figure 21: Weeley Economic Context. Source: AECOM.

3.5 Utilities

Key Findings

Electricity

- There are no primary substations within a 10 km radius of Weeley. If the demand for the development exceeds the capacity of the existing infrastructure in the area, a new primary substation will be required.
- A 33 kV overhead line exists to the south of Weeley which, capacity and route permitting, can be extended to supply a new primary substation.

Water supply

- Affinity Water forecast that the region will have a supply/demand surplus during their current 25 year planning period; 2015-2040.

Gas

- Intermediate and High pressure networks have adequate capacity.
- Medium and Low pressure networks will require reinforcement and extension to service new developments.

Waste Water

- Although there is a localised pumping station in Weeley, it is within the Wastewater Treatment Works (WwTW) catchment for Clacton-Holland Haven. This is currently assessed as having sufficient volumetric capacity (headroom between the permitted dry weather flow and the demand). In addition, there is headroom within the process capacity, relating to the volume of water a WwTW is capable of treating to the required quality standards set by the discharge permit. Upgrades to the wastewater collection infrastructure between Alresford and the Clacton-Holland Haven WwTW will be needed if the current capacity is insufficient for the proposed additional demand. Similarly, upgrades to the infrastructure discharging the treated effluent from Clacton-Holland Haven WwTW may be required.

Telecommunications

- BT Openreach has made a commitment to supply high speed fibre optic broadband to all development over 30 dwellings at no cost to the developer.

Sources

- Affinity Water
- BT Openreach (October 2016)
- UKPN Distributed Generation map
- National Grid Gas (September 2014)

Figure 22: Weeley Utilities. Source: Anglian Water / National Grid

3.6 Landscape Character, Sensitivity and Condition

Key Findings

- The existing topography is broadly defined by the Weeley Brook, with the site situated in the valley bottom.
- The Village of Weeley is small in nature and situated a short distance to the north of the train station in a triangle of land between the B1033 and the B1441. It comprises a mixture of housing stock, of a range of ages. Development to the immediate north of the train station comprises a holiday park.
- Forming part of the Holland Valley System Character Area it is described as a steep sided valley containing a number of brooks. Ancient woodlands are located in the wetter areas and steeper slopes and are dominated by oak, ash and sweet chestnut. Lanes drop down the valley sides and cross the streams at historic crossing points on stone or brick bridges.
- The area is described as typically being devoid of built development apart from isolated cottages and a former corn mill at Crow Bridge.
- Forming part of the Northern Thames Basin National Character Area, the geology of the area is largely London Clay overlain by loamy soils.

Sources

- Tendring Landscape Character Area Assessment Volume 2

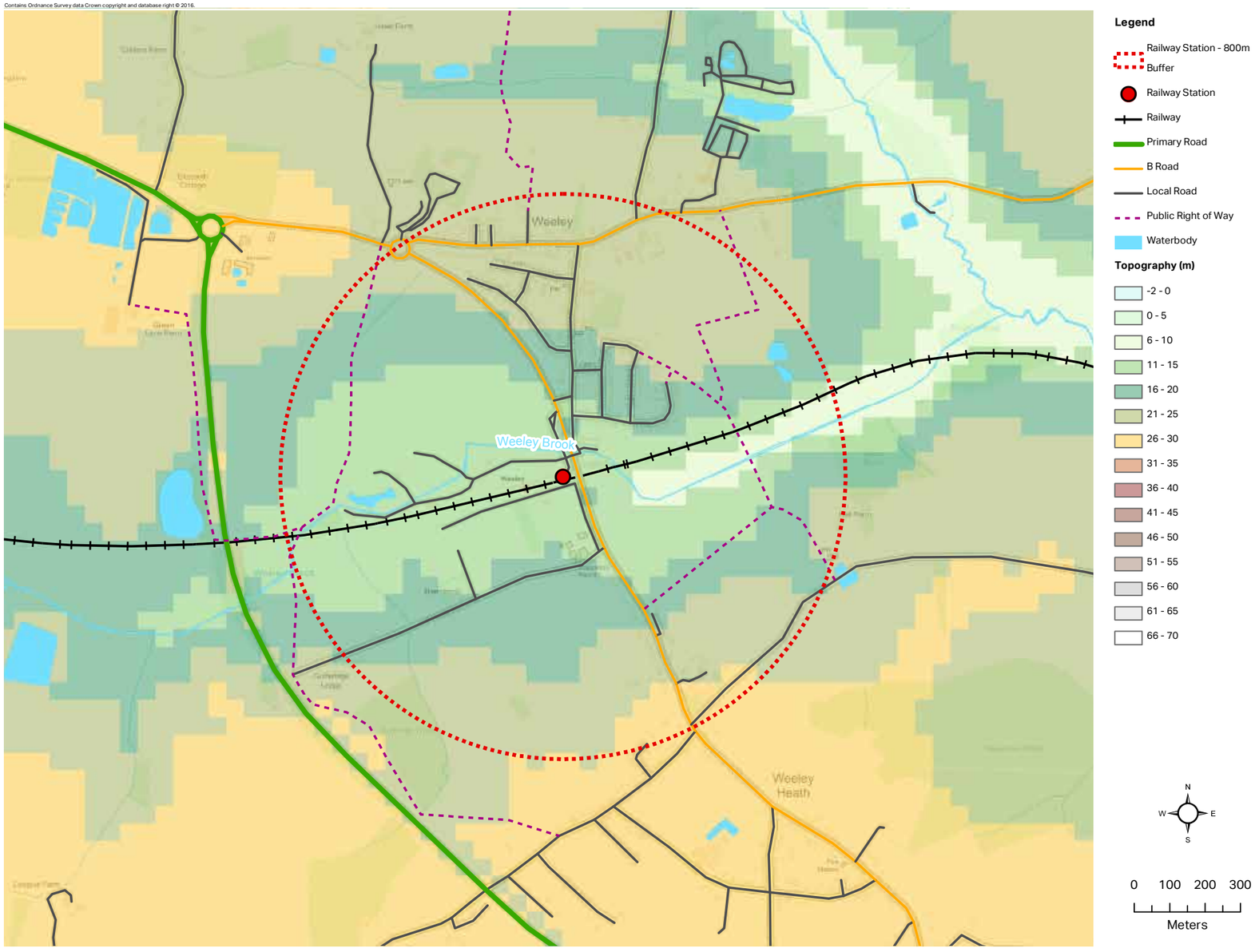


Figure 23: Weeley Landscape and Topography. Source: Natural England / Environment Agency

3.7 Agricultural Land Classifications

Key Findings

- The quality of agricultural land is predominantly good moderate (Grade 3)
- Outside the Area of Investigation to the North and South there is some very good agricultural land (Grade 2)
- To the east, outside of the 800m buffer, there is a strip of poor (Grade 4) agricultural land

Sources

- Natural England, National Character Areas - GIS Digital Boundary

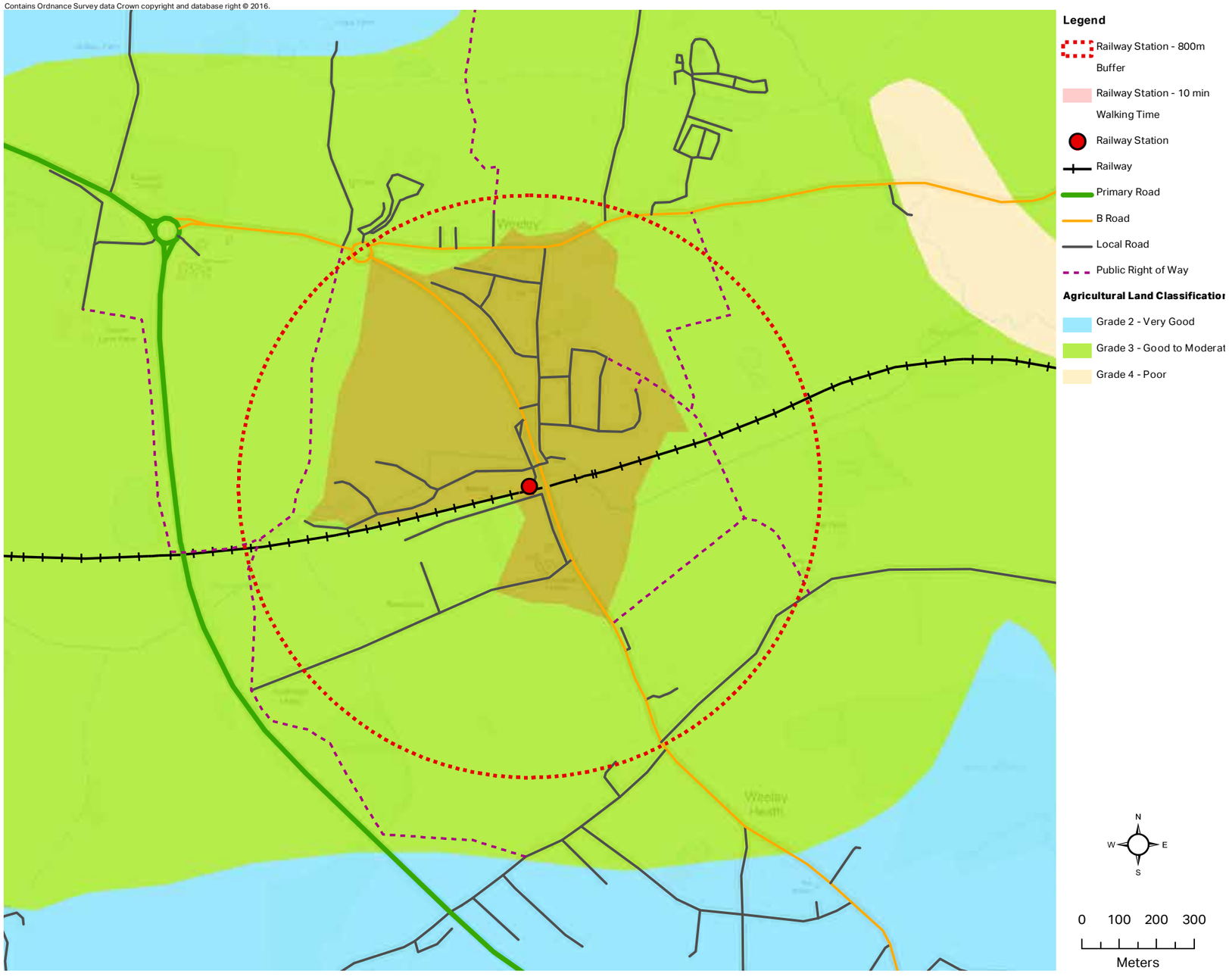


Figure 24: Weeley Agricultural Land Classifications. Source: Natural England.

3.8 Ecological Designations

Key Findings

- The area around the site study area has a rich and varied ecological baseline with a mosaic of habitats including urban gardens and parks, ancient woodland, arable fields and semi-improved grassland
- Of particular importance is the nationally recognised and protected Weelyhall Wood SSSI. Weeleyhall Wood is one of the largest ancient woods in the Tendring peninsula. It contains one of the best examples in Essex of base-poor springline alder woodland, a type of woodland which is rare in the county, as well as good examples of lowland hazel-pedunculate oak and some wet ash-maple woodland, and chestnut coppice-with-standards derived from these last two.
- There are a number of Local Wildlife Sites (LoWS) both in and around the site study area. These are designated for a number of habitats including woodland, meadows, road side verges.
- The LoWS should be retained within any new development and green linkages made between them and to existing habitat located on the periphery of the site.

Sources

- Natural England Designated Sites Citations
- Essex Wildlife Trust for LoWS

Figure 25: Weeley Ecological Designations. Source: Natural England / Environment Agency

3.9 Parks, Recreation and Historic Environment

Key Findings

- There are several Grade II listed buildings within the area of investigation, in which there is a cluster along The Street an the B1033.
- The landscape provides a network of Public Rights of Way offering access to the countryside throughout the search area.

Sources

- OS Terrain 50
- Natural England GIS Digital Boundary Datasets
- Historic England

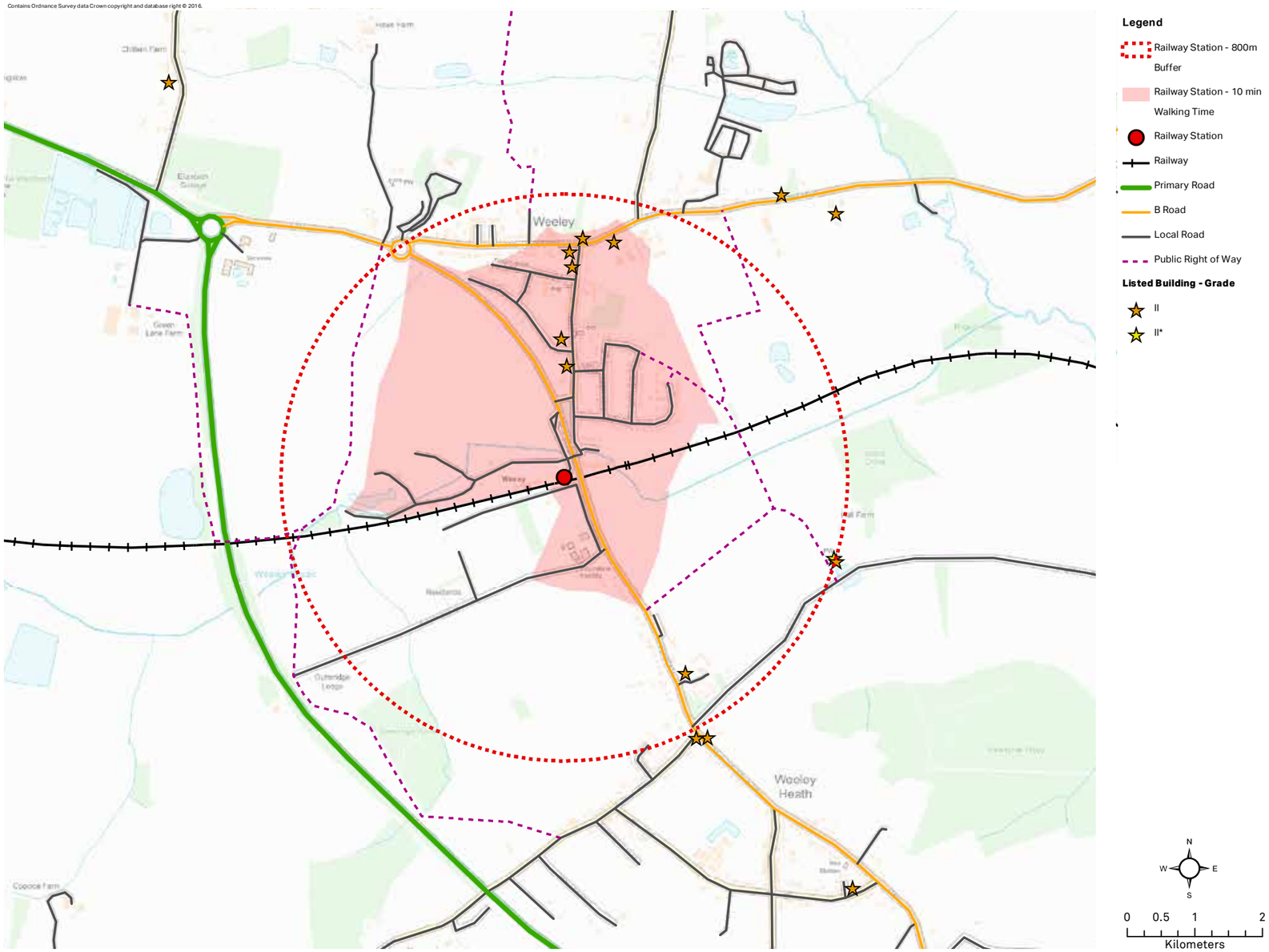


Figure 26: Weeley Recreational and Heritage Assets. Source: English Heritage / Natural England

3.10 Water Cycle

Key Findings

- Weeley is located within the Holland Brook catchment which flows in a south easterly direction just outside the study area to the east. Weeley Brook flows through the centre of the study area, within the 800m buffer and 10min walking time zones. Weeley Brook then confluences with the Holland Brook to the east of the village before the Holland Brook flows in a south easterly direction to the North Sea at Holland-on-Sea. Other smaller ditches also drain the study area. Both the Weeley Brook and Holland Brook are classified as Main Rivers.
- The terrain is relatively flat in the surrounding area and is generally pastoral or arable agriculture in land use with small pockets of woodland.
- The Holland Brook is classed as a heavily modified watercourse with moderate ecological status and good chemical status.
- Land within the study area drains to a priority water which is considered to 'probably be at risk' from agricultural diffuse pollution sources. The study area is within a surface water and groundwater Nitrate Vulnerable Zone. There are no water abstraction licenses recorded within the area or groundwater protection zones.
- Flood risk from rivers is generally limited to the narrow corridor along the Weeley Brook classed as Flood Zone 3. However an area at the western edge of the study area suffers from higher flood risk with areas within Flood Zone 2 and Flood Zone 3. The area shown to be at risk of flooding from surface water is generally within a wide corridor along the river valley and along the natural drainage paths in the topography. Otherwise the risk is generally limited to the highways within urban areas. An area is identified as at risk of flooding from reservoirs to the south-west of the A133, however this is outside the study area. The area is not considered to be at high risk of groundwater flooding.
- Potable water is supplied by Affinity Water and falls within their East region, within the Brett water resource zone. This zone usually takes 100% of its supply from groundwater sources, although it can also import water from the Ardleigh reservoir, which is jointly owned with Anglian Water. It is considered to be a 'serious water stress' area, however the Brett water resource zone is predicted to remain in surplus at least up to 2040. This is based on average growth trends and there is no specific information on the proposed development area. There are therefore no major intervention options being assessed and Affinity Water's strategy in the area concentrates on improving water efficiency, metering and leakage prevention.

Sources

- Environment Agency Catchment Data Explorer, Environment Agency website (27th February 2017)
- Environment Agency WIYBY online maps, Environment Agency website (27th February 2017)
- Environment Agency Long Term Flood Risk Information, Gov.uk website (27th February 2017)
- Final Water Resource Management Plan 2015-2020, Affinity Water (June 2014)
- Haven Gateway Water Cycle Study Stage 2 Report, Haven Gateway Partnership (November 2009)
- Level 1 Strategic Flood Risk Assessment Final Report, URS (May 2015)
- Waste Water Treatment Works Needs Assessment in Essex and Southend-on-Sea Final Report, URS (June 2014)

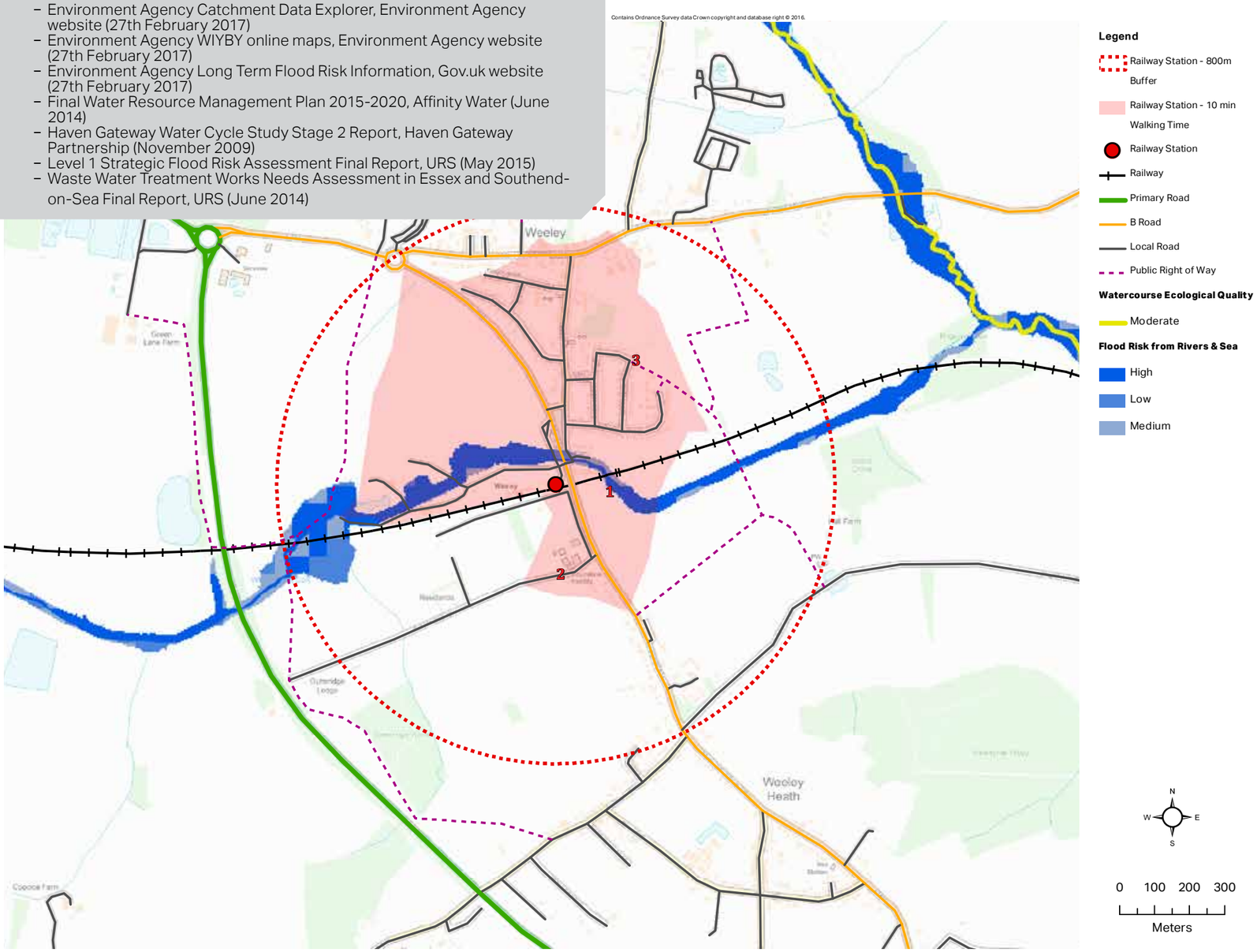


Figure 27: Weeley Water Cycle. Source: Natural England / Environment Agency

3.11 Movement and Connectivity

Key Findings

Travel Patterns

- 2011 Census Data - mode share data for the Lower Super Output Areas (LSOAs) in which the settlement of Weeley, sits demonstrates a strong reliance on individual motorised modes with 78% of all work related trips undertaken by either car or motorbike. Despite the presence of a rail station, public transport trips only represent 7% of all work related trips. Walking and Cycling work related trips account for 9%.
- The majority of journeys to work are between 5 and 20km (45%) with journeys under 5km representing 17% and journeys over 20km representing 18%. This would suggest that a large proportion of trips would require a motorised form of transport based on current home-work trips.
- Tendring District is characterised by a substantial self-containment of travel patterns with 60% of people living and working in Tendring. The main travel movements to work outside of Tendring are toward Colchester, with 20% of Tendring's working population commuting to this neighbouring authority.

Road

- Weeley is served by a number of A and B roads, including:
  - The A133, north-south towards Raven's Green and Clacton-on-Sea respectively;
  - B1033 running east-west toward Thorpe-le-Soken and the A133 respectively; and
  - B1441 running north-south towards Weeley and Little Clacton respectively.
- The Tendring Local plan modelling includes 3,200 new homes around Weeley station, spread across the sites represented on the map. The modelling identifies that with the level of growth proposed and allocated in Weeley it will impact the A133/B1033 and B1033/B1441, junctions which are identified as over capacity by 2032.
- Mitigation will be required to ensure the highway network can accommodate the level of growth anticipated and furthermore any increases in growth identified.

Key Findings

Rail

- Weeley mainline station is served by the Sunshine Coast line, an electrified double track branch line from the Great Eastern Main Line connecting Colchester (mainline and town stations) with Clacton-on-Sea and Walton-on-the-Naze.
- During a typical weekday AM peak (6am-8am), Weeley station is served by up to 2 trains per hour in both directions thanks to train services departing from both Walton-on-the-Naze and Clacton-on-Sea toward Colchester and vice versa. From 8am to 9am, the number of services reduces to 1 train per hour, the same as during the rest of the day.
- During a typical weekday AM peak (6am-8am) Weeley station is served by 1 train per hour towards Clacton-on-Sea. The number of services towards Clacton-on-Sea stays consistent throughout the day with an approximate journey time of 15 minutes.
- Minimum journey times to Colchester is currently 22 minutes calling at Great Bentley, Alresford, Wivenhoe and Hythe. A journey to London Liverpool Street typically takes approximately 1h30 minutes.
- The station is located approximately 800m south of the main existing urban centre. In this context it would likely mean that many existing residents would require a complimentary (first leg) mode of transport to access the station.
- It is understood that the Sunshine Coast line currently operates within capacity. The Anglia Route study (March 2016) identifies improvements on the Sunshine Coast line to 4 trains per hour by 2043 (one every 15minutes) including at Great Bentley station. However, movements from Weeley beyond Colchester on the Great Eastern Main Line are likely to be constrained by the lack of capacity on this line.

Public Transport

- The area is served by route 76 operating approximately 1 service per hour between 7am and 7pm towards Colchester and 7am to 8pm towards Clacton-on-Sea. The bus stops that are served by these services are located on the B1033 Thorpe Road.
- Other local bus service routes (2/100) serve Weeley Station between Clacton with one service every 2 hours. The bus stops serving these routes are located on the B1441 Weeley ByPass.

Key Findings

Active Modes

- No dedicated walking and cycling routes are located in the area. The nearest route is National Route 51 identified on Keelars Lane, some 4km from Weeley. The route passes through Oxfordshire, Buckinghamshire, Bedfordshire, Cambridgeshire, Suffolk and Essex. The section between Harwich and Colchester forms part of the North Sea Cycle Route, also known as EuroVelo 12
- The Rail station is located outside the main urban settlement and no dedicated route for active modes is identified linking this station both locally or to the wider area.
- The area is characterised by a network of quiet country C-roads which are potentially suitable for cycling, however they are not currently designated as such.

Sources

- North Essex Garden Communities Baseline Compendium, June 2016
- Tendring Local Plan Modelling Support, December 2015
- Tendring Infrastructure Delivery Plan, Tendring Council, 2013
- Anglia Route Study, Network Rail, March 2016
- The scope for high-quality rail services to support sustainable development, Jonathan Tyler (Passenger Transport Networks, York) – a report for CAUSE – Campaign Against Urban Sprawl in Essex, 2015
- Google Maps, consulted February 2016

Figure 28: Weeley Transport Existing Conditions

Opportunities and Constraints

Travel Patterns

- Opportunity to plan towards a more sustainable modal split for this area and others in Tendring will allow mitigation of the impact on the network by not reproducing the current high level of car usage and ownership.
- Existing modal splits need to be challenged and reflect transit-oriented development (TOD), one of the main Garden Communities principles. For that, opportunities to encourage sustainable travel in and around Weeley should be sought, including improvements to walking and cycling infrastructure and public transport provision.
- Understandably in the context of this area, greater walk and cycle distances are potentially viable, such as up to 2.5km for cycling to a station. However the principles of TOD dictate that these should be much reduced, the station is therefore outside of the identified 800m active modes catchment for a large proportion of the proposed development sites. The presence of a rail station should be an asset to capitalise on for the future development of Weeley to improve sustainable movements to main employment areas and reduce the need for car usage and ownership.
- Given the rural location of the area under investigation, innovative car sharing / car hire schemes should be explored, but at this time are unlikely to be particularly viable to operators unless a critical mass can be assumed through large scale development that is linked together.
- Given the current share of work trips for less than 5km (17%), this represents a potential target for short journeys to be undertaken via walking or cycling if the infrastructure requirements are met, such as safe and secure cycling routes and cycle parking to encourage those trips.

Road

- Given the Tendring Local Plan modelling outlined in the previous section, mitigation will be required to ensure the highway network can accommodate the level of growth anticipated.
  - B1441 Weeley Bypass, A133 and B1033 would appear to be a logical locations for providing access to development. The roads are designed with high link capacity and are likely to be able to accommodate increases in traffic. Segregated footways are present with grass verges providing segregation from traffic. An opportunity would exist to upgrade these to form a clear dedicated walking / cycling routes linking the development sites with the station.
  - Potential upgrades to the junctions of the B1441
  - New junctions to provide access
  - New access from Colchester Road B1033
  - New access from A133

Opportunities and Constraints

Rail

- Evidence currently points to an over reliance on car travel, and upgrades to the Sunshine Coast line would be of great benefit.
- The Anglia Route study (March 2016) identifies improvements on the Sunshine Coast line to four trains per hour by 2043 whilst a possible tram-train solution should be explored to enable possibly even greater frequencies, quality of service and desirability for passengers to use and realistically give up their car to make their journey to work.
- Additional capacity on the sunshine coast line has been identified[1] and in this context, CAUSE supports the development of a tram-train service on the Sunshine Coast line with opportunities to link different sites with Colchester at a greater frequency and allows street running trains to serve Colchester town centre for greater public transport integration.
- Opportunities to develop a walking/cycling network integrated with the station is essential to increase public transport mode share in Weeley and make rail trips more attractive to main employment areas in Tendring and Colchester.

Bus

- In addition to rail improvements, opportunities exist to look at a strategic bus network connecting development sites identified under this scope depending on the critical mass achieved over all these areas.
- Local bus services require greater frequencies to provide a 'second tier' of public transport to support the rail station and provide a 1st leg trip to the station of residents of new settlement which lie outside of the 800m active modes catchment.

1 The scope for high-quality rail services to support sustainable development, Jonathan Tyler (Passenger Transport Networks, York) – a report for CAUSE – Campaign Against Urban Sprawl in Essex, 2015

Opportunities and Constraints

- Potential to incorporate the station within the development and provide clear strategic active modes routes through the site to connect with the station. Forming a true TOD development.

Active Modes

- The location of the station in relation to the main urban settlement and the lack of clear safe and secure walking and cycling route towards the station is currently a constraint for people to consider rail as an attractive alternative to car.
- Direct routes, linking the existing settlement and new development sites would be required.
- Limiting car parking at the station would also ensure that 1st leg trips by car can be made less attractive compared other 1st leg trips such as bus or active modes trips whilst safe and secure cycle parking and infrastructure should be provided at the station.
- Given the size of sites under investigation in Weeley, opportunities should be explored to develop a consistent network of greenways and quietways across the existing and extending urban settlement providing key connections to the station and other main local destinations. Landownership may be problematic in ensuring the small development are linked appropriately.
  - Improved footway provision as a minimum on the B1441
  - Consideration of a green link between the rail station and the internal parts of the site to facilitate active modes, potentially along-side the rail track or through the caravan park which lies adjacent to the station
  - Improved cycle parking provision at the station
  - Cycle Lane on B1441
  - Strategic green link between sites facing A133 through the site facing the B1441 to the rail station
  - Potential to link all development sites through a key public transport / quiteway with the station and beyond
- In a number of cases the addition of formal cycle lanes may prove difficult given the nature of the road network (available space, speeds, role). Formal Cycle lanes are one of the main solutions to ensuring that residents will take up active modes for both short and longer distance movements.

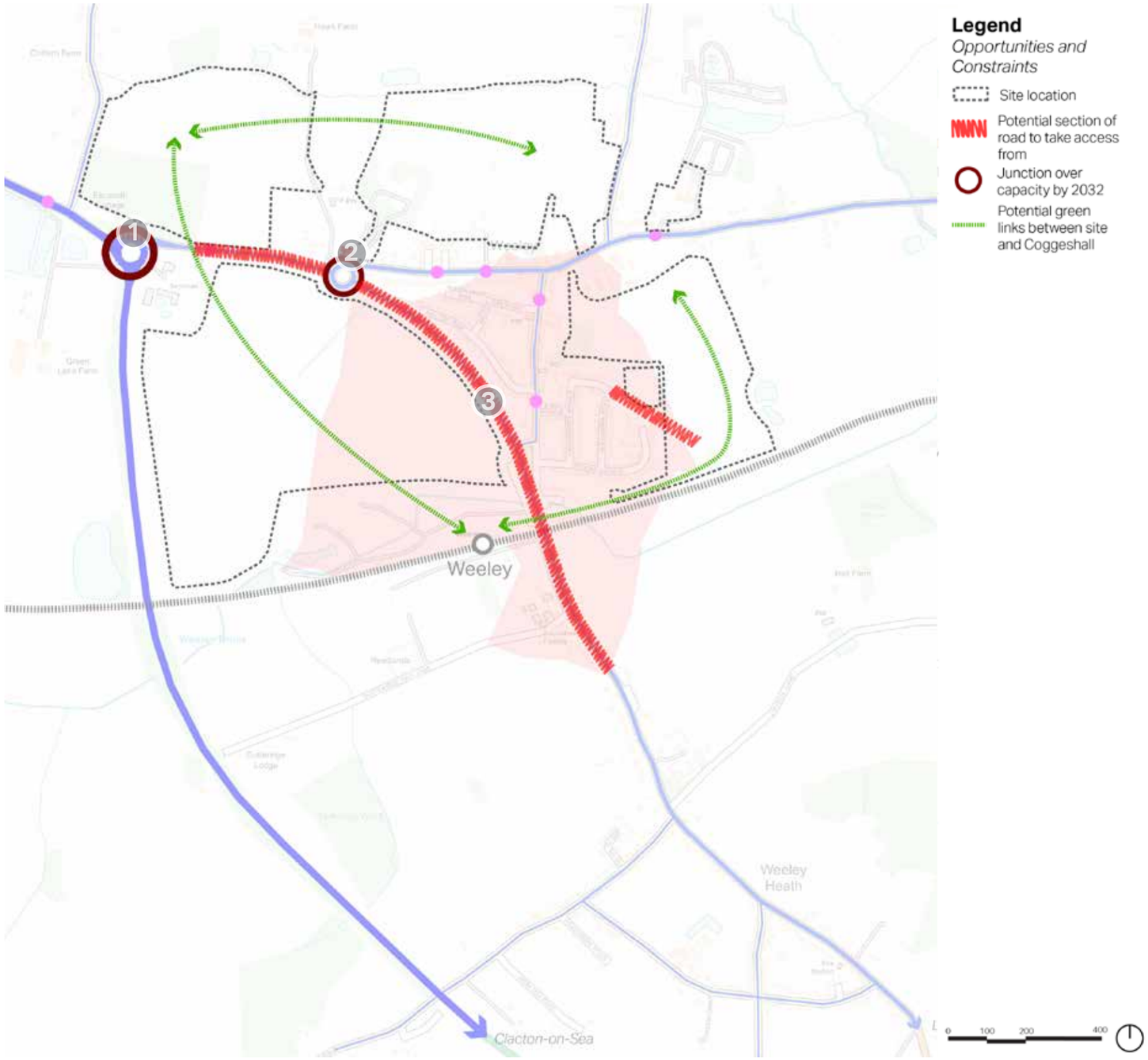


Figure 29: Weeley Transport Opportunities and Constraints

3.12 Social Infrastructure - Education

Essex County Council has developed a Commissioning School Places in Essex 2015-2020, published February 2016 and Meeting the Demand for School Places in Essex - 10 year Plan 2016-2025 (2016). Both documents provide information related to future pupil numbers and where further expansion will be required to meet housing demands.

The 5km buffer Weeley is within Tendring Local Authority with both scales assessed to determine the current situation, committed infrastructure and future issues development in the area may cause.

Key Findings - Primary

Current Situation within 5km Buffer

5 Primary Schools

13 Surplus Places

- Schools within Site Study Area

Committed Infrastructure within 5km Buffer

- There are no planned primary school infrastructure within the area of investigation. However there are two potential primary school projects proposed in the wider 5km area, both of which are uncommitted.

FE	Location	Delivery Commitment	Mechanism
unknown	Engaines - Little Clacton	Uncommitted	-
unknown	St Andrews CE	Uncommitted	

Table 7: Committed Primary Infrastructure. Source: Meeting the Demand for School Places in Essex - 10 Year Plan 2016-2025

Future and Wider Issues

- The Commissioning Plan forecasts an increase of 190 primary school pupils for Tendring between 2015-2020. With the additional pupils, this translates to a forecast surplus of 358 places across Tendring.
- Potential growth at Weeley would likely create a demand for primary school places, therefore proposals coming forward would need to consider the delivery of future education infrastructure provision.
- Essex County Council are seeking contributions from housing developers towards the cost of providing the additional places required for the pupils generated by new housing.

Key Findings - Secondary

Current Situation within 5km Buffer

0 Secondary Schools

Committed Infrastructure within 5km Buffer

- There are no secondary y schools committed for Tendring, instead it appears there will be school closures with the closing of Tendring Enterprise Studio School. The closure of the school will reduce the number of places available for Years 10, 11, 12 and 13 in Tendring area.

Future and Wider Issues

- The Commissioning Plan forecasts an increase of 182 secondary school pupils for Tendring between 2015-2020. With the additional secondary pupils, this translates to a forecast surplus of 346 places across Tendring to 2020.
- Pupil numbers across the remaining secondary schools are forecast to remain relatively stable over the next 5 years. While new housing will be monitored, it appears that there are sufficient school places to meet increase demand.
- Essex County Council are seeking contributions from housing developers towards the cost of providing the additional places required for the pupils generated by new housing.

Key Findings - Further Education

Current Situation within 5km Buffer

0 Further Education

Committed Infrastructure within 5km Buffer

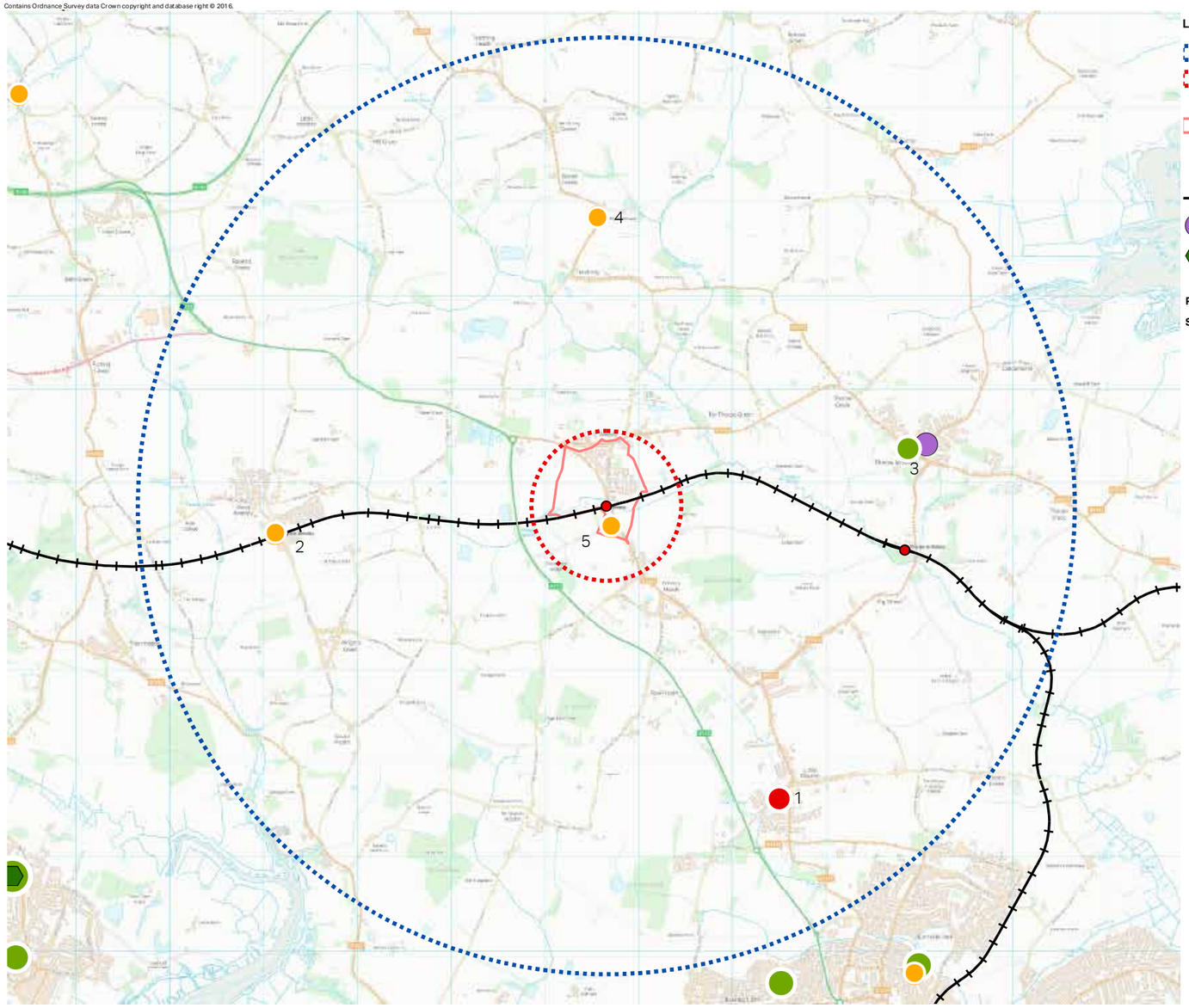
- There is no identified Further Education infrastructure identified within the 5km radius of the area of investigation

Future and Wider Issues

- The minimum age at which young people in England can leave learning increased in 2013, requiring young people to continue education or training to the end of the academic year in which they turn 17. This has been followed with a policy beginning in 2015 where all young people must remain in learning to their 18th birthday, This is referred to as Raising the Participation Age (RPA).
- This puts more pressure on the local authorities to ensure and provide options for young people to learn the skills required. Local authorities have the duty to:
  - Promote effective participation in education or training to young people;
  - Ensure that sufficient places are available to meet the reasonable needs of all young people and encourage them to participate; and
  - Make available to young people support that will allow them to participate in education or training.

Sources

- Department of Education, Edubase Portal (May 2016)
- Commissioning School Places in Essex 2015-2020



Primary School Capacity Analysis

Primary School Name	Capacity	Surplus / Deficit	Label
Engaines Primary School	266	-15	1
Great Bentley Primary School	210	4	2
Rolph CofE Primary School	218	15	3
Tendring Primary School	140	1	4
Weeley St Andrew's CofE Primary School	218	8	5
TOTAL	**1,052**	**13**	

Figure 30: Weeley Edcuation Context. Source: Edubase (2016)

Social Infrastructure - Health

Key Findings

Current Situation within 5km Buffer

1 GP Practices

0 Hospitals

GPs

- There is 1 GP practices identified within 5km of North Colchester.
- There is an overall deficit in provision of GP across the wider 5km buffer zone with -1,099 patient spaces. However, this is a theoretical assessment, and the actual pressures may be more pressing..

Hospitals

- There are currently no hospitals identified within 5km of Weeley.

Key Findings

Committed Infrastructure within 5km Buffer

- Following a review of the Tendring Infrastructure Delivery Plan (2013), there are no identified healthcare infrastructure projects within a 5km radius of the area of investigation

Key Findings

Future and Wider Issues

- The Area of Investigation sits within North Essex Clinical Commissioning Group, which is an NHS organisation set up by the Health and Social Care Act 2012 to organise the delivery of NHS services in England.
- The CCGs receives funding and are commissioned by NHS England to provide primary care services (including GPs), in turn the CCGs commission most services in their areas to trusts that include hospital and community healthcare.

North Essex Clinical Commissioning Group

- North Essex CCG 5-year plan will look to put people at the centre by commissioning around the needs of people, rather than the service.
- It is projected that demand for older people's services over the next 5-10 years will increase by roughly 20,000 people (those over the age of 55).
- In addition, the health and social care system faces considerable financial challenges over the coming years. The CCG will look to commission integrated health and social care services, promote prevention and early intervention, and promoting self-care to begin diminishing the burden.

Sources

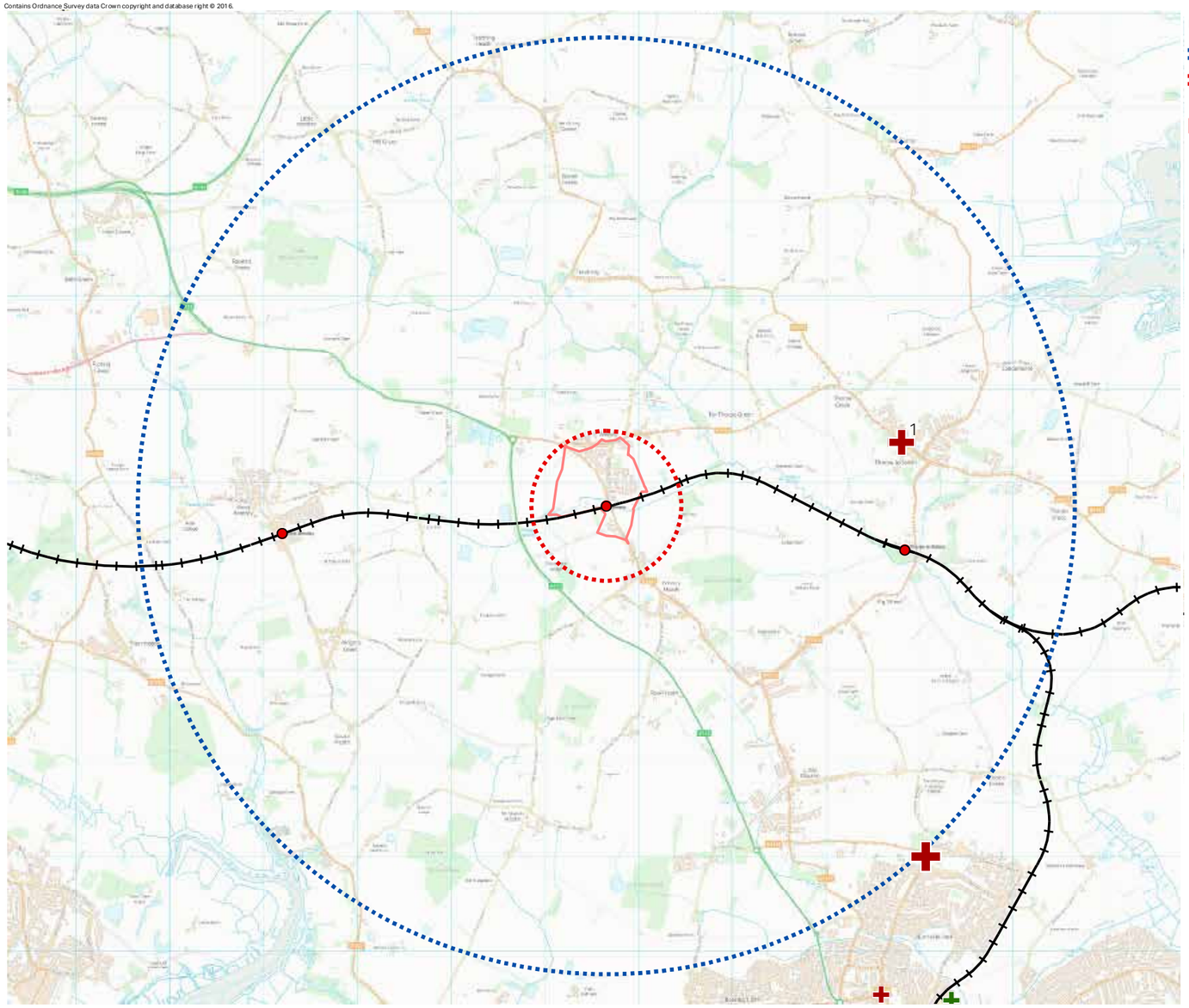
- NHS England, MyNHS Portal datasets (May 2016)
- Health and Social Care Information Centre (HSCIC) dataset (January 2016)

Sources

- Tendring Infrastructure Delivery Plan (2013)

Sources

- North Essex Clinical Commissioning Group



Legend

- Railway Station - 5km Buffer
- Railway Station - 800m Buffer
- Railway Station - 10 min Walking Time
- Railway Station
- Railway

GP - Surplus / Deficit

- -4000 - -2000
- -1999 - -1000
- -499 - 0
- 1 - 500

GP Capacity Analysis

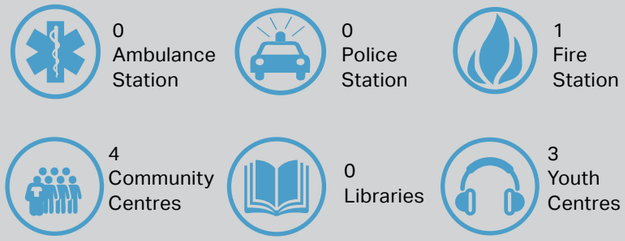
Practice Name	Full Time Equivalent GP's	Patients	Capacity	Surplus / Deficit	Label
Thorpe Surgery	3	6,499	5,400	-1,099	1
TOTAL	**3**	**6,499**	**5,400**	**-1,099**	

Figure 31: Weeley Health Infrastructure Context. Source: MyNHS, HSCIC

Social Infrastructure - Community Facilities and Emergency Services

Key Findings

Current Situation within 5km Buffer



Emergency Services

- Across the wider 5km buffer zone, the analysis identifies 1 emergency station comprising a single fire stations.

Libraries

- There are no libraries within within the 5km wider area of the area of investigation.

Youth Centres

- There are three youth centres within 5km of North of Colchester.

Community Centres

- There are four community centres within 5km of the development.

Key Findings

Committed Social Infrastructure within 5km Buffer

- A review of Tendring's infrastructure Delivery Plan (2013) has not identified any future projects within the 5km radius of the area of investigation within Tendring as it relates to community facilities and emergency services.

Key Findings

Future and Wider Issues

- A review of ambulance services has identified a change in the future model of ambulance provision by the early 2020s within the East of England's Ambulance Services. This involves a hub and spoke service in order to meet demand from existing population. Traditional ambulance stations act as the main hubs of service, with smaller 24/7 posts acting as the spoke.
- Further work will need to determine whether the capacity of the existing emergency services can cope with the forecast increase in population.
- Further work will need to determine whether the capacity of the existing community facilities can cope with the forecast increase in population. However, it is likely that future development in the area of investigation would need to provide some new community infrastructure.

Sources

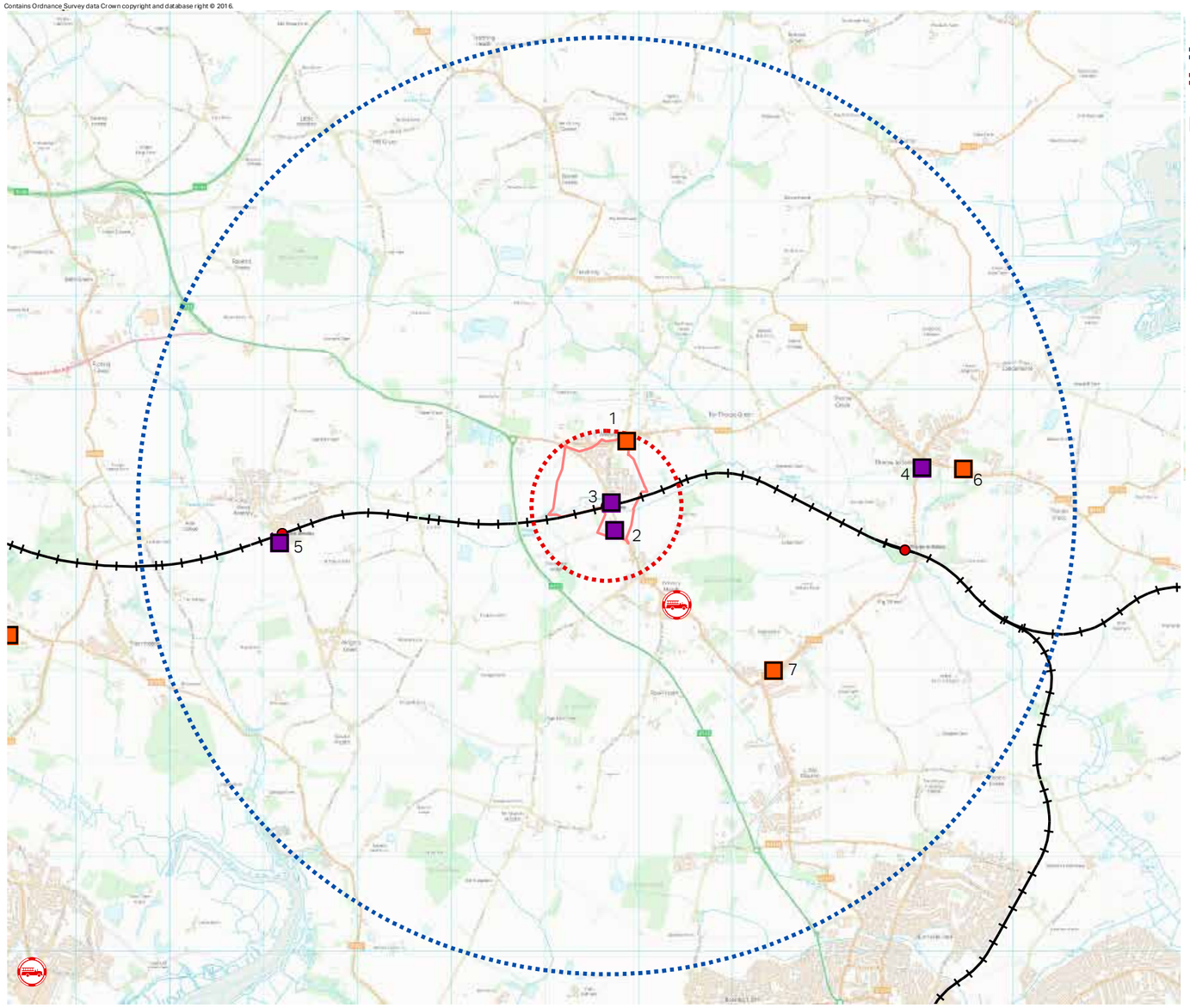
- East of England Ambulance Services, Essex Police, Essex County Fire & Rescue Services
- Google maps to identify community facilities, libraries and youth centres

Sources

- Tendring IDP (2013)

Sources

- East of England Ambulance Services
- Essex Police
- Essex County Fire & Rescue Services



Community Service Facilities		
Name of Facility	**Type**	**Label**
Air Training Corps Weeley	Youth Centre	1
Willow Park Resource Centre	Community Centre	2
Weeley Village Hall	Community Centre	3
Thorpe-Le-Soken Sports Club	Community Centre	4
Great Bentley Village Hall	Community Centre	5
Thorpe-Le-Soken Scouts	Youth Centre	6
Air Cadets Weeley Heath	Youth Centre	7

Emergency Service Facilities	
Name of Facility	**Type**
Station 19 Weeley	Fire

Figure 32: Weeley Community Facilities and Emergency Services. Source: East Of England Ambulance Services, Essex Police, Essex County Fire & Rescue Services, Google Maps to Identify Community Facilities, Libraries and Youth Centres

3.13 Development Capacity

Key Drivers

Overview

The total potential site area surrounding Weeley railway station is approximately 23 hectares, comprising agricultural land and settlement fringe sites. This is based on a refined 10 minute walknet under current conditions. 15.64ha is considered developable (residential/employment/mix-use land), while approximatly 7ha would be needed for primary infrastructure (roads, etc) and green infrastructure requirement.

Landuse

- It is anticipated that development at Weeley could create 480 new homes at 35 dwellings per hectare
- At least 1.37 ha of mixed-use space would be required. This would largely fulfil demand for retail, the care sector, leisure and hospitality uses and non-commercial needs.

Green Infrastructure	Mixed-Use	Employment	Primary Infrastructure	Residential	Total
12%	6%	2%	20%	60%	100%

Table 8: Weeley Proposed Land Use Parameters (%)

Green Infrastructure	Mixed-Use	Employment	Primary Infrastructure	Residential
27,424 sq.m	13,712 sq.m	4,571 sq.m	45,706 sq.m	137,119 sq.m

Table 9: Weeley Proposed Land Use Parameters (#)

- An assumed breakdown of potential land use has been applied by AECOM for each of the sites in order to determine the residential growth arising from developable land. It's been assumed that 60% of developable land would be for residential, 20% for primary infrastructure (roads, etc), 12% for green infrastructure and 8% for employment or community facilities.
- The land use parameter breakdown would vary for each site, depending on individual characteristics and setting. This approach provides a reasonable set of parameters based on future growth occurring within established villages.
- The population of Weeley is approximately 1,800 people (2011 Census). A housing yield of 480 dwellings would result in a population of 1,104 people (based on an average household size of 2.3 (ONS)). This would be a growth of over 60% on the existing village population.

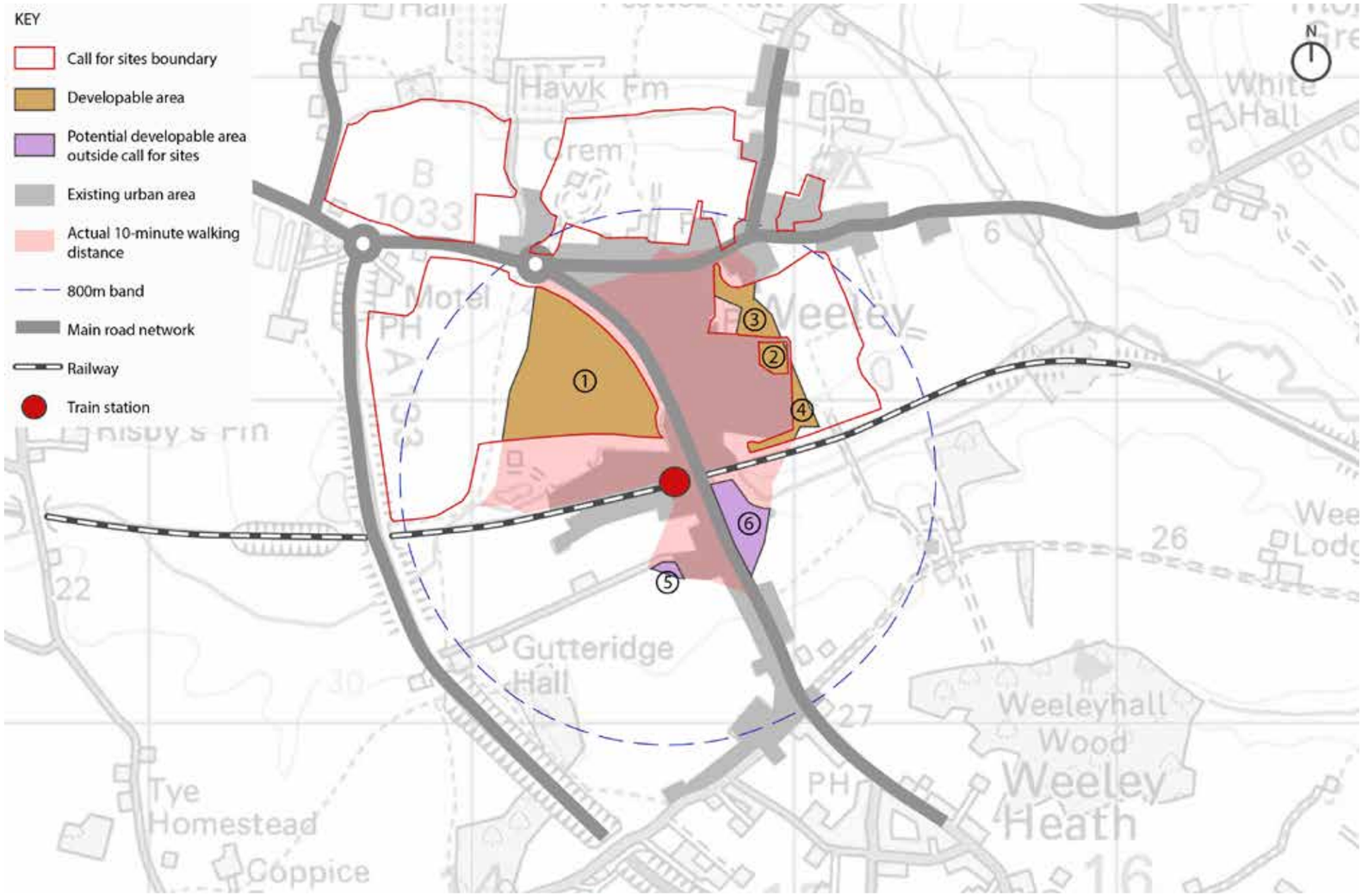


Figure 33: Developable Area Diagram

22.9 ha
Total Site Area

1.37 ha
Mixed-Use (Community Facilities)

4.57 ha
Primary Infrastructure

480
35 dph

15.54 ha
Total Developable Area

0.46 ha
Employment and Leisure Land

13.71 ha
Residential Developable Area

2.74 ha
Green Corridors and Infrastructure

Note. If we assume that the full 800m buffer of Weeley is considered, at an 80% residential development rate the 135.50 ha of land may yield approximately 3,800 homes at 35 dwellings per hectare. However, it is clear that development at this scale would substantially alter the nature and character of the village. It would also dramatically impact the ecology, visual amenity and the existing transport networks in the surrounding area. Furthermore, this figure does not include any land constraints beyond flood risk zones, protected ecology sites and existing urban development and may therefore potentially be lower once these have been factored into the assessment .

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3.14 Indicative Infrastucture Requirement

Project List

The following table identifies the key infrastructure requirements to support the proposed development at Weeley. These projections are based on a high level assessment of the infrastructure requirements for the development option and the growth (housing and employment) envisaged. It is assumption based only and related either to the transport strategy outlined above, the social infrastructure standards described in the North Essex Garden Communities Options and Evaluations Report Appendix 2 and applied to the projected population. The utility infrastructure requirements are informed through preliminary discussions with the relevant service providers wherever possible . They are indicative only and are not based on a masterplanning exercise.

Infrastructure	Demand Arising from Development Option	Cost per Unit (£)	Total Cost (£)	Phasing	Justification
Education					
Primary Schools Form Entry	0.2	£3,750	£1,800,000	Phasing of education infrastructure to occur within development period and post according to the housing growth triggers	Minimum requirement, assuming off-site mitigation and no account of existing surplus/deficit in existing surrounding facilities. Education costs and calculations based upon *The Essex County Council Developers' Guide to Infrastructure Contributions - Revised Edition 2016*
Secondary Schools Form Entry	0.2				
Early Year Facilities	0.3				
Healthcare & Community					
General Practioners	1	£2,250	£1,080,000	Phasing of healthcare infrastructure to occur within development period and post development, according to the housing growth triggers for each facility	Minimum requirement, assuming off-site mitigation and no account of existing surplus/deficit in existing surrounding facilities. All AECOM Social Infrastructure Modelling (SIF) standards as set out in Appendix 2 of the North Essex Garden Communities Options and Evaluations Report.
Dentists	1				
Acute Hospital Beds	2				
Library Space	28				
4 Court Sports Centre	0.06				
4 Lane Swimming Pool	0.05				
Open Space					
Outdoor Sport	1.41	£2,750	£2,914,684	Phasing of open space infrastructure to occur within development period and post development, according to the housing growth triggers for each type	Minimum requirement based on standards as set out in Appendix 2 of the North Essex Garden Communities Options and Evaluations Report..
Children's Play Space	0.32				
Semi Natural Open Space	1.84				
Parks and Gardens	1.21				
Amenity Green Space	0.81				
Allotments	0.21				
Utilities - Scheme-wide Enabling Works					
Energy		Scheme Wide Enabling Works Cost/unit: £16,250 Environment/ Sustainability/ Waste Cost/unit: £500	Scheme Wide Enabling Works Total Cost: £7,800,000 Environment/ Sustainability/ Waste Total Cost: £240,000		
2 No. 11 kV to 400 V distribution substations	0.9 MW			Phasing of energy infrastructure to occur within development and post development period, according to housing growth triggers	Distribute end-user loads
400 V LV circuits from distribution substations to end users	-				
Potable Water					
New network of distribution pipework	175 m3/day			Phasing of potable water infrastructure to occur within development and post development period, according to housing growth triggers	New supply pipework
Waste Water					
Connections for all properties to existing waste water collection network	-			Phasing of waste water infrastructure to occur within development and post development period, according to housing growth triggers	Raw sewage to existing treatment plants
Expansion of existing waste water network to local Water Recyling Centre	-				
Possible expansion of existing local Water Recycling Centre	-				
Gas					
Plot connections for all properties to gas distribution network	-			Phasing of gas infrastructure to occur within development and post development period, according to housing growth triggers	Connecting to end users

Infrastructure	Demand Arising from Development Option	Cost per Unit (£)	Total Cost (£)	Phasing	Justification
Utilities - Off-Site Requirements					
Energy					
1 No. 11 kV ring circuit from primary substation to connect to distribution substations.	-	-	£6,490,000	Initial Phase	Provide electrical power capacity for development
Gas					
Extension to exsiting Medium Pressure distribution network	-	-	£4,000,000	Initial Phase	Gas supply to end users
Telecommunications					
Development of access chambers for BT Telecoms network, BT Openreach fibre optic network and private telecoms network throughout development	-	-	£500,000	Initial Phase	ICT and data networks to end users
Transport - On-Site / Off-Site Requirements					
Upgraded pedestrian & cycle networks, including greenways - Up to Plan Period	-	-	£1,100,000	Up to Plan Period	To ensure non-car mode transit is embedded from the outset and to connect with the sub-regional transport connectivity solutions.
Bus service subsidies & other public transport improvements - Straight Line	-	-	£192,000	Up to Plan Period	
New site access junction - Initial Phase	-	-	£4,500,000	Initial Phase	To facilitate vehicular connection to the site
Upgrade existing site access junction - Initial Phase	-	-	£3,000,000	Initial Phase	
Travel plan measures (smarter choices, car clubs, charging points, etc) - Straight Period	-	-	£408,000	Up to Plan Period	
****Total Cost**			**£34,024,684**	(Total Cost at May 2016 Prices but excluding Professional Fees and Design Development and Construction Contingency)	

Table 10: Key Infrastructure Requirements for Weeley

This chapter provides baseline synthesis and key findings associated to Great Bentley.

It concludes with a high level assessment of development capcity and infrastructure requirement.

04 Great Bentley

4.1 Site Overview and Landuse
4.2 Call for Sites
4.3 Surrounding Settlement Hierarchy
4.4 Economic Context
4.5 Utilities
4.6 Landscape Character, Sensitivity and Condition
4.7 Agricultural Land Classifications
4.8 Ecological Designations
4.9 Parks, Recreation and Historic Environment
4.10 Water Cycle
4.11 Movement and Connectivity
4.12 Social Infrastructure
4.13 Development Capacity
4.14 Infrastructure Requirement

4.1 Site Overview and Landuse

The Great Bentley area of investigation is surrounded by a mix of land uses surrounding the railway station. This includes mainly residential and employment uses in the immediate vicinity of the station and agricultural land to the west and south of the station. There are no other villages in the area around Great Bentley. Plough Road is the main road running through Great Bentley, in which a mix of retail, commercial and residential properties line it. Adjacent to the station is Plough Road Business Centre (south), with the village hall and an allotment site adjacent to the west. A Village Green (43 acres), is located centrally within the settlement.

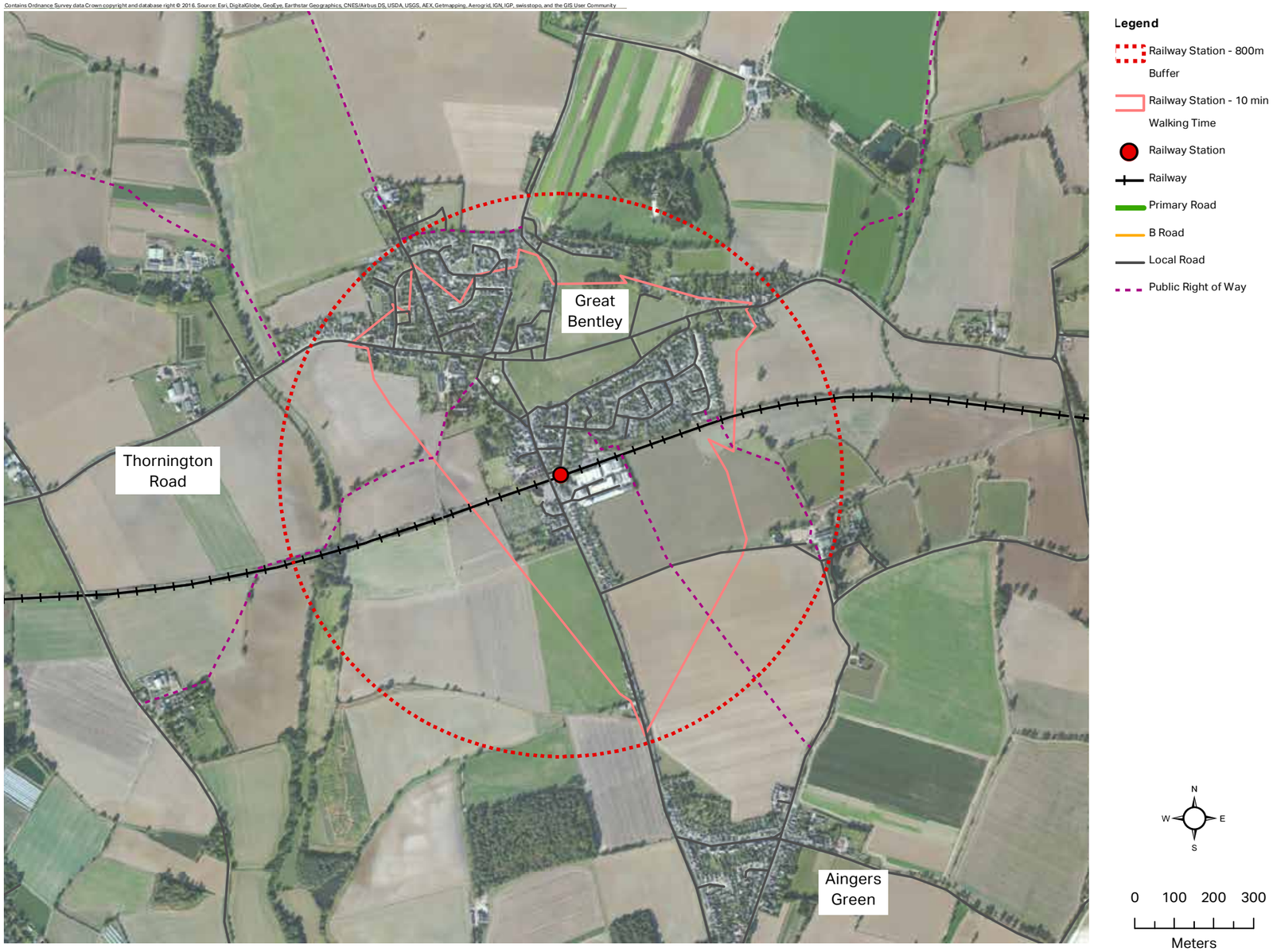


Figure 34: Great Bentley Context

4.2 Call for Sites

Key Findings

- The Call for Sites process for Tendring undertaken to support the development of the new Local Plan has identified 5 sites within the area of interest, in which proposed development area collectively amounts to 18.74ha.
- The individual site details submitted for the Call for Sites are shown below in Table 11. The individual site sizes are relatively small, with most recommended for a development of between 16-20 dwellings per hectare in the Call for Sites.
- Land South of Thorrington Road is identified as a potential broad area for growth to be considered in the Local Plan Review. It has not been promoted however by the landowner or a developer. This site is thus considered with a potential to come forward in the longer term.
- Land North of Moors Close has a potential for 100 dwellings. It has been identified as a potential broad area for growth to be considered in the Local Plan Review. However the site has not been promoted by a landowner or developer.

Figure 35: Great Bentley Landuse Source: Tendring Call for Sites.

Call for Sites Reference	Location	Proposed Use	Site Area (ha)
RS2.2	Land West of Plough Road	Residential	3.1
RS2.3	Land South of Thorrington Road	Residential	7.5
RS2.4	Land at Sturrick's Farm	Residential	4.2
RS2.5	Land North of Moors Close	Residential	5.6
RS2.6	Land South of Weeley	Residential	2.5
Total Site Area: 18.74 ha			

Table 11: Call for Site individual site details.

4.3 Surrounding Settlement Hierarchy

Key Findings

- Great Bentley is identified as a Rural Service Centre. The Local Plan designates it as an opportunity for small-scale growth. The village has a population of just over 2,000, but due to the rural nature of the local authority, this makes it the largest settlement in the immediate vicinity
- There are not many settlements in the immediate vicinity, illustrating the rural nature of Tendring. Frating to the north west and Thorrington to the south west form the two closest small rural settlements.

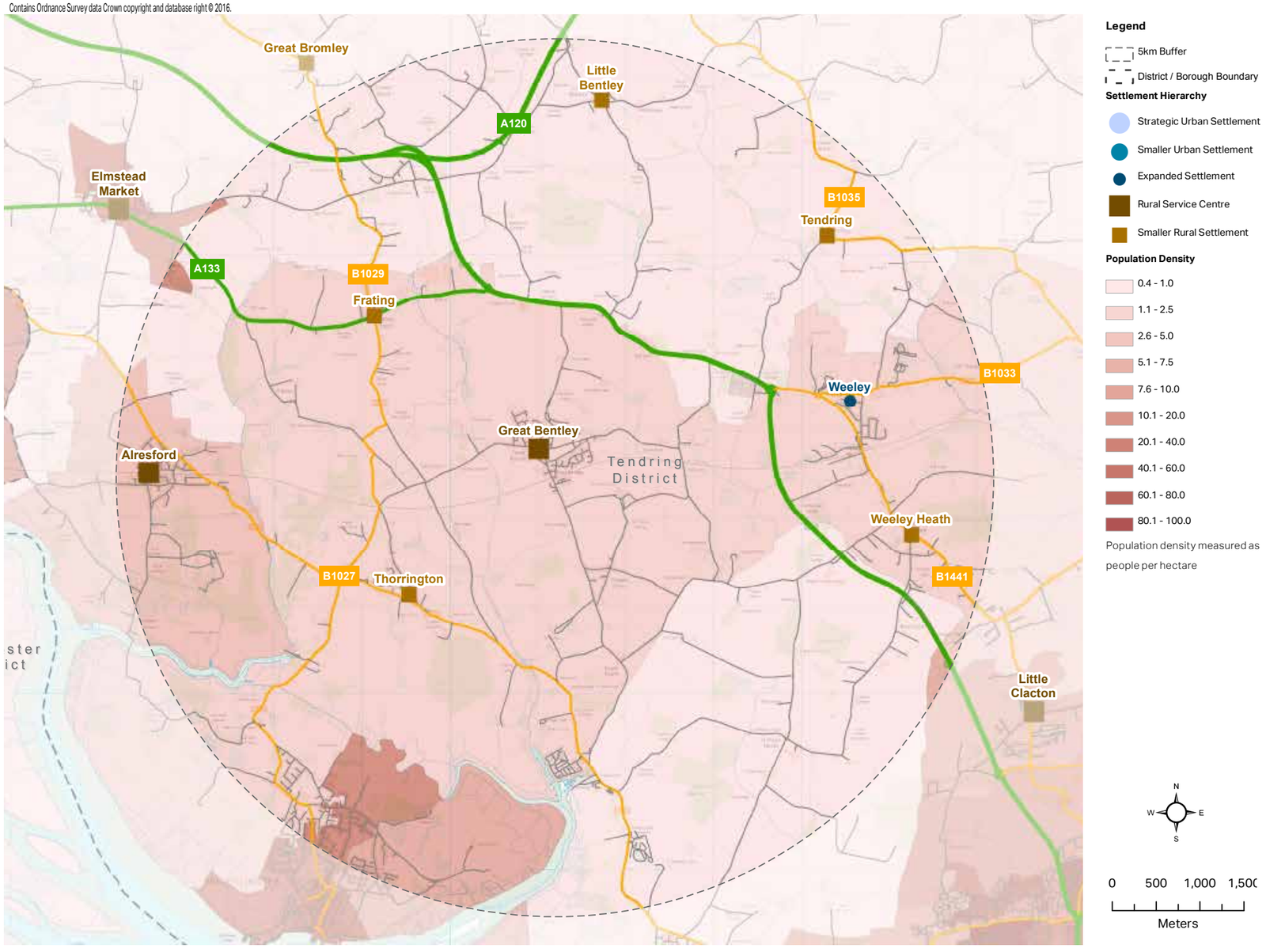


Figure 36: Tendring Settlement Hierarchy. Source: AECOM

4.4 Economic Context

Key Findings

- The area of investigation is centred around Weeley railway station, in which the station is adjacent to Plough Centre - Great Bentley Industrial Estate. This is identified in Local Plan (2007) Policy ER2 as a Principal Business and Industrial Area. In addition, Policy ER1 identifies an extension to the Plough Centre as allocated for employment B1 (b) and (c), B2 and B8.
- Tendring Local Plan (2007) identifies a Local Centre within Great Bentley, just north of the station along Plough Road. This centre comprises a mix of residential, commercial and retail businesses.
- To the West, South and South East it is primarily agricultural land with few residential, commercial or residential properties
- Tendring's Economic Growth Strategy (October 2013) identifies this location as a Tier Two Location as part of the Rural Hinterland, in which:
  - The rural parts of the district are not seen as taking on significant economic growth over the next decade with greater emphasis to improving sector and business support

Sources

- Tendring District Local Plan (2007) & Proposals Map
- Tendring Economic Strategy (October 2013)

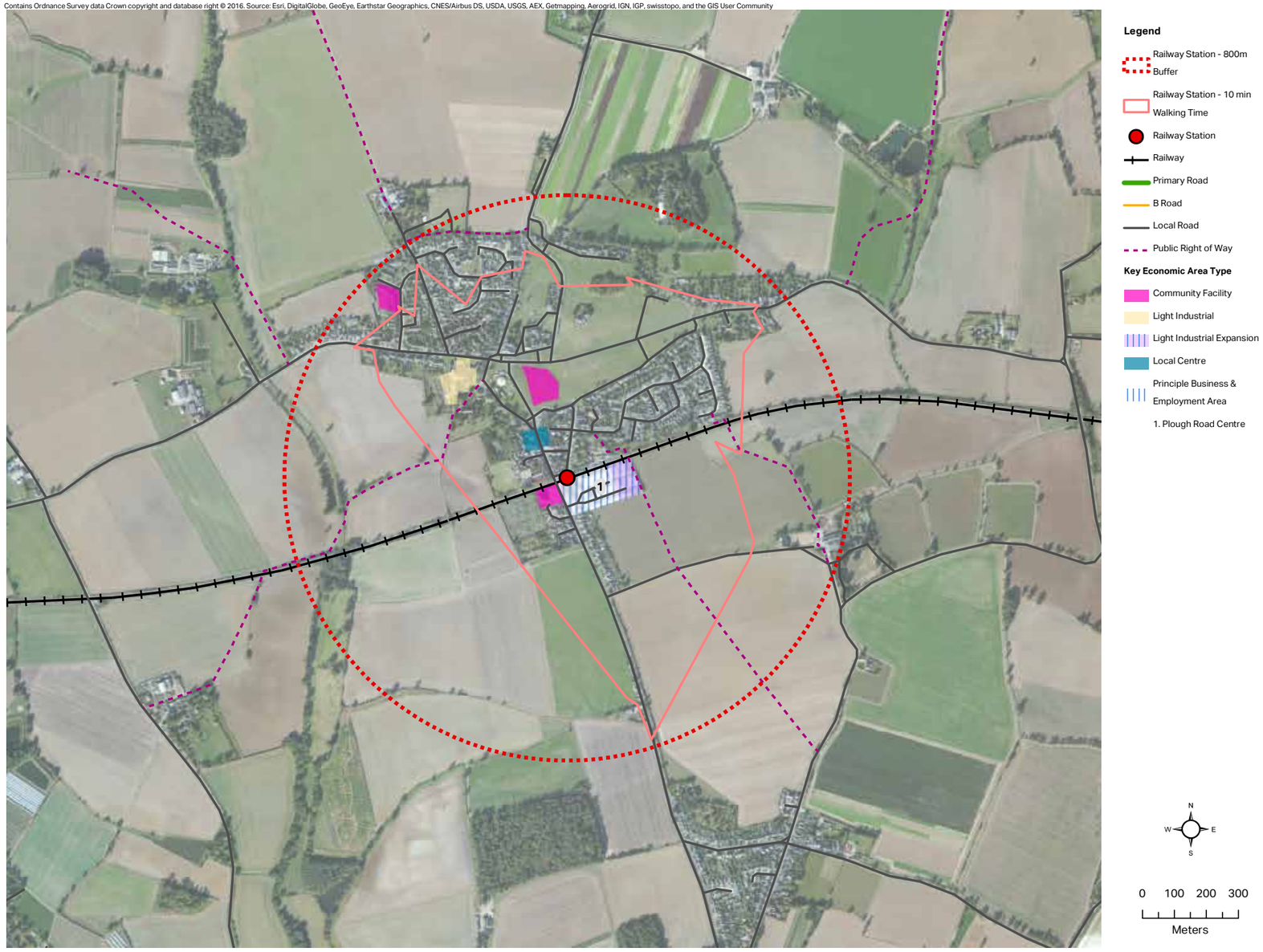


Figure 37: Great Bentley Economic Context. Source: AECOM.

4.5 Utilities

Key Findings

Electricity

- There are two primary substations within a 10 km radius of Great Bentley; Arlesford Primary and Chibson Heath Primary. As both of these have limited capacity for increased demand, a new primary substation may be required in closer proximity to Great Bentley.

Water supply

- Affinity Water forecast that the region will have a supply/demand surplus during their current 25 year planning period; 2015-2040.

Gas

- Intermediate and High pressure networks have adequate capacity.
- Medium and Low pressure networks will require reinforcement and extension to service new developments.

Waste Water

- Great Bentley is within the Wastewater Treatment Works (WwTW) catchment for Thorrington. This is currently assessed as having sufficient volumetric capacity (headroom between the permitted dry weather flow and the demand. In addition, there is headroom within the process capacity, relating to the volume of water a WwTW is capable of treating to the required quality standards set by the discharge permit. Upgrades to the wastewater collection infrastructure between Great Bentley and the Thorrington WwTW will be needed if the current capacity is insufficient for the proposed additional demand. Similarly, upgrades to the infrastructure discharging the treated effluent from Thorrington WwTW may be required.

Telecommunications

- BT Openreach has made a commitment to supply high speed fibre optic broadband to all development over 30 dwellings at no cost to the developer.

Sources

- Affinity Water
- BT Openreach (October 2016)
- UKPN Distributed Generation map
- National Grid Gas (September 2014)

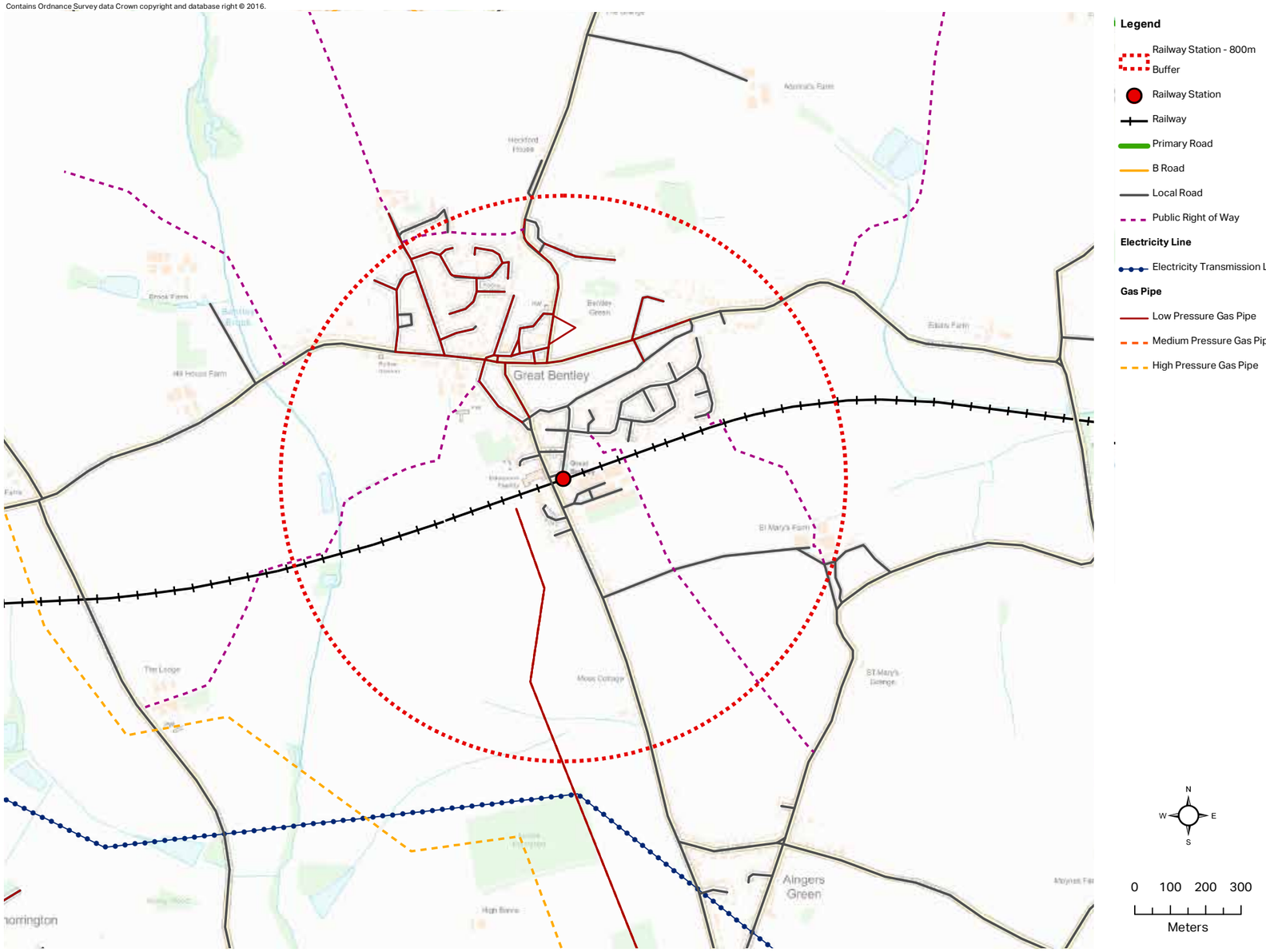


Figure 38: Great Bentley Utilities. Source: Affinity Water / National Grid

4.6 Landscape Character, Sensitivity and Condition

Key Findings

- The existing topography is broadly defined by a plateau of land between two river valleys, Bentley Brook to the west and the Weeley Brook to the east.
- The Village of Great Bentley is situated to the north of the train station with a small amount of development to the south of the railway line. It comprises a mixture of housing stock, with a range of ages interspersed with a number of commercial and retail buildings centred around the train station.
- Forming part of the St Osyth and Great Bentley Heaths Character Area it is described as a highly productive open plateau of arable fields divided by low, gappy hedgerows with occasional hedgerow oaks. Ancient woodlands form a backdrop to views and are typically sweet chestnut coppice with oak standards.
- The settlement pattern in the wider study area comprises a traditional rural settlement pattern of scattered farmsteads, hamlets and villages. The villages are traditionally focussed around a village green, heath or common but including more recent linear development.
- The scattered farms and villages are connected by a network of narrow lanes.
- Forming part of the Northern Thames Basin National Character Area, the geology of the area is largely London Clay overlain by loamy soils.

Sources

- Tendring Landscape Character Area Assessment Volume 2

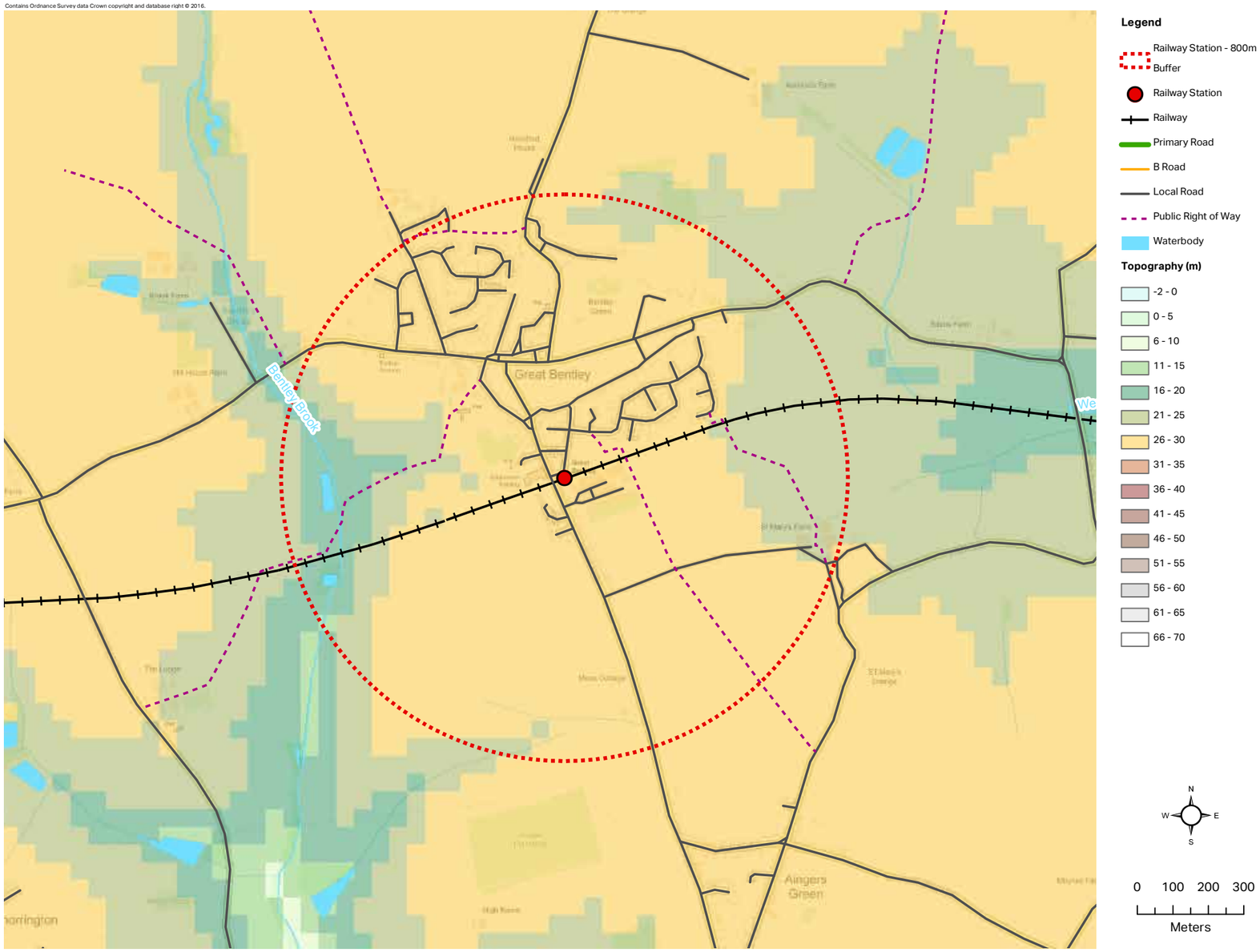


Figure 39: Great Bentley Landscape and Topography. Source: Natural England / Environment Agency

4.7 Agricultural Land Classifications

Key Findings

- The quality of agricultural land is predominantly very good (Grade 2) or good to moderate (Grade 3) within the 800m buffer around the railway station.
- Similarly, outside the 800m buffer, the agricultural land surrounding Great Bentley is predominantly either very good (Grade 2) or good to moderate (Grade 3), with some excellent (Grade 1) agricultural soil.

Sources

- Natural England, National Character Areas - GIS Digital Boundary

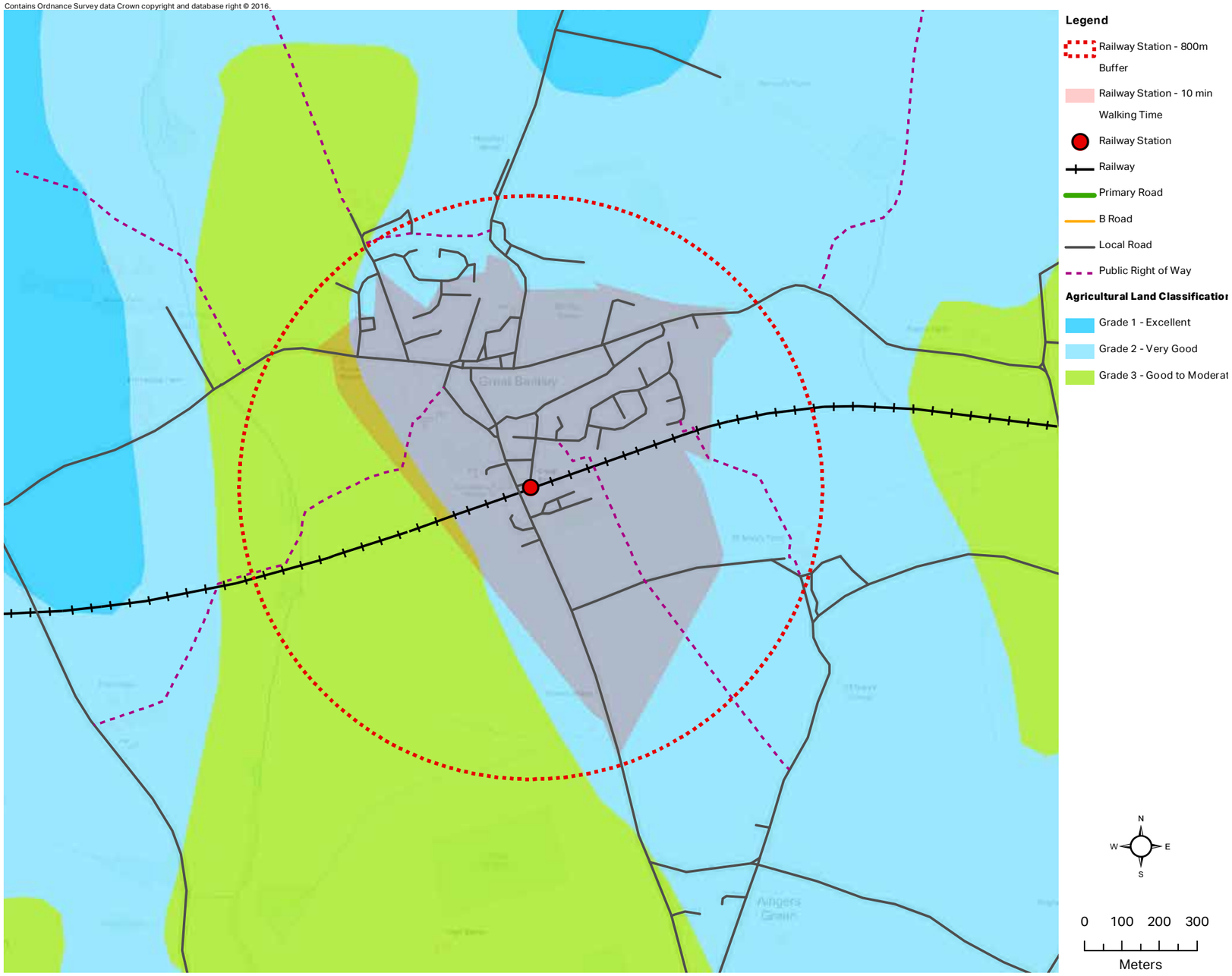


Figure 40: Great Bentley Agricultural Land Classifications. Source: Natural England.

4.8 Ecological Designations

Key Findings

- The area around the site study area has a rich and varied ecological baseline with a mosaic of habitats including urban gardens and parks, arable fields, semi-improved grassland and small areas of woodland on the periphery of the study area.
- Of particular importance is the internationally recognised and protected Colne Valley, located to the south west of Great Bentley. It is a RAMSAR site, SAC, SPA and SSSI and although not within the immediate site study area could be affected by increased pressure from visitor numbers as a result of new development. This could therefore be subject to an Appropriate Assessment and create the need for Suitable Alternative Natural Greenspace (SANGs) to be provided.
- There are a number of Local Wildlife Sites (LoWS) both in and around the site study area. These are designated for a number of habitats including woodland, brooks, churchyards and road side verges.
- The LoWS should be retained within any new development and green linkages made between them and to existing habitat located on the periphery of the site.

Sources

- Natural England Designated Sites Citations
- Essex Wildlife Trust for LoWS

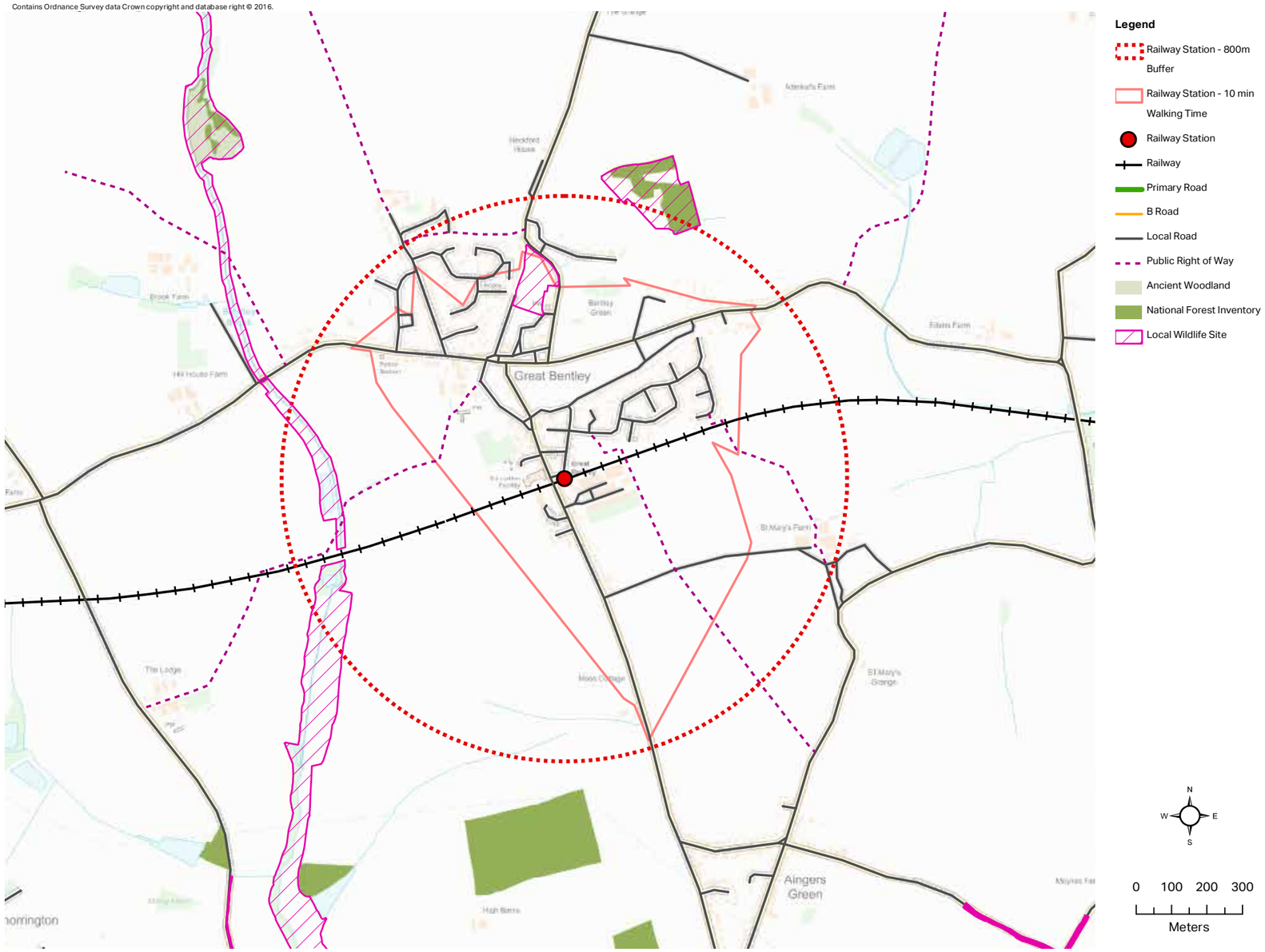


Figure 41: Great Bentley Ecological Designations. Source: Natural England / Environment Agency

4.9 Parks, Recreation and Historic Environment

Key Findings

- There are several Grade II listed buildings within the area of investigation. There is a noticeable cluster to the north of Great Bentley rail station along Plough Road and Station Road.
- There is also a Grade I listed Church along Plough Road, which dates back to the 12th century.
- Outside of this cluster of historic buildings in the centre of Great Bentley, there are relatively few historic features, in particular to the south.
- The landscape provides a network of Public Rights of Way offering access to the countryside throughout the site.

Sources

- OS Terrain 50
- Natural England GIS Digital Boundary Datasets
- Historic England

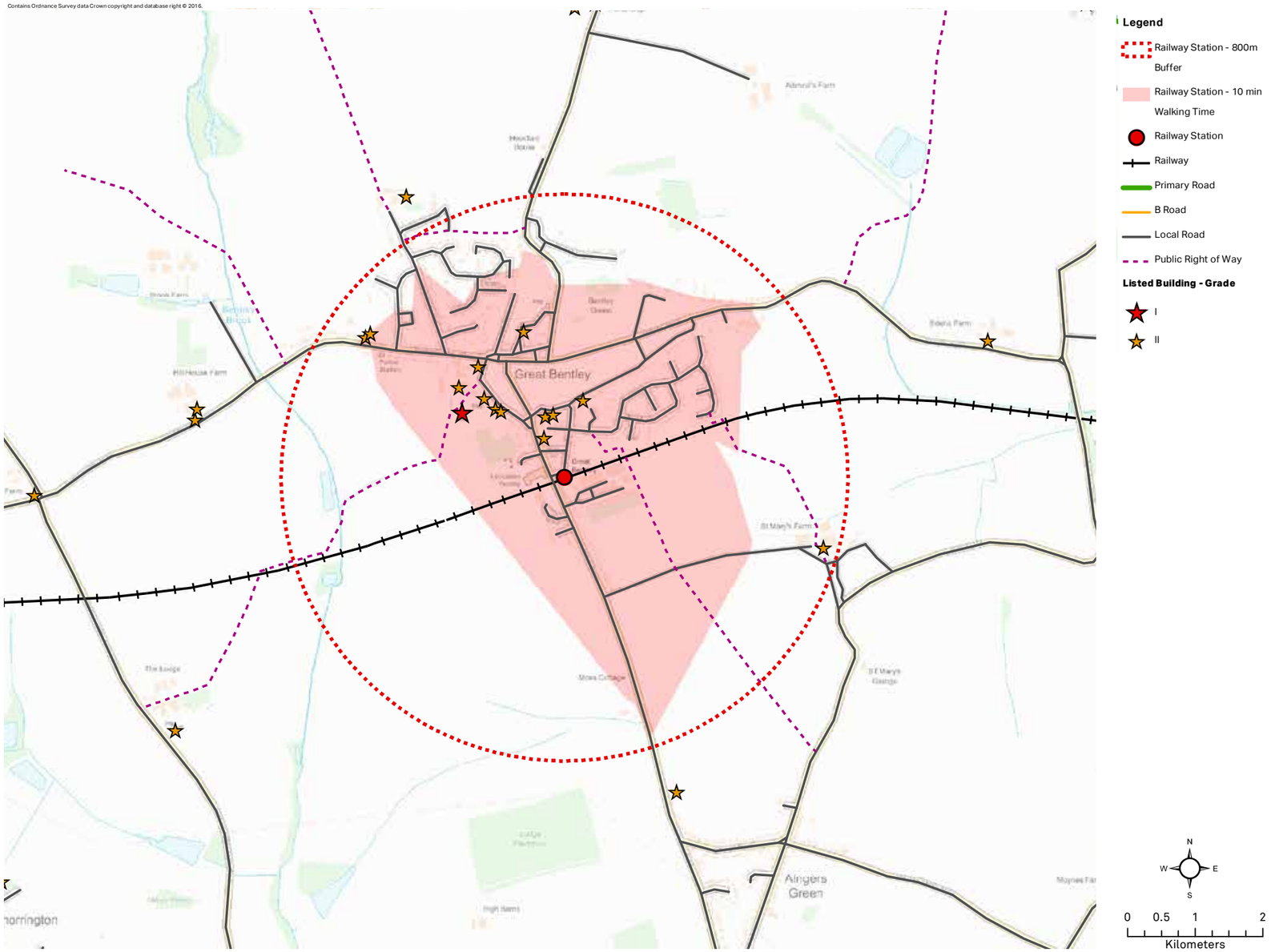


Figure 42: Great Bentley Recreational and Heritage Assets. Source: English Heritage / Natural England

4.10 Water Cycle

Key Findings

- Weeley Brook starts to the south-east of the area and flows eastwards into the Holland Brook. These are both classed as Main Rivers. Holland Brook then flows in a south-easterly direction into the North Sea at Holland-on-Sea. To the west of the village, the Bentley Brook flows. This has a source to the north of Great Bentley and flows southwards towards the tidal Flag Creek which then joins the Colne Estuary. Consequently the eastern half of the village is in the Holland Brook catchment and the western half of village is in the Bentley Brook catchment.
- The terrain is relatively flat in the surrounding area and is generally of pastoral or arable land use with small pockets of woodland.
- The Holland Brook is classed as a heavily modified watercourse with moderate ecological status and good chemical status. The Bentley Brook has no WFD classification data available.
- Land within the study area drains to a priority water which is considered to 'probably be at risk' from agricultural diffuse pollution sources. There is a conservation area covering the village green and surrounding area north of the railway line. The eastern half of the study area is within a surface water Nitrate Vulnerable Zone and the entire study area is within a Groundwater Nitrate Vulnerable Zone. There is a groundwater abstraction license situated within the study area, although outside the 10min walking time zone. This has a groundwater source protection zone associated with it. Together the Protection Zones 1, 2 & 3 cover the majority of the study area. There are also a number of surface water abstraction licenses along the Bentley Brook within or close to the study area.
- Bentley Brook has a very limited fluvial flood extent along the watercourse within the study area classed as Flood Zone 3. Surface water flooding is generally limited to highways with a few areas at risk along the natural drainage paths in the topography. There is a significant area at low to medium risk of surface water flooding on the edge of the study area to the north / north-east. The study area is not considered to be at high risk of groundwater flooding.
- Potable water is supplied by Affinity Water and falls within their East region, within the Brett water resource zone. This zone usually takes 100% of its supply from groundwater sources, although it can also import water from the Ardleigh reservoir, which is jointly owned with Anglian Water. It is considered to be a 'serious water stress' area, however the Brett water resource zone is predicted to remain in surplus at least up to 2040. This is based on average growth trends and there is no specific information on the proposed development area. There are no major intervention options being assessed and Affinity Water's strategy in the area concentrates on improving water efficiency, metering and leakage prevention.
- Great Bentley is within the Wastewater Treatment Works (WwTW) catchment for Thorrington. This is currently assessed as having sufficient volumetric capacity (headroom between the permitted dry weather flow and the demand. In addition, there is headroom within the process capacity, relating to the volume of water a WwTW is capable of treating to the required quality standards set by the discharge permit.

Sources

- Environment Agency Catchment Data Explorer, Environment Agency website (27th February 2017)
- Environment Agency WIYBY online maps, Environment Agency website (27th February 2017)
- Environment Agency Long Term Flood Risk Information, Gov.uk website (27th February 2017)
- Final Water Resource Management Plan 2015-2020, Affinity Water (June 2014)
- Haven Gateway Water Cycle Study Stage 2 Report, Haven Gateway Partnership (November 2009)
- Level 1 Strategic Flood Risk Assessment Final Report, URS (May 2015)
- Waste Water Treatment Works Needs Assessment in Essex and Southend-on-Sea Final Report, URS (June 2014)

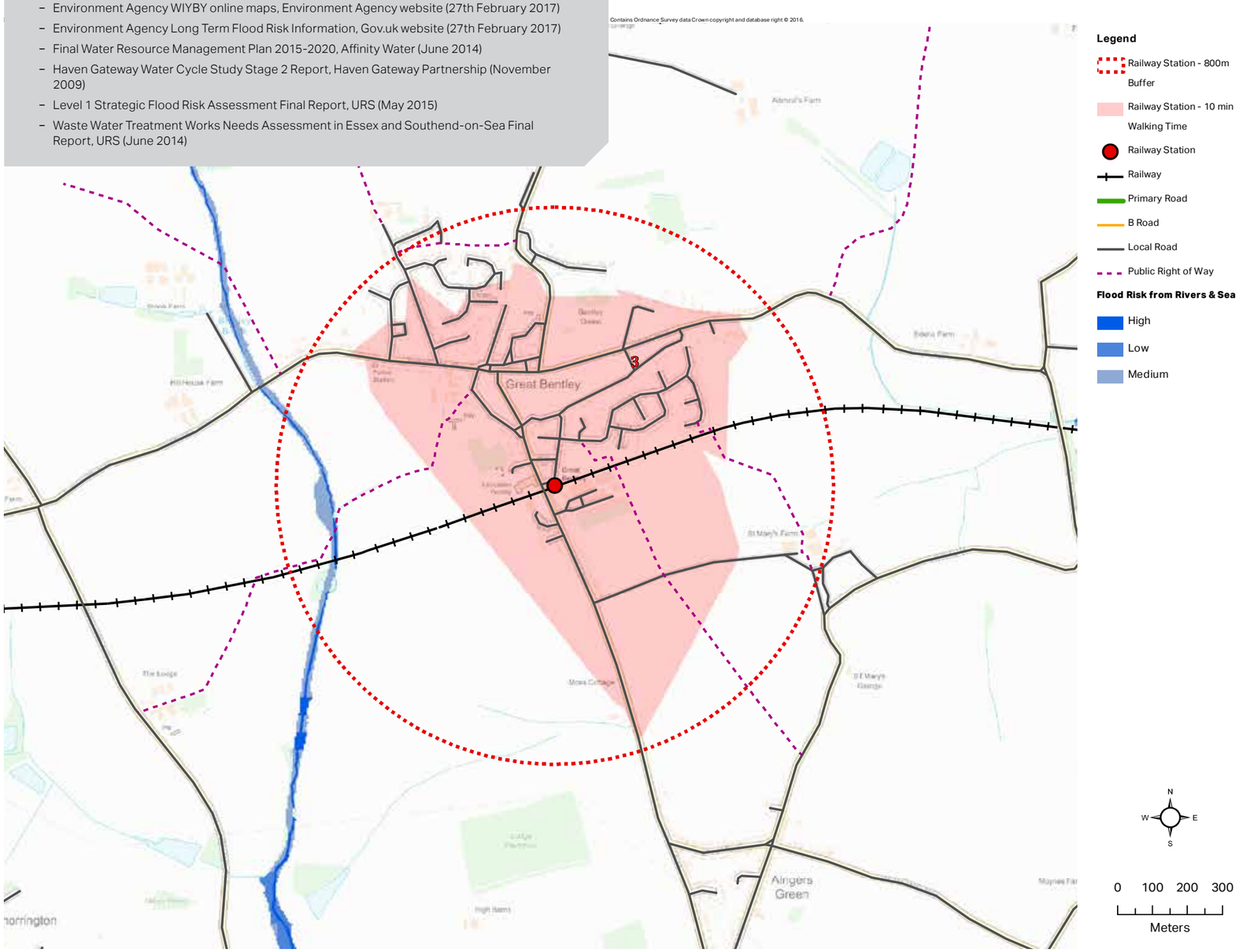


Figure 43: Great Bentley Ecological Designations. Source: Natural England / Environment Agency

4.11 Movement and Connectivity

Key Findings

Travel Patterns

- 2011 Census Data – mode share data for the Lower Super Output Areas (LSOAs) in which the settlement of Great Bentley sits demonstrates a strong reliance on individual motorised modes of transport with 74% of all work related trips undertaken by either car or motorbike. Despite the presence of a rail station, public transport trips only represent 9% of all work related trips. Walking and Cycling work related trips account for just 9%.
- The majority of journeys to work are between 5 and 20km (45%) with journeys under 5km representing 15% and journeys over 20km representing 17%. This would suggest that a large proportion of trips would require a motorised form of transport based on current home-work trips.
- Regarding travel patterns, Tendring District is characterised by a substantial level of self-containment with 60% of people living and working in Tendring. The main movements to work outside of Tendring are towards Colchester, with 20% of Tendring's working population commuting to this neighbouring authority.

Road

- Great Bentley is served by a network of roads, which include:
  - Thorrington Road / Weeley Road running east-west;
  - Plough Road running north-south; and
  - Heckford's Road running north-south towards the A133 and Great Bentley respectively.
- Located approximately 1,5km north of Great Bentley, the A133 is the closest strategic road towards Colchester westbound and Clacton eastbound.
- North of Great Bentley, the Tendring local plan modelling identifies the A133 Colchester Road/ Heckford's Road and A133 Colchester Road/A133 Main Road junctions as overcapacity in its full development scenario (2032). This includes significant development on sites at East Colchester, Hare Green, Weeley and Clacton-on-Sea. However, it is important to note that the Local Plan modelling does not assume major development in or surrounding Great Bentley in its model reporting.

Key Findings

Rail

- The Sunshine Coast line, an electrified double track branch line from the Great Eastern Main Line connecting Colchester (mainline and town stations) with Clacton-on-Sea, serves Great Bentley mainline station.
- During a typical weekday AM peak (6am-8am), Great Bentley station is served by up to 2 trains per hour in both directions thanks to train services departing from Colchester and Clacton-on-Sea towards Great Bentley. From 8am to 9am, the number of services reduces to 1 train per hour, same as during the rest of the day.
- During a typical weekday AM peak (6am-8am) Great Bentley station is served by 1 train per hour towards Clacton-on-Sea. The number of services towards Clacton-on-Sea stays consistent throughout the day with an approximate journey time of 19 minutes
- Minimum journey times to Colchester from Great Bentley are currently18 minutes on a multistop service calling at Alresford, Wivenhoe and Hythe. A journey to London Liverpool Street typically takes approximately 1 hour and 30 minutes.
- The station is located approximately 700m south of the main existing urban centre, which would likely mean that many existing residents would require a complimentary (first leg) mode of transport to access the station.
- It is understood that the Sunshine Coast line currently operates within capacity. The Anglia Route study (March 2016) identifies improvements on the Sunshine Coast line to 4 trains per hour by 2043 (one every 15minutes) including at Great Bentley station. However, movements from Great Bentley beyond Colchester on the Great Eastern Main Line are likely to be constrained by the lack of capacity on this line.

Bus

- The area is served by route 77/79 operating a combined total of 1 service every hour between Colchester Town Centre, Great Bentley, and Frinton-on-Sea. The bus stops for these services are located along Thorrington Road and Plough Road.

Key Findings

Active Modes

- No dedicated walking and cycling route are located in the area. The nearest route is National Route 51 identified on Harwich Road, some 5km from Great Bentley. The route passes through Oxfordshire, Buckinghamshire, Bedfordshire, Cambridgeshire, Suffolk and Essex. The section between Harwich and Colchester forms part of the North Sea Cycle Route, also known as EuroVelo 12.
- Despite the Rail station being located at walking distance of the main urban settlement, no dedicated route for active modes is identified linking this station both locally or to the wider area.
- The area is characterised by a network of quiet country C-roads which are potentially suitable for cycling however they are not currently designed as such.

Sources

- North Essex Garden Communities Baseline Compendium, June 2016
- Tendring Local Plan Modelling Support, December 2015
- Tendring Infrastructure Delivery Plan, Tendring Council, 2013
- Anglia Route Study, Network Rail, March 2016
- The scope for high-quality rail services to support sustainable development, Jonathan Tyler (Passenger Transport Networks, York) – a report for CAUSE – Campaign Against Urban Sprawl in Essex, 2015
- Google Maps, consulted February 2016

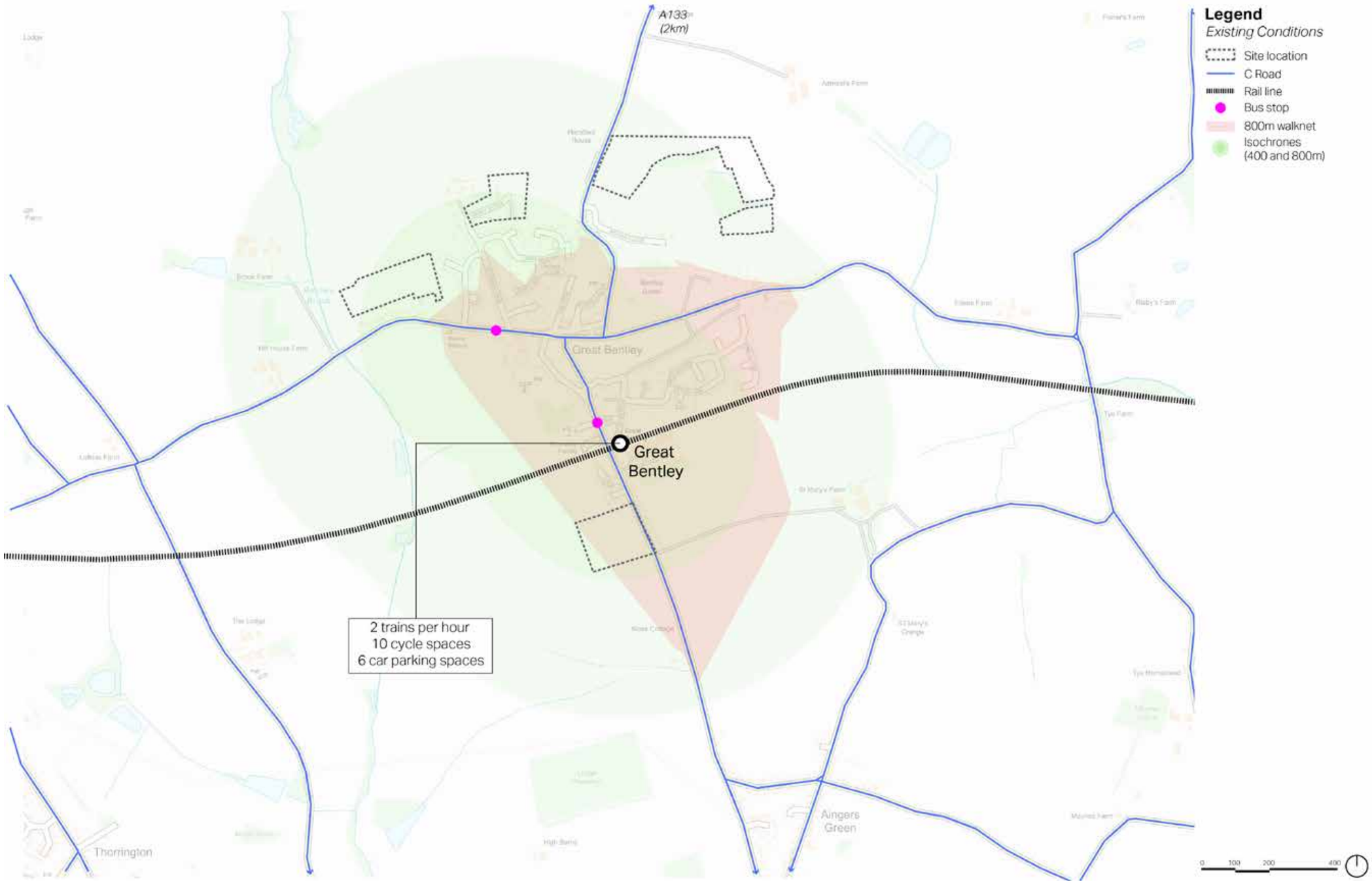


Figure 44: Great Bentley Transport Existing Conditions

Opportunities and Constraints

Travel Patterns

- Opportunity to plan towards a more sustainable modal split for this area and others in Tendring will allow mitigation of the impact on the network by not reproducing the current high level of car usage and ownership.
- Existing modal splits need to be challenged and reflect transit-oriented development (TOD), one of the main Garden Communities principles. For that, opportunities to encourage sustainable travel in and around Great Bentley should be sought, including improvements to walking and cycling infrastructure and public transport provision.
- Understandably in the context of this area, greater walk and cycle distances are potentially viable, such as up to 2.5km for cycling to a station. The presence of a rail station should be an asset to capitalise on for the future development of Great Bentley to improve sustainable movements to main employment areas and reduce the need for car usage and ownership.
- Given the rural location of the area under investigation, innovative car sharing / car hire schemes should be explored but at this time are unlikely to be particularly viable to operators unless a critical mass can be assumed through large scale development that is linked together.
- Given the current share of work trips of less than 5km (15%), this represents a potential target for short journeys to be undertaken via walking or cycling if the infrastructure requirements are met, such as safe and secure cycling routes and cycle parking to encourage those trips.

Road

- The Local Plan modelling does not include development sites identified around Great Bentley nor around other areas under investigation as part of CAUSE scope. This would suggest that even without development in Great Bentley the highway network is constrained and will require mitigation measures to ensure development can be accommodated. This would require further modelling assessment in future to ensure the impact of the CAUSE proposal is adequately assessed and mitigated measures put forward.
- Access to the various parcels are constrained by the existing settlement pattern and sub-standard road network, which currently services a rural settlement. There is potential to take access from the following roads to serve future development parcels:
  - Southern section of Plough Road, which currently includes a footway on the eastern side of the carriageway toward the station and settlement centre. Upgrades likely required to provide for improved pedestrian footway provision and cycle lane (either on road of off-road)
  - Extension to Sturrick Lane to form a continuation of the current residential road typology. Loss of hedgerow, stream as well as the general character will occur. Any new road would impact the existing pedestrian right of way / trail that exists.
  - Thorrington Road – new junction arrangement close to entrance and 30mph speed limit signage. Any new road would impact the existing pedestrian right of way / trail that exists.
  - Heckfords Road. This would require the addition of footways and cycle provision to facilitate development off this route. This would also result in loss of character and hedgerows, and is unlikely to support large scale development.
  - The location of the rail line impacts walking and cycling connectivity between the sites north and south and may require interventions to improve connectivity.
  - New points of access on Plough Road, Sturrick Road, Heckfords Road and Thorrington Road.
  - Upgrades to local junctions such as Thorrington Road/ Heckfords Road and Heckfords Road/ Plough Road to accommodate increases in traffic

Rail

- The evidence points to a reliance on car travel, and upgrades to the Sunshine Coast line would be of great benefit.
- The Anglia Route study (March 2016) identifies improvements on the Sunshine Coast line to four trains per hour by 2043 whilst a possible tram-train solution should be explored to enable possibly even greater frequencies, quality of service and desirability for passengers to use and realistically give up their car to make their journey to work.
- Additional capacity on the sunshine coast line has been identified[1] in this context, CAUSE supports the development of a tram-train service on the Sunshine Coast line with opportunities to link different sites with Colchester at a greater frequency and allows street running trains to serve Colchester town centre for greater public transport integration.
- Opportunities to develop a walking/cycling network integrated with the station is essential to increase public transport mode share in Great Bentley and make rail trips more attractive to the main employment areas in Tendring and Colchester.

1 The scope for high-quality rail services to support sustainable development, Jonathan Tyler (Passenger Transport Networks, York) – a report for CAUSE – Campaign Against Urban Sprawl in Essex, 2015

Opportunities and Constraints

Bus

- In addition to rail improvements, opportunities exist to look at a strategic bus network connecting development sites identified under this scope depending on the critical mass achieved over all these areas.
- Local bus services require greater frequencies to provide an attractive 'second tier' of public transport to support the rail station and provide a 1st leg trip to the station of residents of new settlement, which lie outside of the 800m active modes catchment.

Active Modes

- The location of the station in relation to the main urban settlement and the lack of clear, safe, and secure walking and cycling routes towards the station is currently a constraint for people to consider rail as an attractive alternative to the car.
- Direct routes, linking the existing settlement and new development sites would be required.
- Limiting car parking at the station would also ensure that 1st leg trips by car can be made less attractive compared other 1st leg trips such as bus or active modes trips whilst safe and secure cycle parking and infrastructure should be provided at the station.
- Given the size of sites under investigation in Great Bentley, opportunities exist to develop a consistent network of greenways and quietways across the existing and extending urban settlement providing key connections to the station and other main local destinations.
- Landownership may be problematic in ensuring the small developments are linked appropriately.
- In a number of cases, the addition of formal cycle lanes may prove difficult given the nature of the road network (available space, speeds, role). Formal Cycle lanes are one of the main solutions to ensuring that residents will take up active modes for both short and longer distance movements.
  - Improved footway provision as a minimum on Plough Road, Sturrick Road, Heckfords Road and Thorrington Road
  - Improved cycle parking provision at the station.
  - Off or on-road cycle lanes on Plough Road, Sturrick Road, Heckfords Road and Thorrington Road, where possible

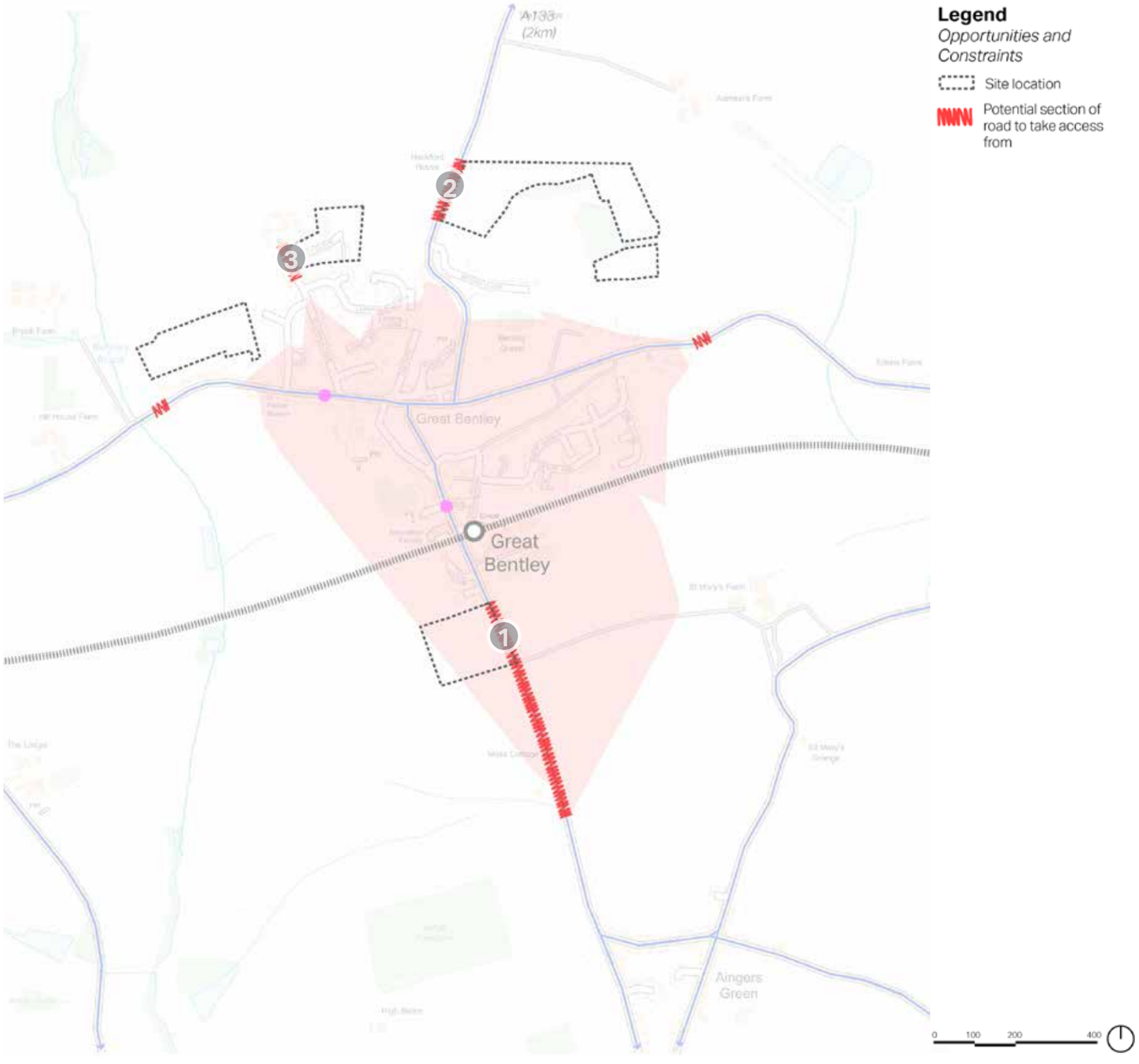


Figure 45: Great Bentley Transport Opportunities and Constraints

4.12 Social Infrastructure - Education

Essex County Council has developed a Commissioning School Places in Essex 2015-2020, published February 2016 and Meeting the Demand for School Places in Essex - 10 year Plan 2016-2025 (2016). Both documents provide information related to future pupil numbers and where further expansion will be required to meet housing demands.

The 5km buffer of Great Bentley is entirely within Tendring Local Authority. As a result, the following analysis determines the current situation and committed infrastructure in the vicinity to Great Bentley and at a district level and any future issues development may cause.

Key Findings - Primary

Current Situation within 5km Buffer

4 Primary Schools

25 Surplus Places

Committed Infrastructure within 5km Buffer

- There are no planned primary school infrastructure within the area of investigation. However there are two potential primary school projects proposed in the wider 5km area, both of which are uncommitted.

FE	Location	Delivery Commitment	Mechanism
unknown	Engaines - Little Clacton	Uncommitted	-
unknown	St Andrews CE	Uncommitted	
1FE	Brightlingsea Infant	Committed	2016

Table 12: Committed Primary Infrastructure. Source: Meeting the Demand for School Places in Essex - 10 Year Plan 2016-2025

Future and Wider Issues

- The Commissioning Plan forecasts an increase of 190 primary school pupils for Tendring between 2015-2020. With the additional pupils, this translates to a forecast surplus of 358 places across Tendring.
- Potential growth at Great Bentley would likely create a demand for primary school places, therefore proposals coming forward would need to consider the delivery of future education infrastructure provision.
- Essex County Council are seeking contributions from housing developers towards the cost of providing the additional places required for the pupils generated by new housing.

Key Findings - Secondary

Current Situation within 5km Buffer

1 Secondary Schools

131 Surplus Places

Committed Infrastructure within 5km Buffer

- There are no secondary y schools committed for Tendring, instead it appears there will be school closures with the closing of Tendring Enterprise Studio School. The closure of the school will reduce the number of places available for Years 10, 11, 12 and 13 in Tendring area.

Future and Wider Issues

- The Commissioning Plan forecasts an increase of 182 secondary school pupils for Tendring between 2015-2020. With the additional secondary pupils, this translates to a forecast surplus of 346 places across Tendring to 2020.
- Pupil numbers across the remaining secondary schools are forecast to remain relatively stable over the next 5 years. While new housing will be monitored, it appears that there are sufficient school places to meet increase demand.
- Essex County Council are seeking contributions from housing developers towards the cost of providing the additional places required for the pupils generated by new housing.

Key Findings - Further Education

Current Situation within 5km Buffer

0 Further Education

Committed Infrastructure within 5km Buffer

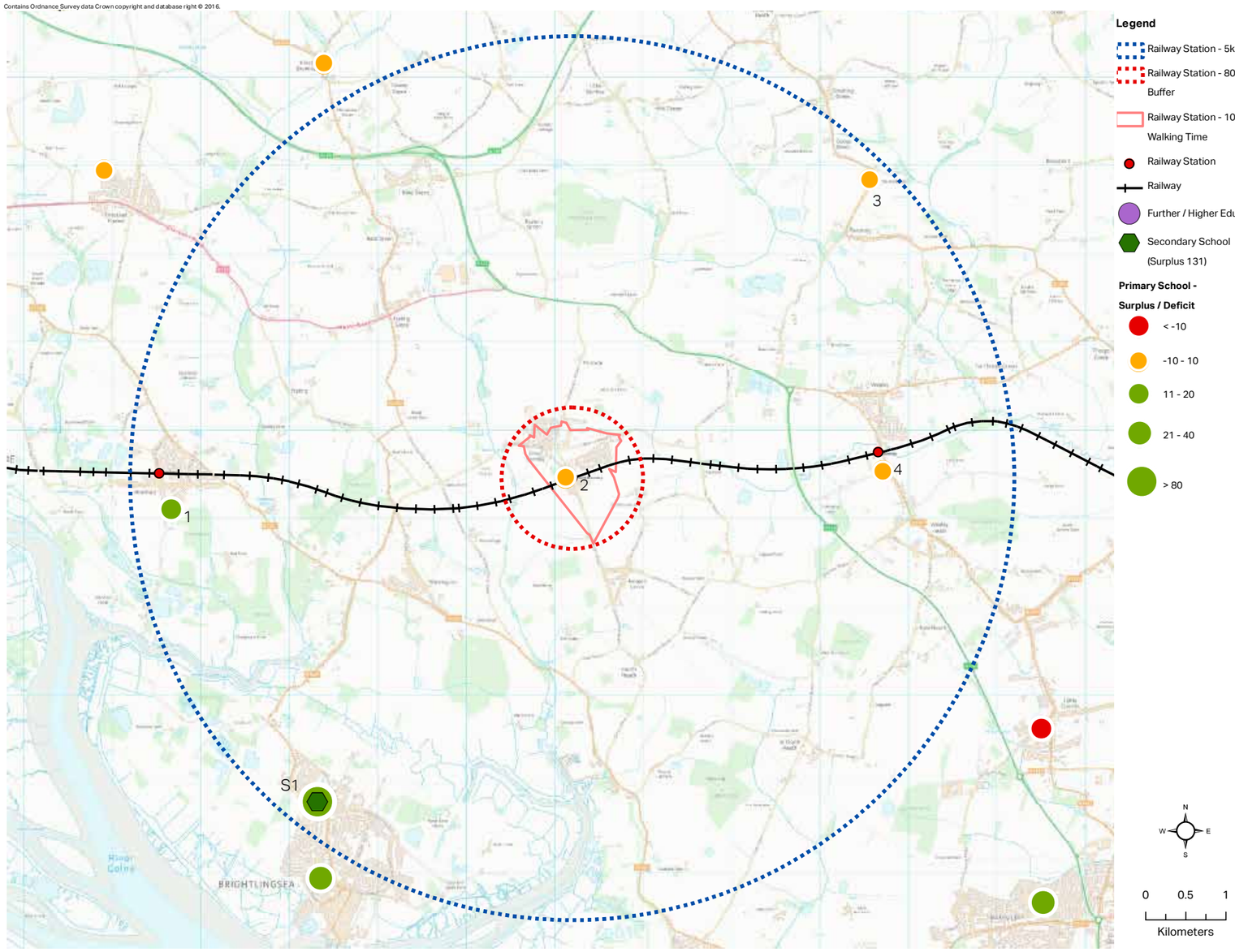
- There is no identified Further Education infrastructure identified within the 5km radius of the area of investigation

Future and Wider Issues

- The minimum age at which young people in England can leave learning increased in 2013, requiring young people to continue education or training to the end of the academic year in which they turn 17. This has been followed with a policy beginning in 2015 where all young people must remain in learning to their 18th birthday, This is referred to as Raising the Participation Age (RPA).
- This puts more pressure on the local authorities to ensure and provide options for young people to learn the skills required. Local authorities have the duty to:
  - Promote effective participation in education or training to young people;
  - Ensure that sufficient places are available to meet the reasonable needs of all young people and encourage them to participate; and
  - Make available to young people support that will allow them to participate in education or training.

Sources

- Department of Education, Edubase Portal (May 2016)
- Commissioning School Places in Essex 2015-2020



Primary School Capacity Analysis

Primary School Name	Capacity	Surplus / Deficit	Label
Alresford Primary School	120	12	1
Great Bentley Primary School	210	4	2
Tendring Primary School	140	1	3
Weeley St Andrew's CofE Primary School	218	8	4
TOTAL	**1,052**	**13**	

Secondary School Capacity Analysis

Secondary School Name	Capacity	Surplus / Deficit	Label
Colne Community School and College	1,488	131	S1
TOTAL	**1,488**	**131**	

Figure 46: Great Bentley Edcuation Context. Source: Edubase (2016)

Social Infrastructure - Health

Key Findings

Current Situation within 5km Buffer (May 2016)

0
GP
Practices

0
Hospitals

GPs

- There are 0 GP practices identified within 5km of Great Bentley. Further development will put increased pressure on existing capacity.

Hospitals

- There are 0 hospitals identified within 5km of the area of investigation.

Key Findings

Committed Infrastructure within 5km Buffer

- Following a review of the Tendring Infrastructure Delivery Plan (2013), there are no identified healthcare infrastructure projects within a 5km radius of the area of investigation

Key Findings

Future and Wider Issues

- The Area of Investigation sits within North Essex Clinical Commissioning Group, which is an NHS organisation set up by the Health and Social Care Act 2012 to organise the delivery of NHS services in England.
- The CCGs receives funding and are commissioned by NHS England to provide primary care services (including GPs), in turn the CCGs commission most services in their areas to trusts that include hospital and community healthcare.

North Essex Clinical Commissioning Group

- North Essex CCG 5-year plan will look to put people at the centre by commissioning around the needs of people, rather than the service.
- It is projected that demand for older people's services over the next 5-10 years will increase by roughly 20,000 people (those over the age of 55).
- In addition, the health and social care system faces considerable financial challenges over the coming years. The CCG will look to commission integrated health and social care services, promote prevention and early intervention, and promoting self-care to begin diminishing the burden.

Sources

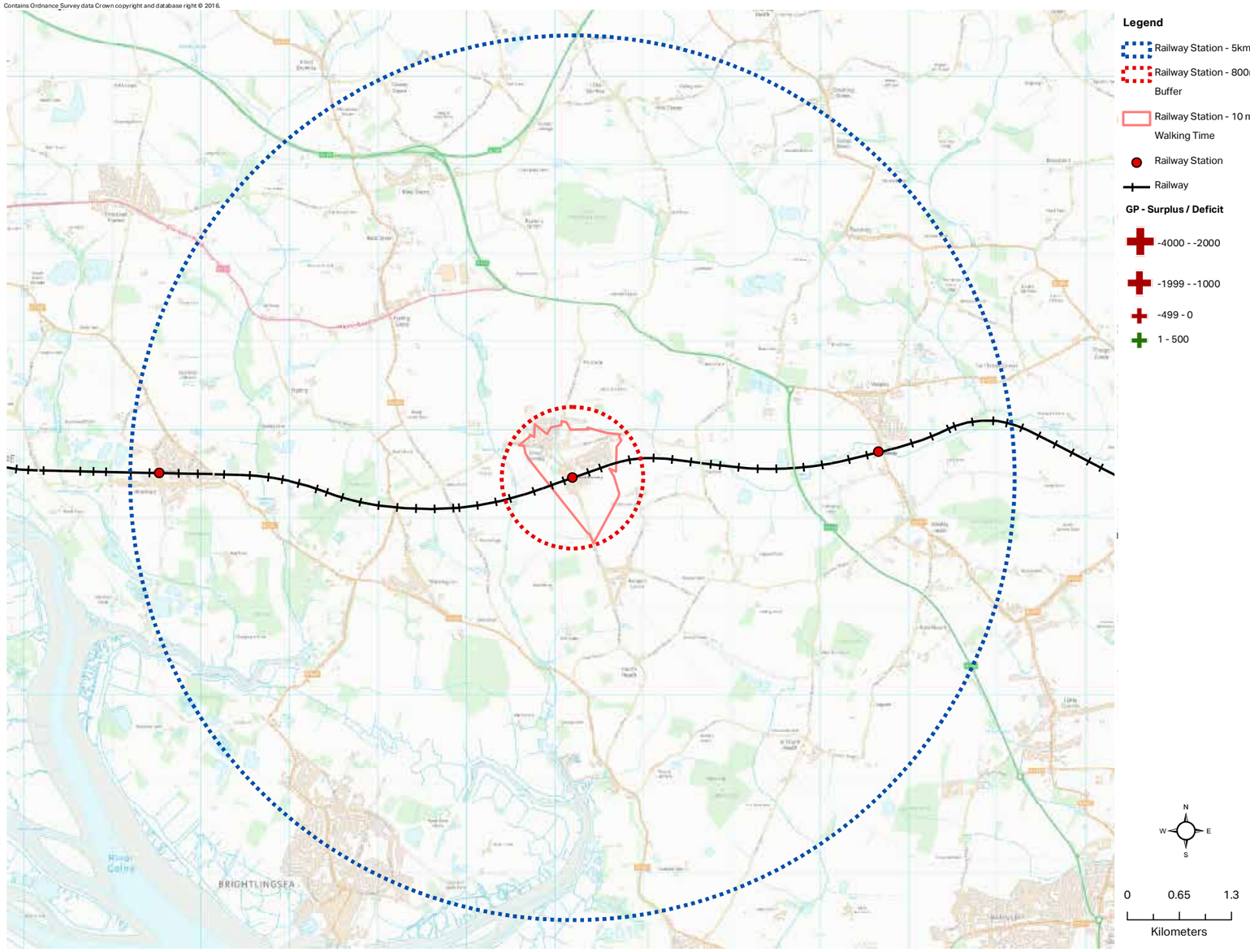
- NHS England, MyNHS Portal datasets (May 2016)
- Health and Social Care Information Centre (HSCIC) dataset (January 2016)

Sources

- Tendring Infrastructure Delivery Plan (2013)

Sources

- North Essex Clinical Commissioning Group



Legend

- Railway Station - 5km Buffer
- Railway Station - 800m Buffer
- Railway Station - 10 min Walking Time
- Railway Station
- Railway

GP - Surplus / Deficit

- -4000 - -2000
- -1999 - -1000
- -499 - 0
- 1 - 500

N
W E
S

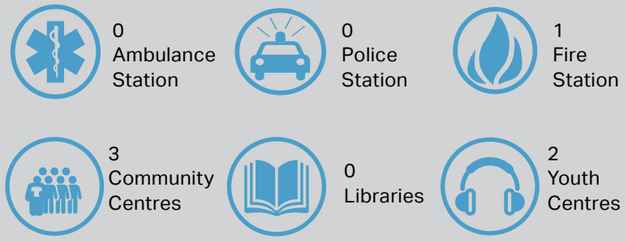
0 0.65 1.3
Kilometers

Figure 47: Great Bentley Health Infrastructure Context. Source: MyNHS, HSCIC

Social Infrastructure - Community Facilities and Emergency Services

Key Findings

Current Situation within 5km Buffer (May 2016)



Emergency Services

- Across the wider 5km buffer zone, the analysis identified a single fire station.

Libraries

- There are no libraries within the 5km wider area of the area of investigation.

Youth Centres

- There are two youth centres within 5km of the area of investigation.

Community Centres

- There are three community centre within 5km of the development.

Key Findings

Committed Social Infrastructure within 5km Buffer

- A review of Tendring's infrastructure Delivery Plan (2013) has not identified any future projects within the 5km radius of the area of investigation within Tendring as it relates to community facilities and emergency services.

Key Findings

Future and Wider Issues

- A review of ambulance services has identified a change in the future model of ambulance provision by the early 2020s within the East of England's Ambulance Services. This involves a hub and spoke service in order to meet demand from existing population. Traditional ambulance stations act as the main hubs of service, with smaller 24/7 posts acting as the spoke.
- Further work will need to determine whether the capacity of the existing emergency services can cope with the forecast increase in population.
- Further work will need to determine whether the capacity of the existing community facilities can cope with the forecast increase in population. However, it is likely that future development at the area of investigation would need to provide some community offer.

Sources

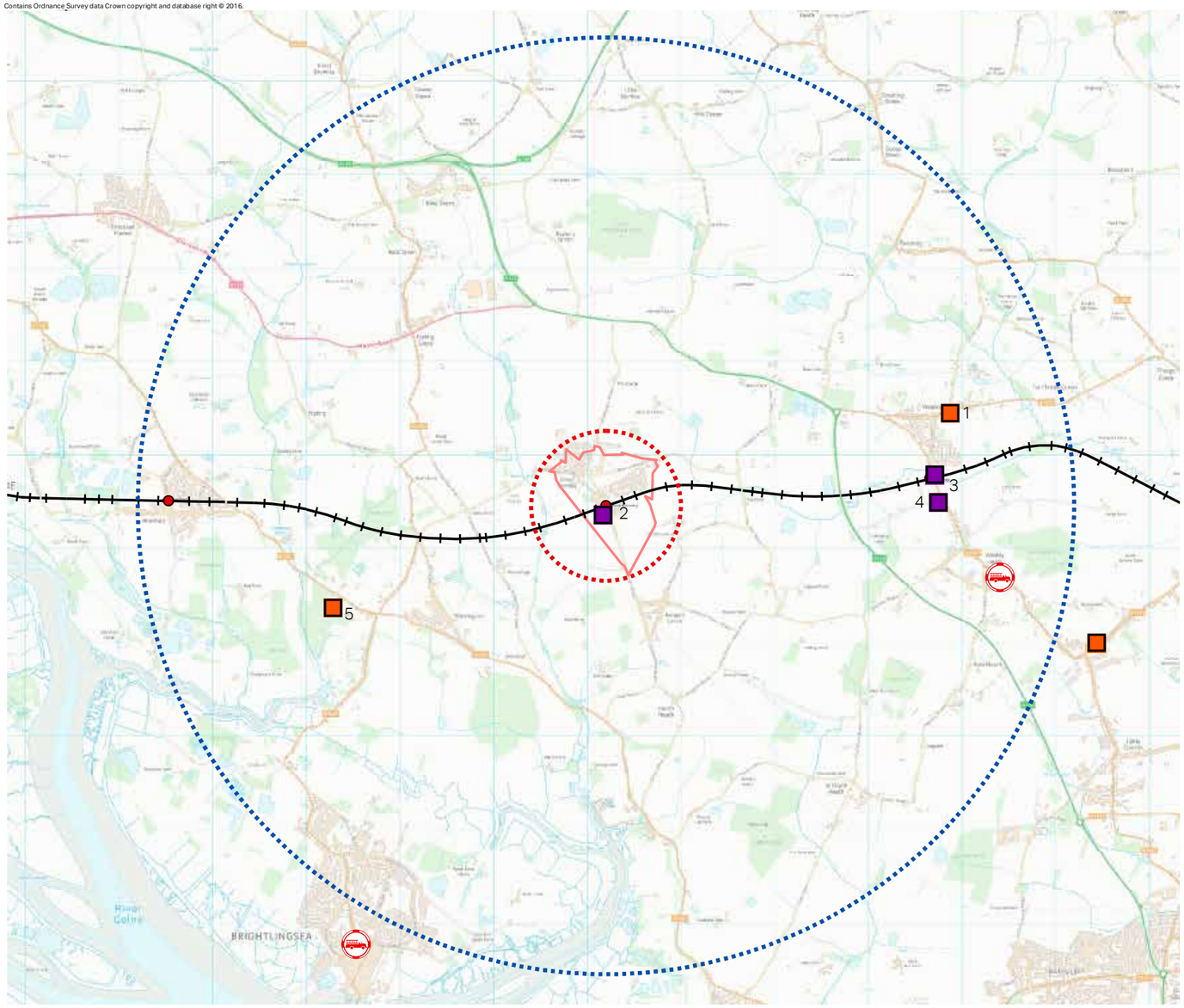
- East of England Ambulance Services, Essex Police, Essex County Fire & Rescue Services
- Google maps to identify community facilities, libraries and youth centres

Sources

- Tendring IDP (2013)

Sources

- East of England Ambulance Services
- Essex Police
- Essex County Fire & Rescue Services



Legend

- Railway Station - 5km Buffer
- Railway Station - 800m Buffer
- Railway Station - 10 min Walking Time
- Railway Station
- Railway

Community Facility

- Community Centre
- Library
- Youth Centre
- Fire

Community Service Facilities

Name of Facility	Type	Label
Tendring Virtual Youth Centre	Youth Centre	1
Great Bentley Village Hall	Community Centre	2
Weeley Village Hall	Community Centre	3
Willow Park Resource Centre	Community Centre	4
Thorrington Scouts	Youth Centre	5

Emergency Service Facilities

Name of Facility	Type
Station 19 Weeley	Fire

N
W E
S

0 0.5 1
Kilometers

Figure 48: Great Bentley Community Facilities and Emergency Services. Source: East Of England Ambulance Services, Essex Police, Essex County Fire & Rescue Services, Google Maps to Identify Community Facilities, Libraries and Youth Centres

4.13 Development Capacity

Key Drivers

Overview

The total potential site area surrounding Great Bentley railway station is approximately 31 hectares comprising agricultural land and settlment fringe sites. This is based on a refined 10minute walknet under current conditions. 21.26ha is considered developable (residential/employment/mix-use land), while approximatly 10ha would be needed for primary infrastructure (roads, etc) and green infrastructure requirement.

Landuse

- It is anticipated that development at Great Bentley could create 657 new homes at 35 dwellings per hectare
- At least 0.1.88 ha of mixed-use space would be required. This would largely fulfill demand for retail, the care sector, leisure and hospitality uses and non-commercial needs.

Green Infrastructure	Mixed-Use	Employment	Primary Infrastructure	Residential	Total
12%	6%	2%	20%	60%	100%

Table 13: Great Bentley Proposed Land Use Parameters (%)

Green Infrastructure	Mixed-Use	Employment	Primary Infrastructure	Residential
27,424 sq.m	13,712 sq.m	4,571 sq.m	45,706 sq.m	137,119 sq.m

Table 14: Great Bentley Proposed Land Use Parameters (#)

- An assumed breakdown of potential land use has been applied by AECOM for each of the sites in order to determine the residential growth arising from developable land. It's been assumed that 60% of developable land would be for residential, 20% for primary infrastructure (roads, etc), 12% for green infrastructure and 8% for employment or community facilities.
- The land use parameter breakdown would vary for each site, depending on individual characteristics and setting. This approach provides a reasonable set of parameters based on future growth occurring within established villages.
- The population of Great Bentley is approximately 2,300 people (2011 Census). A housing yield of 657 dwellings would result in a population of 1,511 people (based on an average household size of 2.3 (ONS)). This would be a growth of over 80% on the existing village population.

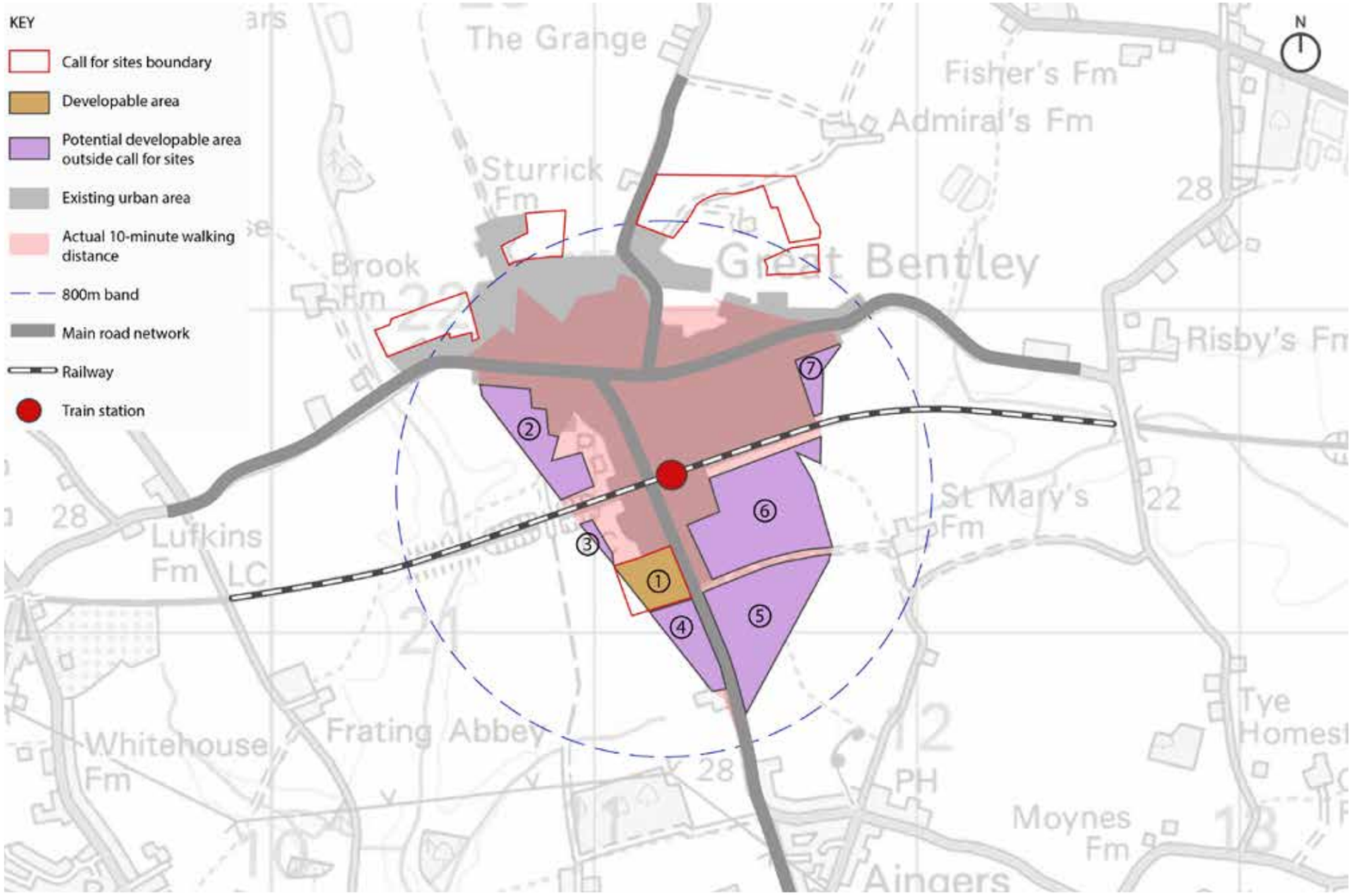


Figure 49: Developable Area Diagram

31.26 ha
Total Site Area

1.88 ha
Mixed-Use (Community Facilities)

6.25 ha
Primary Infrastructure

657
35 dph

21.26 ha
Total Developable Area

0.63 ha
Employment and Leisure Land

18.76 ha
Residential Developable Area

3.75 ha
Green Corridors and Infrastructure

Note. If we assume that the full 800m buffer of Great Bentley is considered, at an 80% residential development rate the 129.56 ha of land may yield approximately 3,600 homes at 35 dwellings per hectare. However, it is clear that development at this scale would substantially alter the nature and character of the village. It would also dramatically impact the ecology, visual amenity and the existing transport networks in the surrounding area. Furthermore, this figure does not include any land constraints beyond protected ecology sites, flood risk zones and existing urban development and may potentially be lower once these have been factored into the assessment .

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4.14 Indicative Infrastucture Requirement

Project List

The following table identifies the key infrastructure requirements to support the proposed development at Great Bentley These projects are based on a high level assessment of the infrastructure requirements for the development option and the growth (housing and employment) envisaged. It is assumption based only and related either to the transport strategy outlined above, the social infrastructure standards described in the North Essex Garden Communities Options and Evaluations Report Appendix 2 and applied to the projected population. The utility infrastructure requirements are formed, where possible, through preliminary discussions with the relevant service providers. They are indicative only and are not based on a masterplanning exercise.

Infrastructure	Demand Arising from Development Option	Cost per Unit (£)	Total Cost (£)	Phasing	Justification
Education					
Primary Schools Form Entry	0.3	£7,500	£2,463,750	Phasing of education infrastructure to occur within development period and post according to the housing growth triggers	Minimum requirement, assuming off-site mitigation and no account of existing surplus/deficit in existing surrounding facilities. Education costs and calculations based upon *The Essex County Council Developers' Guide to Infrastructure Contributions - Revised Edition 2016*
Secondary Schools Form Entry	0.3				
Early Year Facilities	0.4				
Healthcare & Community					
General Practioners	1	£2,250	1,478,250	Phasing of healthcare infrastructure to occur within development period and post development, according to the housing growth triggers for each facility	Minimum requirement, assuming off-site mitigation and no account of existing surplus/deficit in existing surrounding facilities. All AECOM Social Infrastructure Modelling (SIF) standards as set out in Appendix 2 of the North Essex Garden Communities Options and Evaluations Report..
Dentists	1				
Acute Hospital Beds	2				
Library Space	38				
4 Court Sports Centre	0.1				
4 Lane Swimming Pool	0.1				
Open Space					
Outdoor Sport	1.93	£2,750	£3,989,474	Phasing of open space infrastructure to occur within development period and post development, according to the housing growth triggers for each type	Minimum requirement based on standards as set out in Appendix 2 of the North Essex Garden Communities Options and Evaluations Report..
Children's Play Space	0.44				
Semi Natural Open Space	2.52				
Parks and Gardens	1.66				
Amenity Green Space	1.11				
Allotments	0.29				
Utilities - Scheme-wide Enabling Works					
Energy		Scheme Wide Enabling Works Cost/unit: £16,250 Environment/ Sustainability/ Waste Cost/unit: £500	Scheme Wide Enabling Works Total Cost: £10,676,250 Environment/ Sustainability/ Waste Total Cost: £328,500		
3 No. 11 kV to 400 V distribution substations	1.2 MW			Phasing of energy infrastructure to occur within development and post development period, according to housing growth triggers	Distribute end-user loads
400 V LV circuits from distribution substations to end users	-				
Potable Water					
New network of distribution pipework	239 m3/day			Phasing of potable water infrastructure to occur within development and post development period, according to housing growth triggers	New supply pipework
Waste Water					
Connections for all properties to existing waste water collection network	-			Phasing of waste water infrastructure to occur within development and post development period, according to housing growth triggers	Raw sewage to existing treatment plants
Expansion of existing waste water network to local Water Recyling Centre	-				
Possible expansion of existing local Water Recycling Centre	-				
Gas					
1 No. Medium to Low Pressure reducing station	1.4 MW			Phasing of gas infrastructure to occur within development and post development period, according to housing growth triggers	Connecting to end users
Plot connections for all properties to gas distribution network	-				

Infrastructure	Demand Arising from Development Option	Cost per Unit (£)	Total Cost (£)	Phasing	Justification
Utilities - Off-Site Requirements					
Energy					
1 No. 11 kV ring circuit from primary substation to connect to distribution substations	-	-	£12,120,000	Initial Phase	Provide electrical power capacity for development
Waste Water					
Assumed 5km connection to existing waste water treatment works	-	-	£4,000,000	Initial Phase	Sewage network connection and flow to small existing treatment plants in early phases
Gas					
Extension to exsiting Medium Pressure distribution network	-	-	£140,000	Initial Phase	Gas supply to end users
Telecommunications					
Development of access chambers for BT Telecoms network, BT Openreach fibre optic network and private telecoms network throughout development	-	-	£500,000	Initial Phase	ICT and data networks to end users
Transport - On-Site / Off-Site Requirements					
Travel plan measures (smarter choices, car clubs, charging points, etc)	-	-	£558,450	Up to Plan Period	To ensure non-car mode transit is embedded from the outset and to connect with the sub-regional transport connectivity solutions.
Upgraded pedestrian & cycle networks	-	-	£500,000	Up to Plan Period	
Bus service subsidies & other public transport improvements	-	-	£262,800	Up to Plan Period	
New site access junction	-	-	£6,000,000	Initial Phase	To facilitate vehicular connection to the site
Upgrade existing site access junction	-	-	£3,000,000	Initial Phase	

****Total Cost** **£46,017,474** (Total Cost at May 2016 Prices but excluding Professional Fees and Design Development and Construction Contingency)

Table 15: Key Infrastructure Requirements for Great Bentley

This chapter provides baseline synthesis and key findings associated to Alresford.

It concludes with a high level assessment of development capcity and infrastructure requirement

05 Alresford

5.1 Site Overview and Landuse
5.2 Call for Sites
5.3 Surrounding Settlement Hierarchy
5.4 Economic Context
5.5 Utilities
5.6 Landscape Character, Sensitivity and Condition
5.7 Agricultural Land Classifications
5.8 Ecological Designations
5.9 Parks, Recreation and Historic Environment
5.10 Water Cycle
5.11 Movement and Connectivty
5.12 Social Infrastructure
5.13 Development Capacity
5.14 Infrastructure Requirement

5.1 Site Overview and Landuse

The Alresford area of investigation is centred around the railway station, in which the area to the north east, east and south are mainly residential properties with some retail and commercial activity. To the North West there is a large orchard and to the south west a large greenfield site. There are no other villages within close proximity to Alresford. The area of investigation has primarily local roads running through the site, with a B-road (B1027) along the northern fringe of the village.

Figure 50: Alresford Context

5.2 Call for Sites

Key Findings

- The Call for Sites process for Tendring undertaken to support the development of the new Local Plan identified 4 sites associated with the area of investigation, which collectively amount to 81.36ha of land.
- The individual site detail submitted for the Call for Sites is shown below in Table 22. As shown in Figure 51, a vast majority of these are within the 800m buffer zone and the more defined 10 minute walk net of the railway station under current conditions.
- Cockaynes Orchard (south of Cockaynes Lane) was promoted for inclusion in the 2012 Draft Local Plan and allocated for mixed-use development. It has since been removed due to environmental concerns on the character of Cockaynes Lane. Concerns are understood to remain relating to development of the site being contrary to the proposed spatial strategy for a Rural Service Centre.
- Land south of Wivenhoe Road and West of Church Road has been identified as a potential broad area for growth and worthy of consideration during the review of the Local plan. The site has not been promoted for development by the landowner or developer.
- Most of the Call for Sites recommend a density of 16-20 dwellings per hectare (dph)

Figure 51: Alresford Economic Context. Source: AECOM.

Call for Sites Reference	Location	Proposed Use	Site Area (ha)
RS4.11	Cockaynes Orchard - South of Cockaynes	Mix	6.3
RS4.12	Cockaynes Orchard - North of Cockaynes	Residential	70
RS4.13	Land south of St. Andrew's Close	Residential	2.56
RS4.14	Land south of Wivenhoe Road and west of Church Road	Residential	2.5
Total Site Area: 81.36ha			

Table 16: Tendring Call for Sites (2014/2015)

5.3 Surrounding Settlement Hierarchy

Key Findings

- Alresford is identified as a Rural Service Centre. The Local Plan designates it as an opportunity for small-scale growth. The village has a population of just over 2,000.
- It is located just beyond the Colchester Fringe. Colchester Fringe is identified as a Strategic Urban Settlement with a large population and a wide range of existing infrastructure and facilities. It is a major growth centre for both homes and jobs.

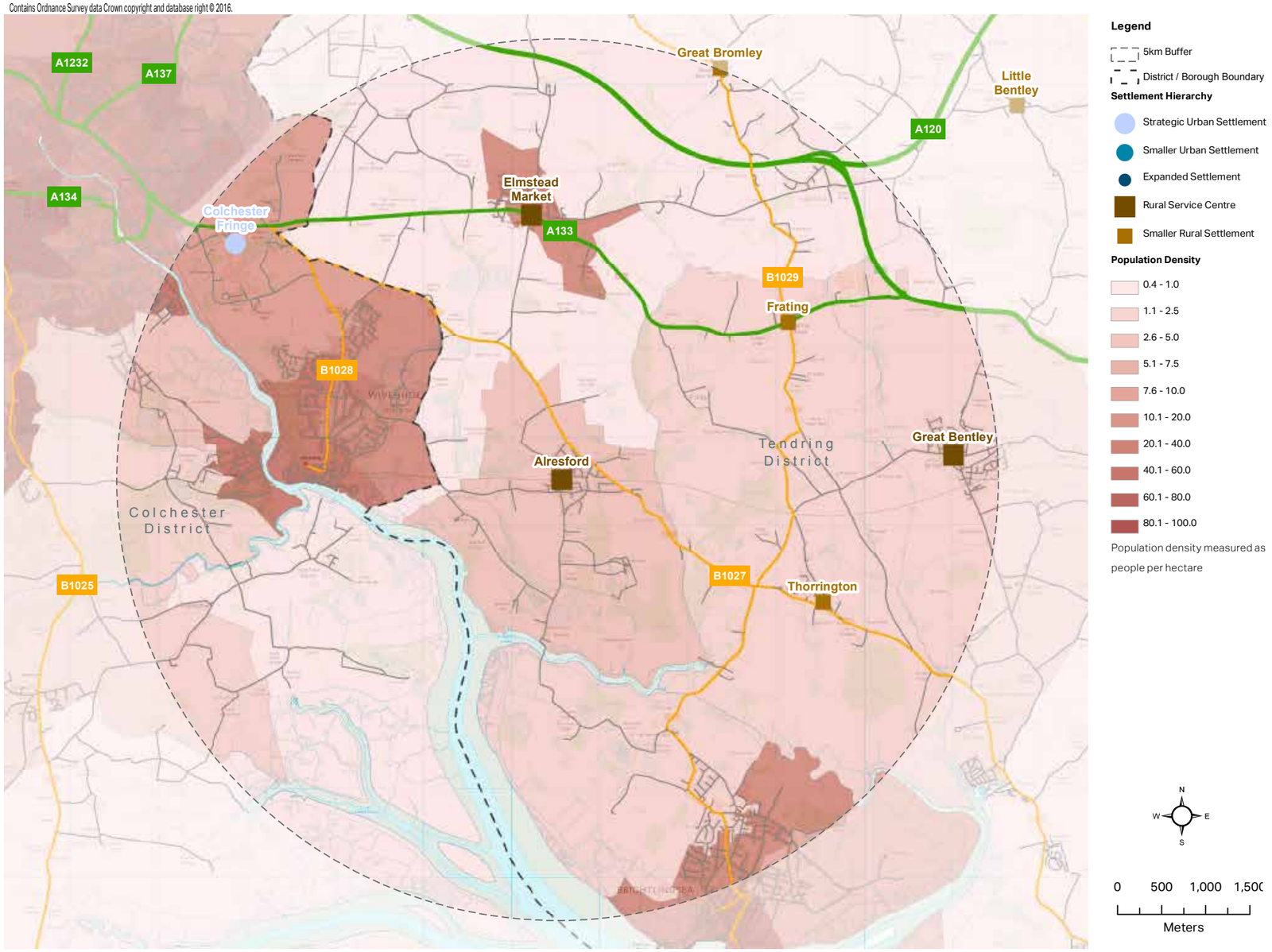


Figure 52: Tendring Settlement Hierarchy. Source: AECOM

5.4 Economic Context

Key Findings

- The area of investigation is centred around Alresford railway station, which is predominately residential, with some small light industrial businesses adjacent to the railline.
- Tendring Local Plan (2007) identifies a Local Centre within Alresford, which is adjacent to the railway station. There are several small businesses, retail shops and restaurants across from the station.
- To the north west of the area of investigation is a cluster of light industrial businesses along Cockaynes Lane. There is also a cluster of businesses along the B1027 in the north east of the area of investigation. Alresford Business Centre has a mix of commercial and light industrial businesses.
- The land immediately to the north west of the station is currently an orchard with no development, while a large portion of land to the south west of the station is agricultural.
- Tendring's Economic Growth Strategy (October 2013) identifies this location as a Tier Two Location as part of the Rural Hinterland, in which:
- The rural parts of the district are not seen as taking on significant economic growth over the next decade with greater emphasis to improving sector and business support. Instead, the majority of employment opportunities will be focused in Colchester (Approximately 9km to the north west) and Clacton-on-Sea (Approximately 12km to the south east).

Sources

- Tendring District Local Plan (2007) & Proposals Map
- Tendring Economic Strategy (October 2013)

Figure 53: Alresford Economic Context. Source: AECOM.

5.5 Utilities

Key Findings

Electricity

- Alresford primary substation has limited capacity for additional demand. If the demand of the new development exceeds this available capacity, upgrades to the primary substation will be required.

Water supply

- Affinity Water forecast that the region will have a supply/demand surplus during their current 25 year planning period; 2015-2040.

Gas

- Intermediate and High pressure networks have adequate capacity.
- Medium and Low pressure networks will require reinforcement and extension to service new developments.

Waste Water

- Alresford is within the Wastewater Treatment Works (WwTW) catchment for Thorrington. This is currently assessed as having sufficient volumetric capacity (headroom between the permitted dry weather flow and the demand. In addition, there is headroom within the process capacity, relating to the volume of water a WwTW is capable of treating to the required quality standards set by the discharge permit. Upgrades to the wastewater collection infrastructure between Alresford and the Thorrington WwTW will be needed if the current capacity is insufficient for the proposed additional demand. Similarly, upgrades to the infrastructure discharging the treated effluent from Thorrington WwTW may be required.

Telecommunications

- BT Openreach has made a commitment to supply high speed fibre optic broadband to all development over 30 dwellings at no cost to the developer.

Sources

- Affinity Water
- BT Openreach (October 2016)
- UKPN Distributed Generation map
- National Grid Gas (September 2014)

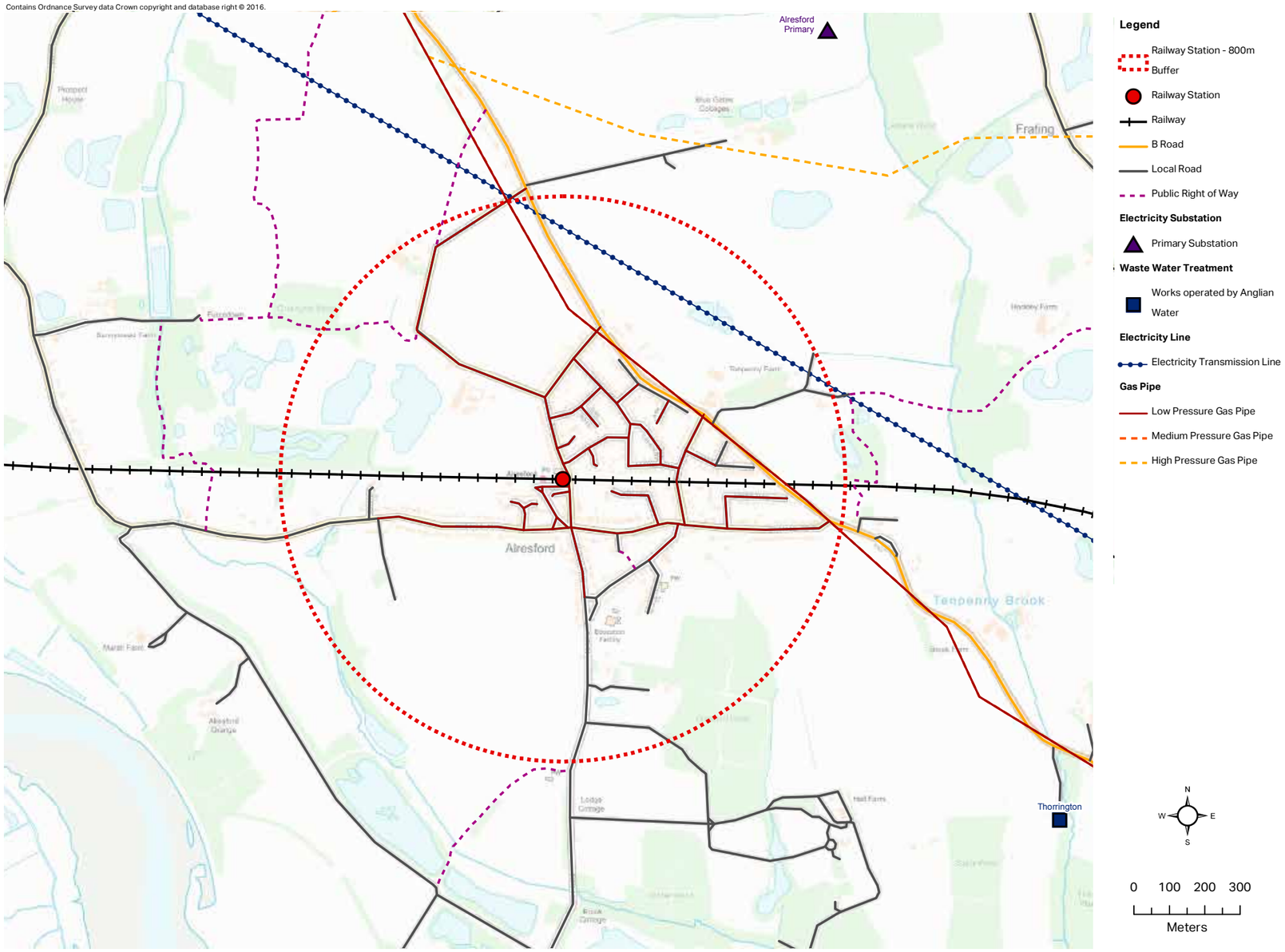


Figure 54: Alresford Utilities. Source: Anglian Water / National Grid

5.6 Landscape Character, Sensitivity and Condition

Key Findings

- The existing topography is broadly defined by the River Colne valley, with the site situated just to the north on a gently undulating plateau sloping to the south.
- The Village of Alresford is centred around the train station with development both north and south of the railway line. It comprises a mixture of housing stock, generally of a modern age interspersed with a number of commercial and retail buildings centred around the train station.
- Forming part of the Bromley Heaths Character Area it is described as an exposed and windswept plateau with an extensive arable landscape of large productive fields divided by low gappy hedgerows where hedgerow oaks stand out as silhouettes against the skyline. A network of narrow lanes connects the scattered farms and villages.
- The settlement pattern in the wider study area comprises an ancient pattern of isolated farms, hamlets and villages interspersed with fields.
- The area around Alresford and south to the River Colne is also dominated by quarries, either actively extracting sand and gravels or disused and dominated by large open water.
- Forming part of the Northern Thames Basin National Character Area, the geology of the area is largely London Clay overlain by loamy soils.

Sources

- Tendring Landscape Character Area Assessment Volume 2

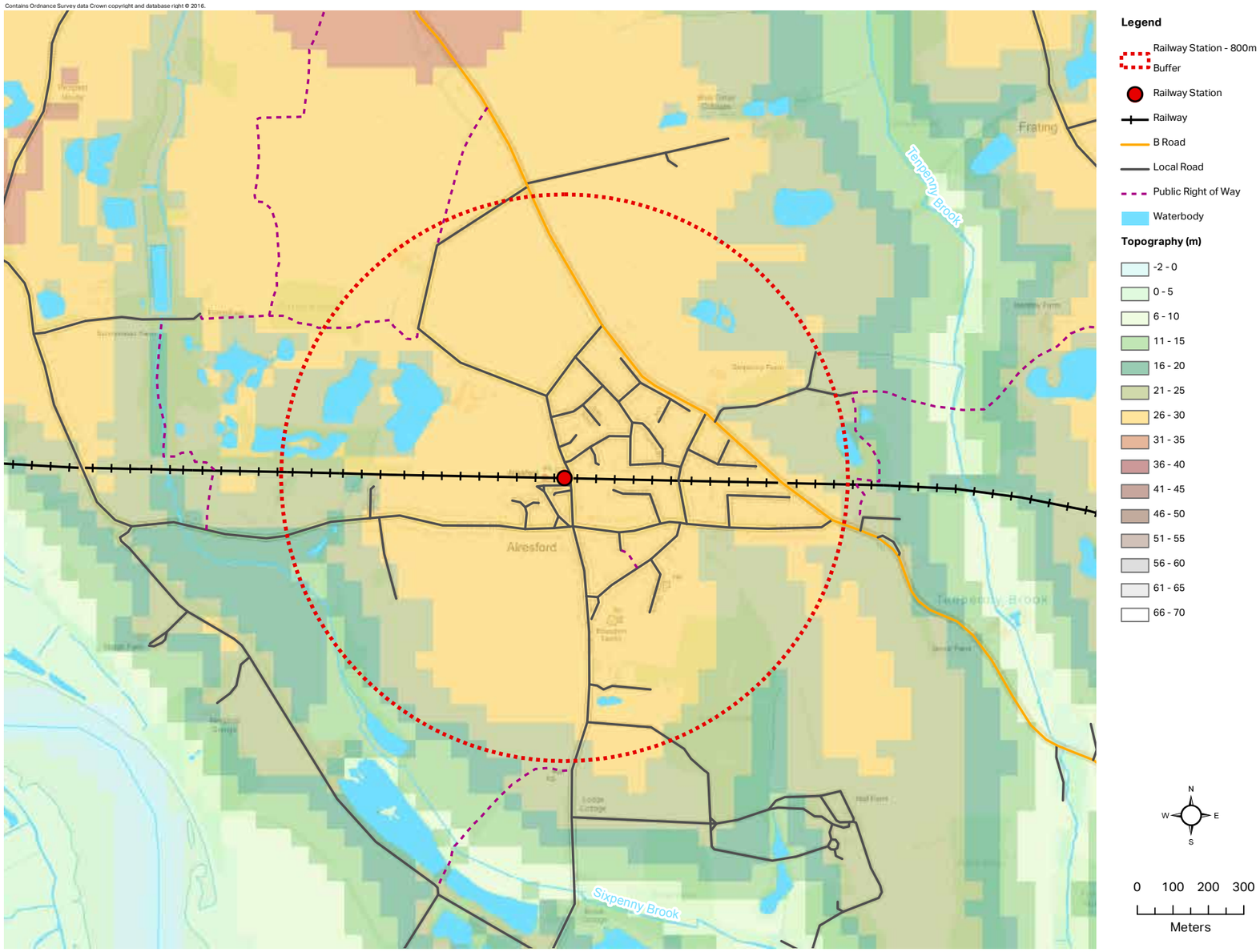


Figure 55: Alresford Landscape and Topography. Source: Natural England / Environment Agency

5.7 Agricultural Land Classifications

Key Findings

- The quality of agricultural land is predominantly very good (Grade 2) within the 800m buffer around the railway station.
- Similarly, outside the 800m buffer, the agricultural land surrounding Alresford is predominantly either very good (Grade 2) or good to moderate (Grade 3)

Sources

- Natural England, National Character Areas - GIS Digital Boundary

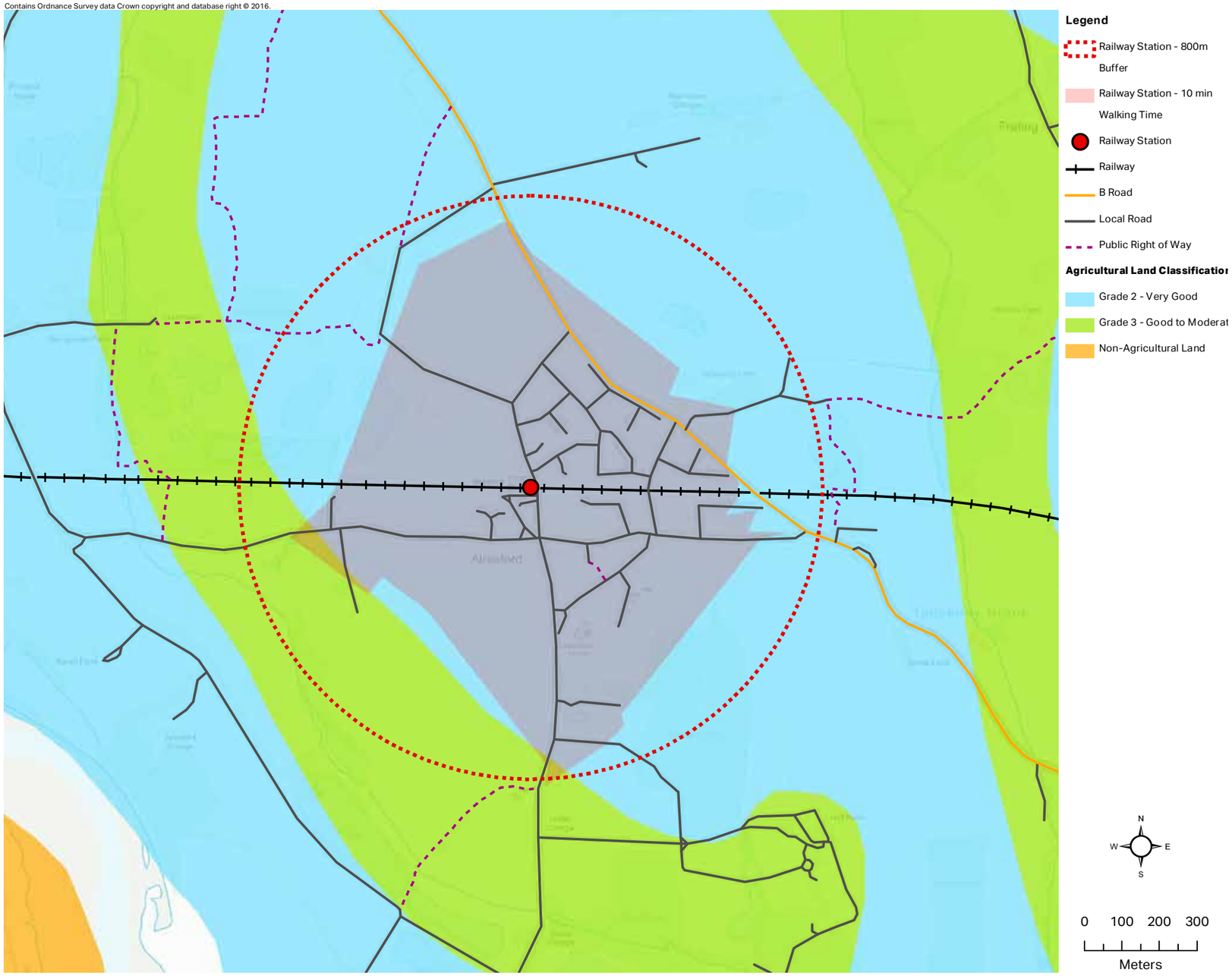


Figure 56: Alresford Agricultural Land Classifications. Source: Natural England .

5.8 Ecological Designations

Key Findings

- The area around the site study area has a rich and varied ecological baseline with a mosaic of habitats including urban gardens and parks, ancient woodland, arable fields, semi-improved grassland and open standing water in the form of ponds and lakes at the former quarry site.
- Of particular importance is the internationally recognised and protected Colne Valley, located just to the south of Alresford. It is a RAMSAR site, SAC, SPA and SSSI and although not within the immediate site study area could be affected by increased pressure from visitor numbers as a result of new development. This could therefore be subject to an Appropriate Assessment and create the need for Suitable Alternative Natural Greenspace (SANGs) to be provided.
- There are a number of Local Wildlife Sites (LoWS) both in and around the site study area. These are designated for a number of habitats including woodland, quarries, churchyards and road side verges.
- The LoWS should be retained within any new development and green linkages made between them and to existing habitat located on the periphery of the site.

Sources

- Natural England Designated Sites Citations
- Essex Wildlife Trust for LoWS

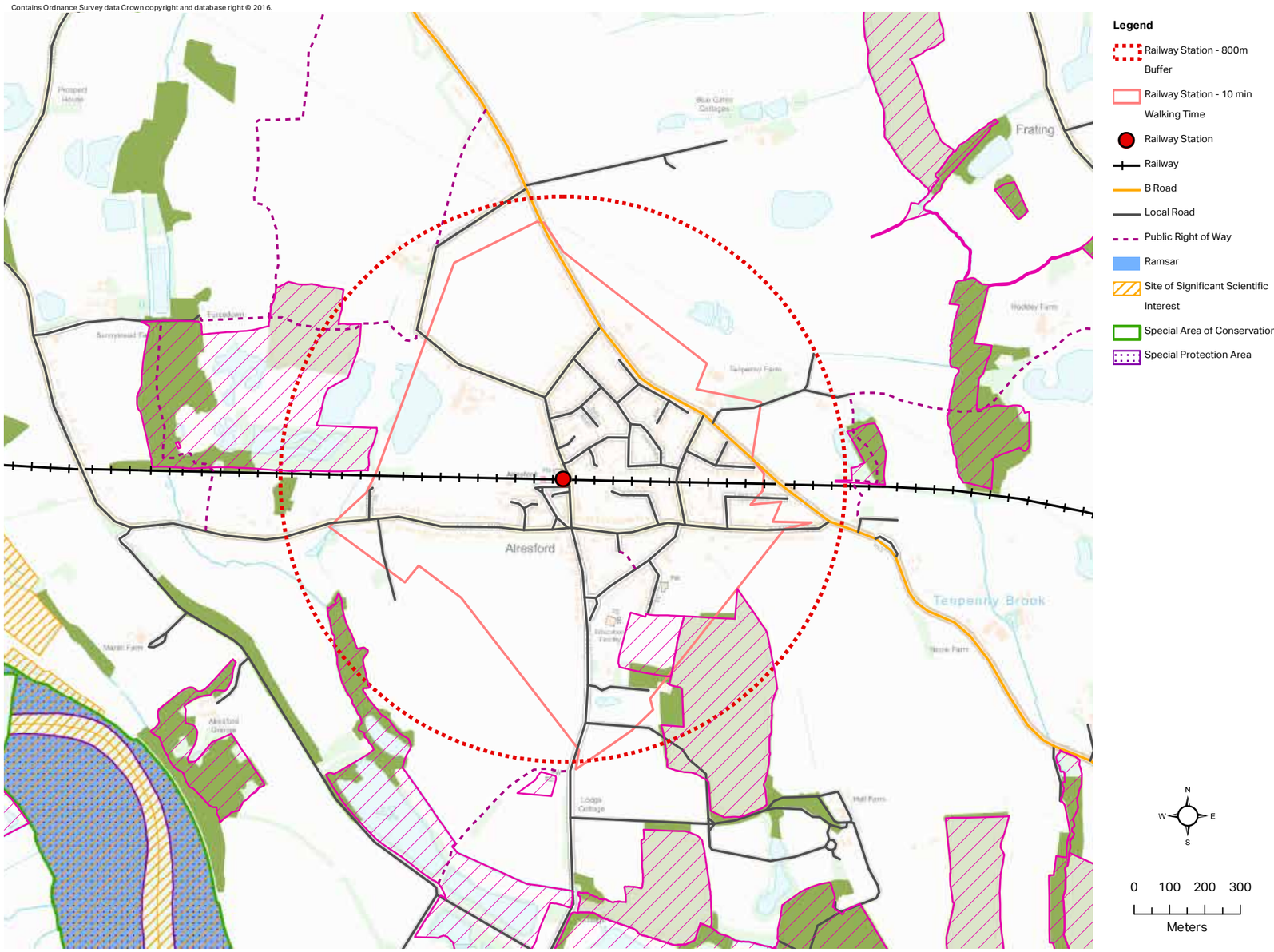


Figure 57: Alresford Ecological Designations. Source: Natural England / Environment Agency

5.9 Parks, Recreation and Historic Environment

Key Findings

- There are several Grade II listed buildings within the area of investigation, but these are all relatively scattered. There are no major clusters of historic buildings.
- To the south of the rail station and just outside the 800m buffer area there is one scheduled monument, St Peters Church.
- The landscape provides a network of Public Rights of Way offering access to the countryside throughout the site.

Sources

- OS Terrain 50
- Natural England GIS Digital Boundary Datasets
- Historic England

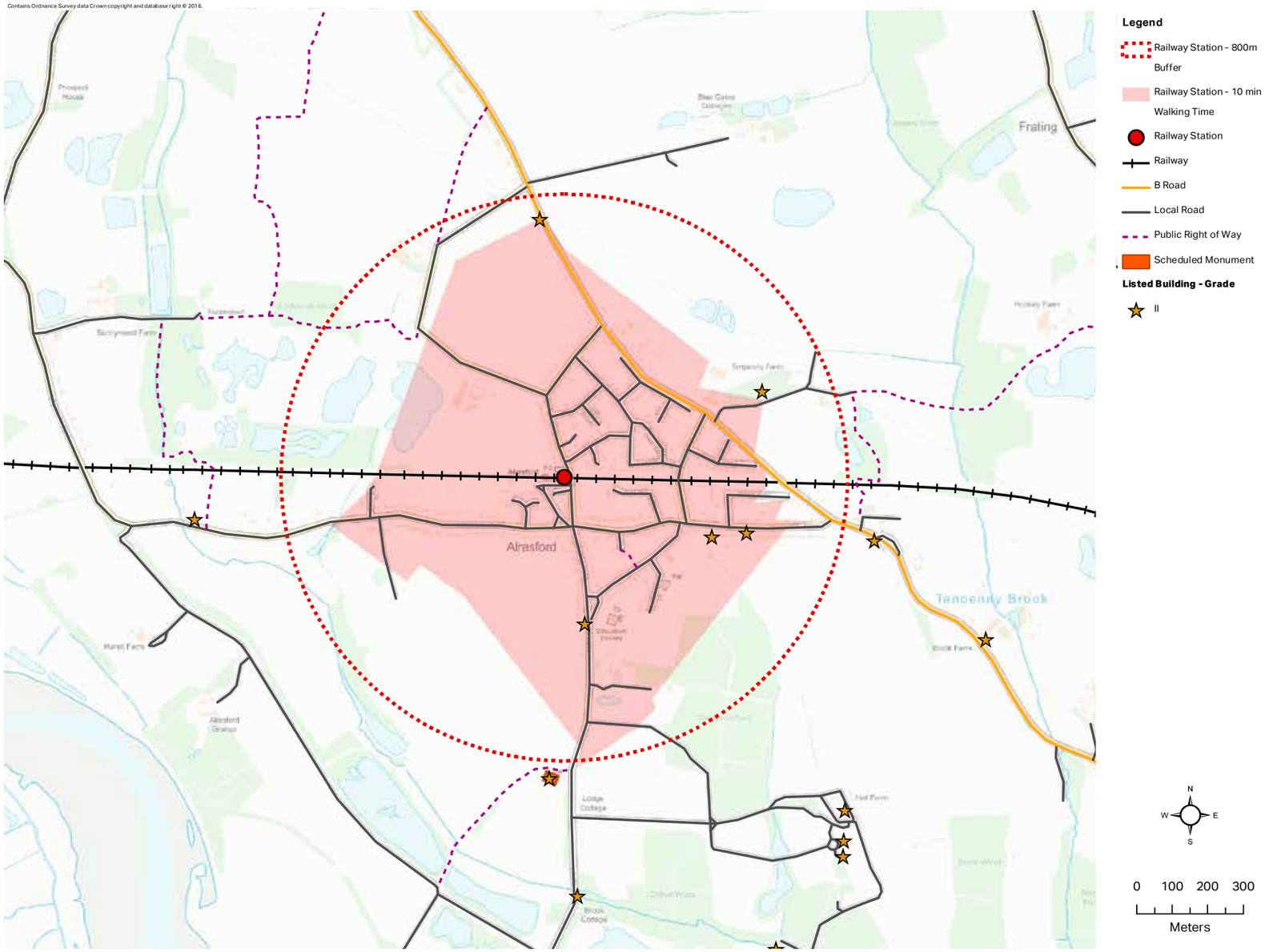


Figure 58: Alresford Recreational and Heritage Assets. Source: English Heritage / Natural England

5.10 Water Cycle

Key Findings

- The study area is situated between the Tenpenny Brook to the east and the Sixpenney Brook to the west. The village of Alresford is consequently split approximately in half into the respective drainage catchments. Both these brooks, classified as Main Rivers, flow from north to south past the village to the Alresford Creek, located approximately 2km south of village. This creek is tidal and connected via the Colne estuary to the North Sea.
- The terrain is relatively flat in the surrounding area and a number of sand and gravel pits are located to the west of the study area along with Cockaynes Wood Nature Reserve.
- The Sixpenny Brook is designated as a heavily modified watercourse with bad ecological and good chemical status. An objective to achieve moderate ecological status by 2021 is in place for the catchment. The Tenpenny Brook, also designated as a heavily modified watercourse, has a moderate ecological and good chemical status.
- Land within the study area drains to a priority water which is considered to 'probably be at risk' from agricultural diffuse pollution sources. The eastern half of the study area is within a surface water Nitrate Vulnerable Zone and the entire study area is within a Groundwater Nitrate Vulnerable Zone. There are no recorded water abstraction licenses within the proposed area or groundwater source protection zones.
- Sixpenny Brook crosses the study area to the south-west. Flooding from this watercourse is however limited to a narrow corridor of Flood Zone 3 along the brook. Surface water flooding is generally restricted to highways with a few areas at risk along the natural drainage paths in the topography. The area is not considered to be at high risk of groundwater flooding.
- Potable water is supplied by Affinity Water and falls within their East region, within the Brett water resource zone. This zone usually takes 100% of its supply from groundwater sources, although it can also import water from the Ardleigh reservoir, which is jointly owned with Anglian Water. It is considered to be a 'serious water stress' area, however the Brett water resource zone is predicted to remain in surplus at least up to 2040. This is based on average growth trends and there is no specific information on the proposed development area. There are no major intervention options being assessed and Affinity Water's strategy in the area concentrates on improving water efficiency, metering and leakage prevention.
- Alresford is within the Wastewater Treatment Works (WwTW) catchment for Thorrington. This is currently assessed as having sufficient volumetric capacity (headroom between the permitted dry weather flow and the demand. In addition, there is headroom within the process capacity, relating to the volume of water a WwTW is capable of treating to the required quality standards set by the discharge permit

Sources

- Environment Agency Catchment Data Explorer, Environment Agency website (27th February 2017)
- Environment Agency WIYBY online maps, Environment Agency website (27th February 2017)
- Environment Agency Long Term Flood Risk Information, Gov.uk website (27th February 2017)
- Final Water Resource Management Plan 2015-2020, Affinity Water (June 2014)
- Haven Gateway Water Cycle Study Stage 2 Report, Haven Gateway Partnership (November 2009)
- Level 1 Strategic Flood Risk Assessment Final Report, URS (May 2015)
- Waste Water Treatment Works Needs Assessment in Essex and Southend-on-Sea Final Report, URS (June 2014)

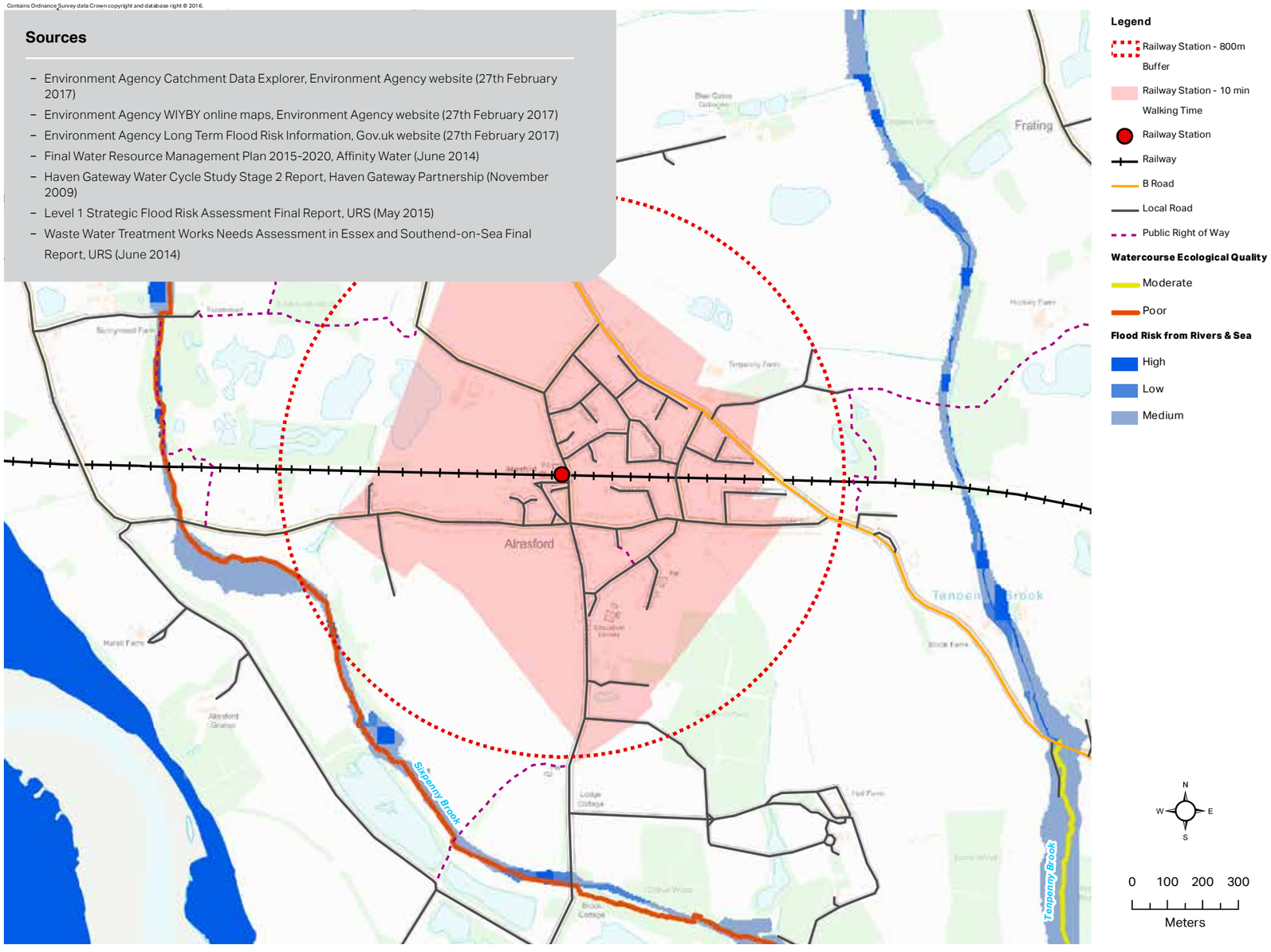


Figure 59: Alresford Water Cycle. Source: Natural England / Environment Agency

5.11 Movement and Connectivity

Key Findings

Travel Patterns

- 2011 Census Data – mode share data for the Lower Super Output Areas (LSOAs) in which the settlement of Alresford sits, demonstrates a strong reliance on individual motorised modes with 75% of all work related trips undertaken by either car or motorbike. Despite the presence of a rail station, public transport trips only represent 10% of all work related trips. Walking and Cycling work related trips account for 6%.
- The majority of journeys to work are between 5 and 20km (43%) with journeys under 5km representing 18% and journeys over 20km representing 14%. This would suggest that a large proportion of trips would require a motorised form of transport based on current home-work trips.
- Regarding travel patterns, Tendring District is characterised by a substantial level of self-containment of travel patterns with 60% of people living and working in Tendring. The main travel movements to work outside of Tendring are toward Colchester, with 20% of Tendring's working population commuting to this neighbouring authority.

Road

- Alresford is served by a network of roads including:
  - The B1027 running southeast-northwest towards the University of Essex Colchester Campus and St. Osyth respectively;
  - Wivenhoe Road east-west;
  - Station Road / Church Road / Ford Lane north-south;
- Approximately 2,5km south-east of Alresford station and settlement, the Tendring local plan modelling identifies the B1027 Tempenny Hill/B1027 Clacton Road/B1029 Brightlinsea Road/B1029 Station Road junction as overcapacity in its full development scenario (2032). This includes significant development on sites at East Colchester, Hare Green, Weeley and Clacton-on-Sea. However, it is important to note that the Local Plan modelling does not assume major development in or surrounding Alresford in its model reporting.

Key Findings

Rail

- Alresford mainline station is served by the Sunshine Coast line, an electrified double track branch line from the Great Eastern Main Line connecting Colchester (mainline and town stations) with Clacton-on-Sea and Walton-on-the-Naze.
- During a typical weekday AM peak (6am-8am), Arlesford station is served by up to four trains per hour thanks to train services departing from Colchester and Clacton-on-Sea.
- During a typical weekday AM peak (6am-8am) Alresford station is served by 1 train per hour towards Clacton-on-Sea. The number of services towards Clacton-on-Sea stays consistent throughout the day with an approximate journey time of 23 minutes
- Minimum journey times to Colchester from Alresford are currently 14 minutes on a multi-stop service calling at, Wivenhoe and Hythe. A journey to London Liverpool Street typically takes approximately 1 hour and 25 minutes.
- The station is located in close proximity to the main existing urban centre, and would not require a complimentary (first leg) mode of transport to access the station.
- It is understood that the Sunshine Coast line currently operates within capacity. The Anglia Route study (March 2016) identifies improvements on the Sunshine Coast line to 4 trains per hour by 2043 (one every 15minutes) including at Great Bentley station. However, movements from Alresford beyond Colchester on the Great Eastern Main Line are likely to be constrained by the lack of capacity on this line.

Public Transport

- The area is served by the following bus routes:
  - Route 74 operating approximately one service per hour betweem 6am and 5pm towards Colchester and 7am to 6pm towards Clacton-on-Sea
  - Route 87 operating approximately one service per hour betweem 6am and 9pm towards Brightlingsea and Colchester.

Key Findings

- The bus stops for these services are located along Wivenhoe Road.

Active Modes

- No dedicated walking and cycling route is located in the area. The nearest route is National Route 51 identified on Keelars Lane, some 2km from Alresford. The route passes through Oxfordshire, Buckinghamshire, Bedfordshire, Cambridgeshire, Suffolk and Essex. The section between Harwich and Colchester forms part of the North Sea Cycle Route, also known as EuroVelo 12.
- The area is characterised by a network of quiet country C-roads which are potentially suitable for cycling, but are not currently designated as such.

Sources

- North Essex Garden Communities Baseline Compendium, June 2016
- Tendring Local Plan Modelling Support, December 2015
- Tendring Infrastructure Delivery Plan, Tendring Council, 2013
- Anglia Route Study, Network Rail, March 2016
- The scope for high-quality rail services to support sustainable development, Jonathan Tyler (Passenger Transport Networks, York) – a report for CAUSE – Campaign Against Urban Sprawl in Essex, 2015
- Google Maps, consulted February 2016

Figure 60: Alresford Transport Existing Conditions

Opportunities and Constraints

Travel Patterns

- Opportunity to plan towards a more sustainable modal split for this area and others in Tendring will allow mitigation of the impact on the network by not reproducing the current high level of car usage and ownership.

- Existing modal splits need to be challenged and reflect transit-oriented development (TOD), one of the main Garden Communities principles. For that, opportunities to encourage sustainable travel in and around Alresford should be sought, including improvements to walking and cycling infrastructure and public transport provision. Understandably, in the context of this area, greater walk and cycle distances are potentially viable, such as up to 2.5km for cycling to a station.

- However the principles of TOD dictate that these should be much reduced, the station is therefore outside of the identified 800m active modes catchment for a large proportion of the proposed development sites. The presence of a rail station should be an asset to capitalise on for the future development of Alresford to improve sustainable movements to main employment areas and reduce the need for car usage and ownership.

- Given the rural location of the area under investigation, innovative car sharing schemes should be explored, but at this time are unlikely to be particularly viable to operators unless a critical mass can be assumed through large scale development that is linked together.

- Given the current share of work trips of less than 5km (18%), this represents a potential target for short journeys to be undertaken via walking or cycling if the infrastructure requirements are met, such as safe and secure cycling routes and cycle parking to encourage those trips.

Road

- Local plan modelling does not include development sites identified around Alresford nor around other areas under investigation as part of CAUSE scope. With the area of the sites identified within this scope, the impact on the road network would have to be reassessed and may show a worsening condition, which will require mitigation measures.

- There is potential to take access from the following roads to serve future development parcels:
  - Northern section of the B1027, which would provide access to a large area of land for development. Upgrades required to provide for improved pedestrian footway provision and cycle lane (either on road of off-road). The capacity of any junction on this road would be finite and will require careful design and planning to ensure it operates satisfactory given the likely volume of dwellings that would be served.
  - Cockaynes Lane north and south, with major upgrades to the infrastructure. Likely loss of hedgerows and character would likely be at determinant to the solution however. Upgrades to the junction with Station Road and the B1027 will likely be required to facilitate development.
  - Wivenhoe Road, with minimal upgrades, due to the presence of high quality footways on both sides of the carriageway toward the centre of Alresford.
  - Access via Ford Road is unlikely to be sufficient in terms of link capacity, road widths, pedestrian and cycle provision. Major upgrades would also alter the character of the roads negatively.
  - Upgrades to Cockaynes Lane and B1027
  - Upgrades to local junctions such as Ford Road/ Wivenhoe Road will likely be required road to accommodate increases in traffic.

Rail

- The nature of the town currently points to an over reliance on car travel, and upgrades to the Sunshine Coast line would be of great benefit.

- The Anglia Route study (March 2016) identifies improvements on the Sunshine Coast line to four trains per hour by 2043 whilst a possible tram-train solution should be explored to enable possibly even greater frequencies, quality of service and desirability for passengers to use and realistically give up their car to make their journey to work.

- Additional capacity on the sunshine coast line has been identified[1] and in this context, CAUSE supports the development of a tram-train service on the Sunshine Coast line with opportunities to link different sites with Colchester at a greater frequency and allows street running trains to serve Colchester town centre for greater public transport integration.

- Opportunities to develop a walking/cycling network integrated with the station is essential to increase public transport mode share in Alresford and make rail trips more attractive to main employment areas in Tendring and Colchester.

1 The scope for high-quality rail services to support sustainable development, Jonathan Tyler (Passenger Transport Networks, York) – a report for CAUSE – Campaign Against Urban Sprawl in Essex, 2015

Opportunities and Constraints

Bus

- In addition to rail improvements, opportunities exist to look at a strategic bus network connecting development sites identified under this scope depending on the critical mass achieved over all these areas.

- Local bus services require greater frequencies to provide an attractive 'second tier' of public transport to support the rail station and provide a 1st leg trip to the station of residents of new settlement which lie outside of the 800m active modes catchment.

Active Modes

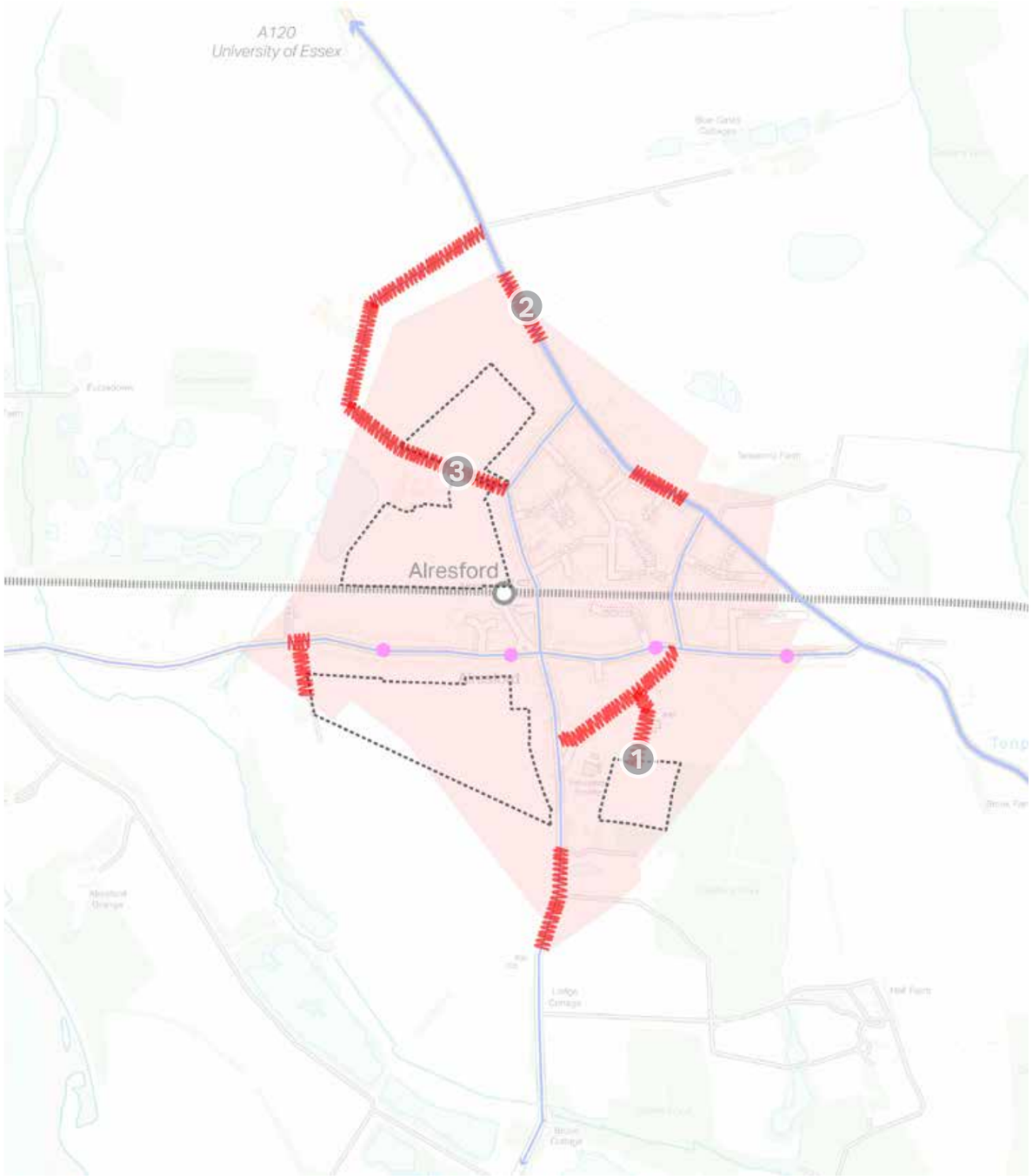
- The location of the station in relation to the main urban settlement and the lack of a clear, safe, and secure walking and cycling route towards the station is currently a constraint for people to consider rail as an attractive alternative to the car.

- Direct routes, linking the existing settlement and new development sites would be required.

- Limiting car parking at the station would also ensure that 1st leg trips by car can be made less attractive compared other 1st leg trips such as bus or active modes trips whilst safe and secure cycle parking and infrastructure should be provided at the station.

- Given the size of sites under investigation in Alresford, opportunities should be explored to develop a consistent network of greenways and quietways across the existing and extending urban settlement providing key connections to the station and other main local destinations. Landownership may be problematic in ensuring the small development are linked appropriately.

- In a number of cases the addition of formal cycle lanes may prove difficult given the nature of the road network (available space, speeds, role). Formal Cycle lanes are one of the main solutions to ensuring that residents will take up active modes for both short and longer distance movements.
  - Improved footway provision as a minimum on the B1027
  - Improved cycle parking provision at the station
  - Cycle Lane on Wivenhoe Road linking site with village centre and rail station



Legend

Opportunities and Constraints

Site location

Potential section of road to take access from

0 100 200 400

Figure 61: Alresford Transport Opportunities and Constraints

5.12 Social Infrastructure - Education

Essex County Council has developed a Commissioning School Places in Essex 2015-2020, published February 2016 and Meeting the Demand for School Places in Essex - 10 year Plan 2016-2025 (2016). Both documents provide information related to future pupil numbers and where further expansion will be required to meet housing demands.

The 5km buffer of Alresford is entirely within Tendring Local Authority. Therefore, for the following social infrastructure review, both Alresford and Tendring are assessed to determine the current situation, committed infrastructure and any future issues development in the village may cause.

Key Findings - Primary

Current Situation within 5km Buffer (February 2017)

12 Primary Schools

237 Surplus Places

Committed Infrastructure within 5km Buffer

- There are no planned primary school infrastructure within the area of investigation. However there is one potential primary school project proposed in the wider 5km area, however it is currently not committed.

FE	Location	Delivery Commitment	Mechanism
1FE	Brightlingsea Infant	Committed	2016

Table 17: Committed Primary Infrastructure. Source: Meeting the Demand for School Places in Essex - 10 Year Plan 2016-2025

Future and Wider Issues

- The Commissioning Plan forecasts an increase of 190 primary school pupils for Tendring between 2015-2020. With the additional pupils, this translates to a forecast surplus of 358 places across Tendring.
- Potential growth at Alresford would likely create a demand for primary school places, therefore proposals coming forward would need to consider the delivery of future education infrastructure provision.
- Essex County Council are seeking contributions from housing developers towards the cost of providing the additional places required for the pupils generated by new housing.

Key Findings - Secondary

Current Situation within 5km Buffer (February 2017)

1 Secondary Schools

131 Surplus/Deficit Places

Committed Infrastructure within 5km Buffer

- There are no secondary schools committed for Tendring, instead it appears there will be school closures with the closing of Tendring Enterprise Studio School. The closure of the school will reduce the number of places available for Years 10, 11, 12 and 13 in Tendring area.

Future and Wider Issues

- The Commissioning Plan forecasts an increase of 182 secondary school pupils for Tendring between 2015-2020. With the additional secondary pupils, this translates to a forecast surplus of 346 places across Tendring to 2020.
- Pupil numbers across the remaining secondary schools are forecast to remain relatively stable over the next 5 years. While new housing will be monitored, it appears that there are sufficient school places to meet increase demand.
- Essex County Council are seeking contributions from housing developers towards the cost of providing the additional places required for the pupils generated by new housing.

Key Findings - Further Education

Current Situation within 5km Buffer (February 2017)

1 Further Education

Committed Infrastructure within 5km Buffer

- There is no identified Further Education infrastructure identified within the 5km radius of the area of investigation

Future and Wider Issues

- The minimum age at which young people in England can leave learning increased in 2013, requiring young people to continue education or training to the end of the academic year in which they turn 17. This has been followed with a policy beginning in 2015 where all young people must remain in learning to their 18th birthday, This is referred to as Raising the Participation Age (RPA).
- This puts more pressure on the local authorities to ensure and provide options for young people to learn the skills required. Local authorities have the duty to:
  - Promote effective participation in education or training to young people;
  - Ensure that sufficient places are available to meet the reasonable needs of all young people and encourage them to participate; and
  - Make available to young people support that will allow them to participate in education or training.

Sources

- Department of Education, Edubase Portal (May 2016)
- Commissioning School Places in Essex 2015-2020

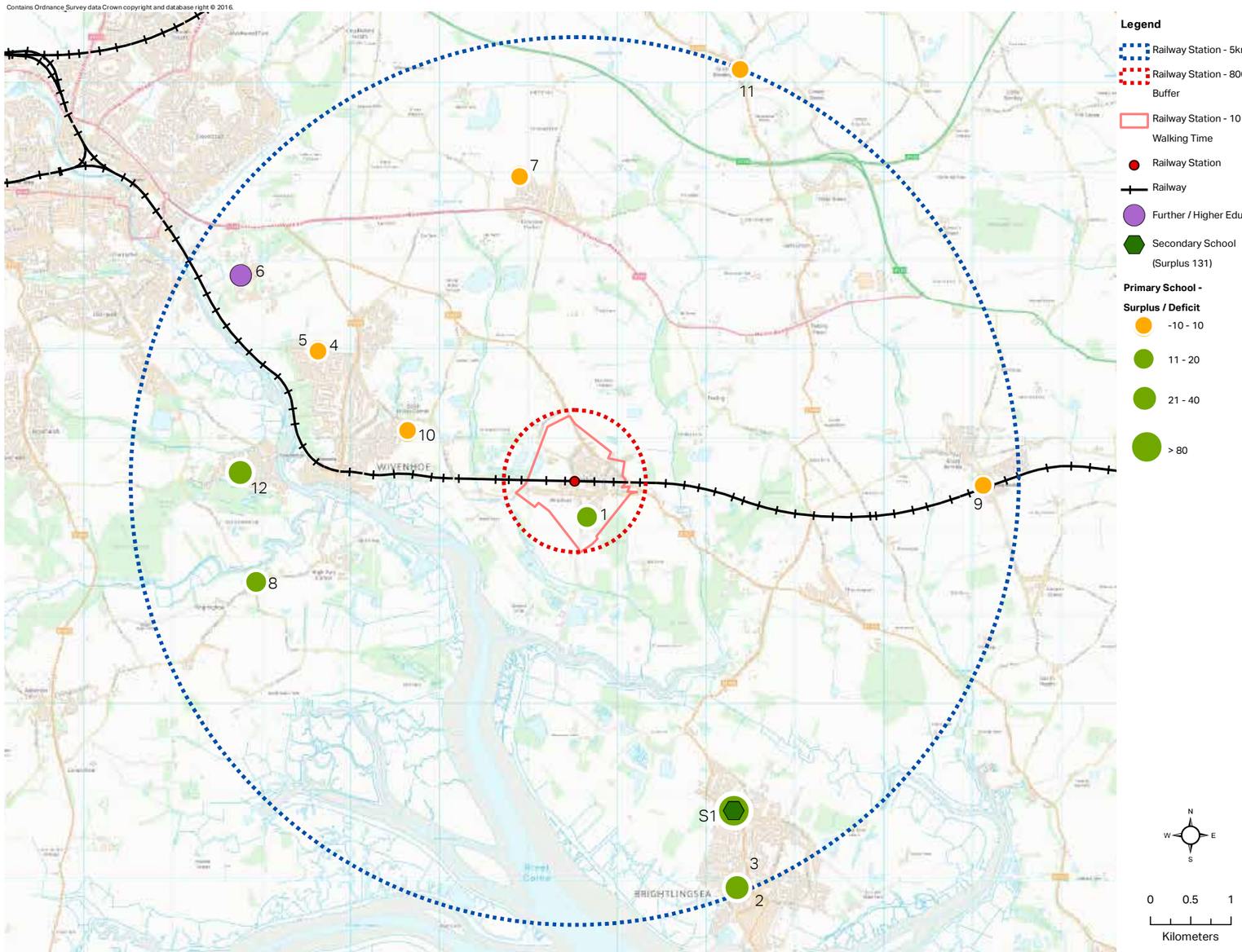


Figure 62: Alresford Edcuation Context. Source: Edubase (2016)

Primary School Capacity Analysis

Primary School Name	Capacity	Surplus / Deficit	Label
Alresford Primary School	120	12	1
Brightlingsea Infant School	270	9	2
Brightlingsea Junior School	360	37	3
Broomgrove Infant School	180	3	4
Broomgrove Junior School	240	6	5
Colne Community School and College	1488	131	6
Elmstead Primary School	208	-5	7
Fingringhoe Church of England Voluntary Aided Primary School	93	11	8
Great Bentley Primary School	210	4	9
Millfields Primary School	210	2	10
St George's Church of England Primary School, Great Bromley	119	0	11
St Lawrence Church of England Primary School, Rowhedge	210	27	12
TOTAL	**3,708**	**237**	

Secondary School Capacity Analysis

Secondary School Name	Capacity	Surplus / Deficit	Label
Colne Community School and College	1,488	1,357	S1
TOTAL	**1,488**	**1,357**	

Higher Education

Secondary School Name
University of Essex

Social Infrastructure - Health

Key Findings

Current Situation within 5km Buffer

2
GP
Practices

0
Hospitals

GPs

- There are 2 GP practices identified within 5km of the area of investigation.
- There is an overall deficit in provision of GPs across the wider 5km buffer zone with -2,986 patient spaces. However, this is a theoretical assessment, and the actual pressures may be more pressing. It can be seen that one of the facilities has a very poor patient to GP ratio, while the other has only a marginal surplus capacity. Further development will put increased pressure on existing capacity.

Hospitals

- There are currently no hospitals identified within 5km of Alresford

Key Findings

Committed Infrastructure within 5km Buffer

- Following a review of the Tendring Infrastructure Delivery Plan (2013), there are no identified healthcare infrastructure projects within a 5km radius of the area of investigation

Key Findings

Future and Wider Issues

- The Area of Investigation sits within North Essex Clinical Commissioning Group, which is an NHS organisation set up by the Health and Social Care Act 2012 to organise the delivery of NHS services in England.
- The CCGs receives funding and are commissioned by NHS England to provide primary care services (including GPs), in turn the CCGs commission most services in their areas to trusts that include hospital and community healthcare.

North Essex Clinical Commissioning Group

- North Essex CCG 5-year plan will look to put people at the centre by commissioning around the needs of people, rather than the service.
- It is projected that demand for older people's services over the next 5-10 years will increase by roughly 20,000 people (those over the age of 55).
- In addition, the health and social care system faces considerable financial challenges over the coming years. The CCG will look to commission integrated health and social care services, promote prevention and early intervention, and promoting self-care to begin diminishing the burden.

Sources

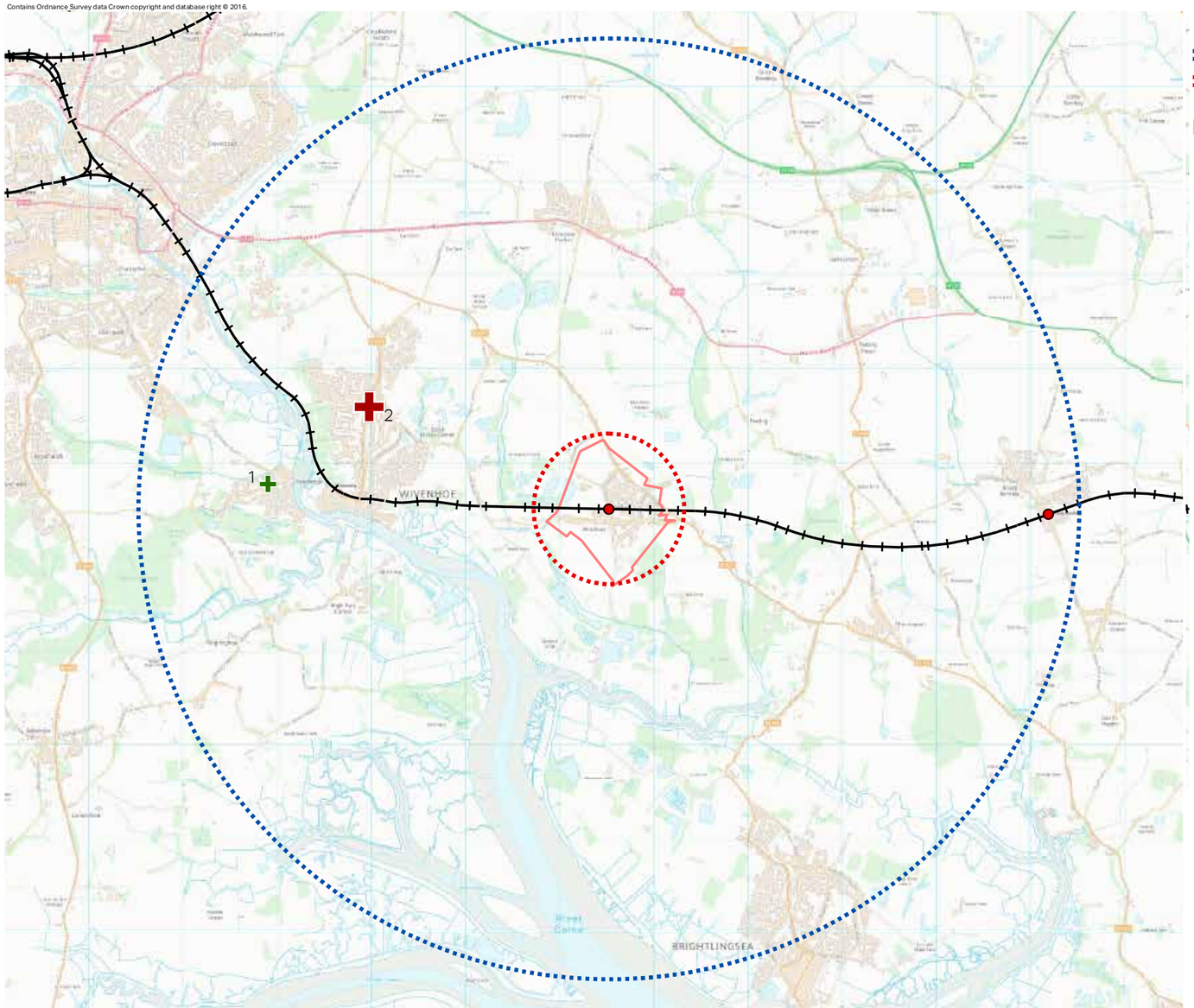
- NHS England, MyNHS Portal datasets (May 2016)
- Health and Social Care Information Centre (HSCIC) dataset (January 2016)

Sources

- Tendring Infrastructure Delivery Plan (2013)

Sources

- North Essex Clinical Commissioning Group



GP Capacity Analysis

Practice Name	GP's	Patients	Capacity	Surplus / Deficit	Label
Rowhedge Surgery	7	12,511	12,600	89	1
Wivenhoe Surgery	3	8,475	5,400	-3,075	2
TOTAL	**10**	**20,986**	**18,000**	**-2,986**	

Figure 63: Alresford Health Infrastructure Context. Source: MyNHS, HSCIC

Social Infrastructure - Community Facilities and Emergency Services

Key Findings

Current Situation within 5km Buffer (May 2016)

Emergency Services

- Across the wider 5km buffer zone the analysis identified a single fire station only, with no police or ambulance stations.

Libraries

- There is one library within the 5km wider area of the area of investigation.

Youth Centres

- There is one youth centre within 5km of Alresford

Community Centres

- There are one community centres within 5km of the proposed development.

Sources

- East of England Ambulance Services, Essex Police, Essex County Fire & Rescue Services
- Google maps to identify community facilities, libraries and youth centres

Key Findings

Committed Social Infrastructure within 5km Buffer

- A review of Tendring's infrastructure Delivery Plan (2013) has not identified any future projects within the 5km radius of the area of investigation within Tendring as it relates to community facilities and emergency services.

Sources

- Tendring IDP (2013)

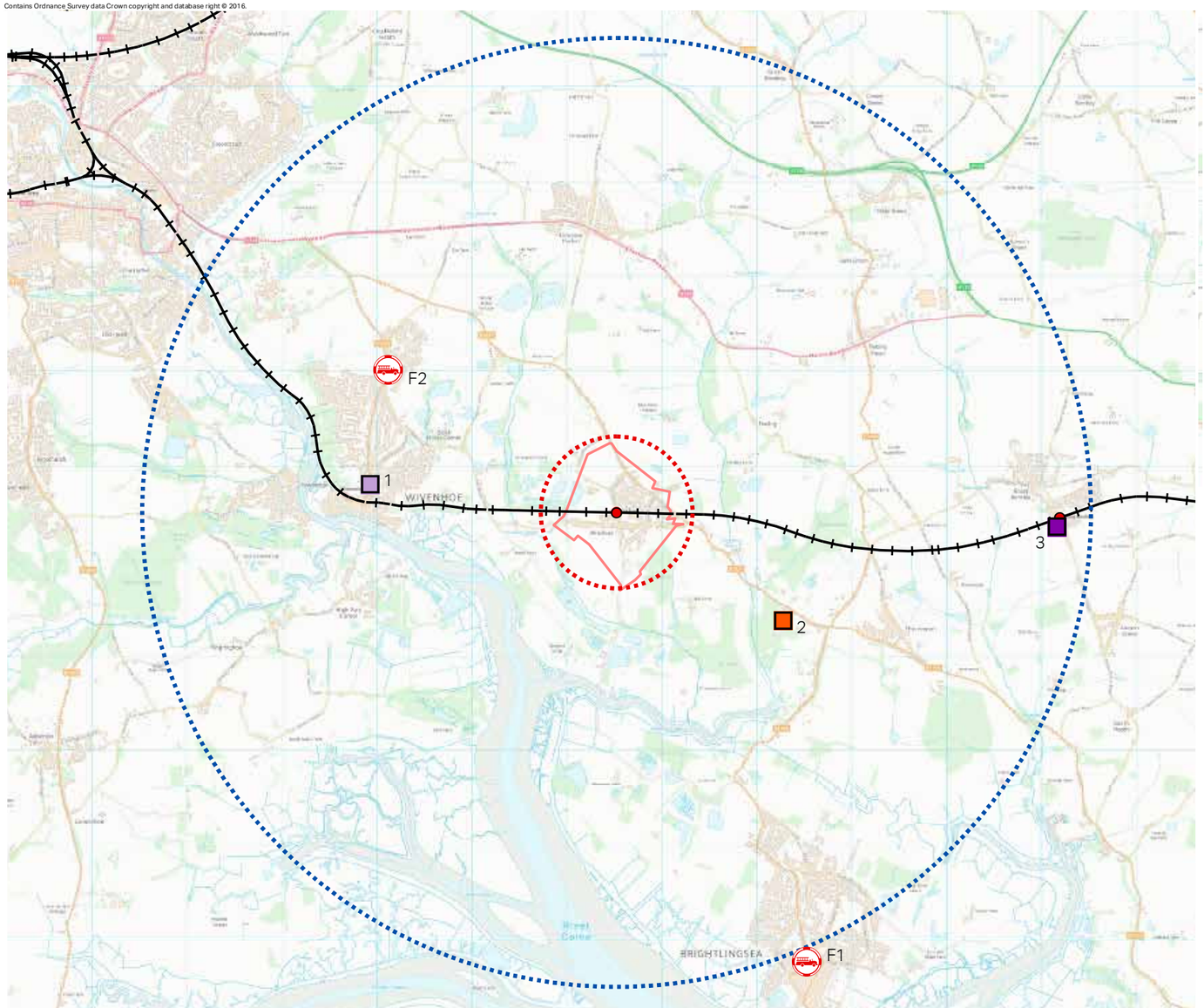
Key Findings

Future and Wider Issues

- A review of ambulance services has identified a change in the future model of ambulance provision by the early 2020s within the East of England's Ambulance Services. This involves a hub and spoke service in order to meet demand from existing population. Traditional ambulance stations act as the main hubs of service, with smaller 24/7 posts acting as the spoke.
- Further work will need to determine whether the capacity of the existing emergency services can cope with the forecast increase in population.
- Further work will need to determine whether the capacity of the existing community facilities can cope with the forecast increase in population. However, it is likely that future development at the area of investigation would need to provide some community offer.

Sources

- East of England Ambulance Services
- Essex Police
- Essex County Fire & Rescue Services



Community Service Facilities	
Name of Facility	**Type**
Wivenhoe Library	Library
Scout Association	Youth Centre
Great Bentley Village Hall	Community Centre

Emergency Service Facilities		
Name of Facility	**Type**	**Label**
Station 20	Fire	F1
Station 21	Fire	F2

Figure 64: Alresford Community Facilities and Emergency Services. Source: East Of England Ambulance Services, Essex Police, Essex County Fire & Rescue Services, Google Maps to Identify Community Facilities, Libraries and Youth Centres

5.13 Development Capacity

Key Drivers

Overview

The total potential site area surrounding Alresford station is approximately 35 hectares comprising agricultural land and settlment fringe sites. This is based on a refined 10minute walknet under current conditions. 23.81ha is considered developable (residential/employment/mix-use land), while approximatly 11ha would be needed for primary infrastructure (roads, etc) and green infrastructure requirement.

Landuse

- It is anticipated that development at Alresford could create 736 new homes at 35 dwellings per hectare (dph)
- At least 2.1 ha of mixed-use space would be required. This would largely fulfil demand for retail, the care sector, leisure and hospitality uses and non-commercial needs.

Green Infrastructure	Mixed-Use	Employment	Primary Infrastructure	Residential
12%	6%	2%	20%	60%

Table 18: Alresford Proposed Land Use Parameters (%)

Green Infrastructure	Mixed-Use	Employment	Primary Infrastructure	Residential
27,424 sq.m	13,712 sq.m	4,571 sq.m	45,706 sq.m	137,119 sq.m

Table 19: Alresford Proposed Land Use Parameters (#)

- An assumed breakdown of potential land use has been applied by AECOM for each of the sites in order to determine the residential growth arising from developable land. It's been assumed that 60% of developable land would be for residential, 20% for primary infrastructure (roads, etc), 12% for green infrastructure and 8% for employment or community facilities.
- The land use parameter breakdown would vary for each site, depending on individual characteristics and setting. This approach provides a reasonable set of parameters based on future growth occurring within established villages.
- The population of Alresford is approximately 2,000 people (2011 Census). A housing yield of 736 dwellings would result in a population of 1,693 people (based on an average household size of 2.3 (ONS)). This would be a growth of over 90% on the existing village population.

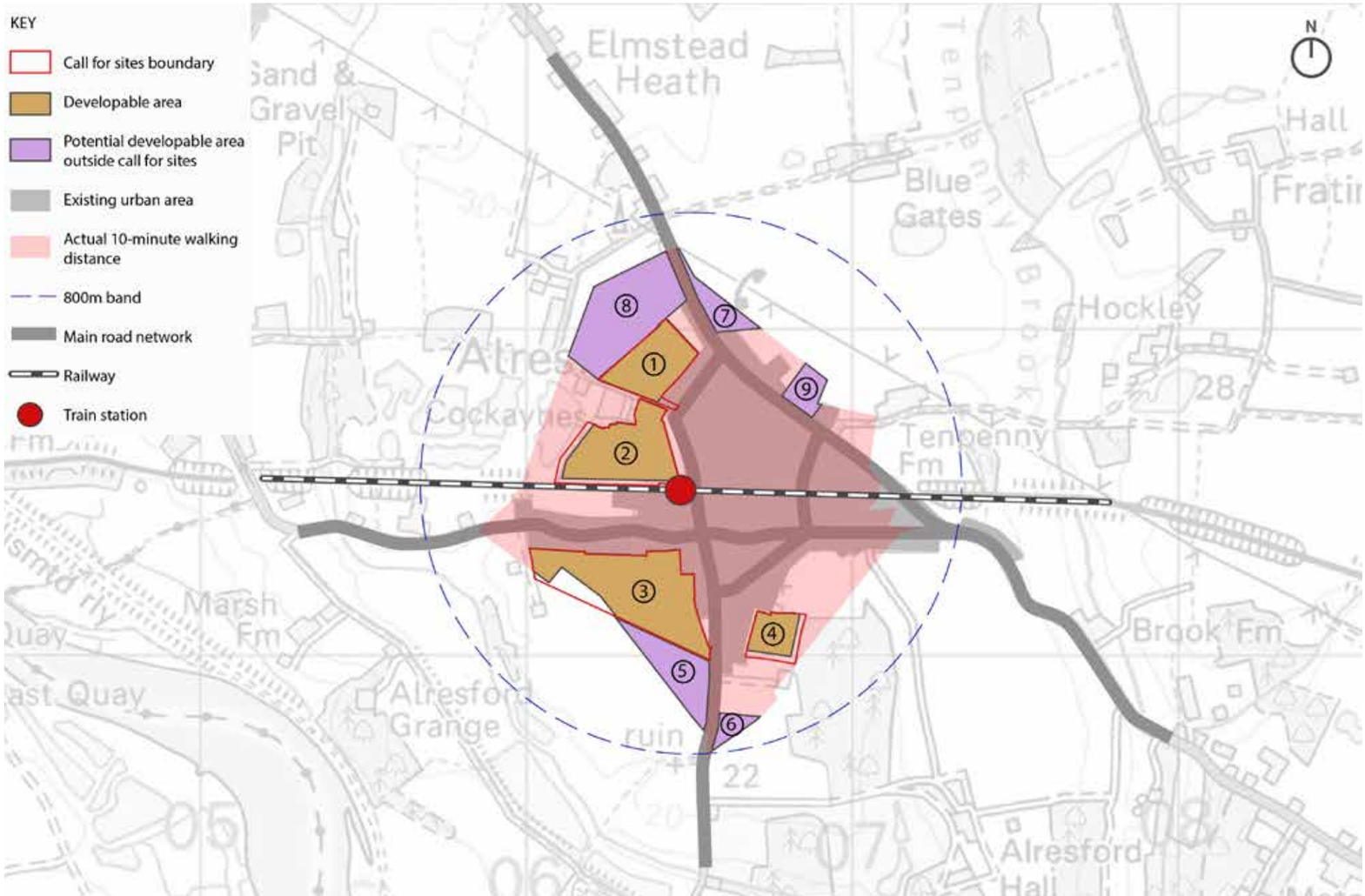


Figure 65: Developable Area Diagram

35.03 ha
Total Site Area

2.1 ha
Mixed-Use (Community Facilities)

7.01 ha
Primary Infrastructure

736
35 dph

23.82 ha
Total Developable Area

0.70 ha
Employment and Leisure Land

21.01 ha
Residential Developable Area

4.2 ha
Green Corridors and Infrastructure

Note. If we assume that the full 800m buffer of Alresford is considered, at an 80% residential development rate the 110.85 ha of land may yield approximately 3,100 homes at 35 dwellings per hectare. However, it is clear that development at this scale would substantially alter the nature and character of the village. It would also dramatically impact the ecology, visual amenity and the existing transport networks in the surrounding area. Furthermore, this figure does not include any land constraints beyond flood risk zones, protected ecology sites and existing urban development and therefore may potentially be lower once these have been factored into the assessment .

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5.14 Indicative Infrastucture Requirement

Project List

The following table identifies the key infrastructure requirements to support the proposed development at Alresford. These projects are based on a high level assessment of the infrastructure requirements for the development option and the growth (housing and employment) envisaged. It is assumption based only and related either to the transport strategy outlined above, the social infrastructure standards described in the North Essex Garden Communities Options and Evaluations Report Appendix 2 and applied to the projected population. The utility infrastructure requirements are informed where possible through preliminary discussions with the relevant service providers. They are indicative only and are not based on a masterplanning exercise.

Infrastructure	Demand Arising from Development Option	Cost per Unit (£)	Total Cost (£)	Phasing	Justification
Education					
Primary Schools Form Entry	0.3	£3,750	£2,760,000	Phasing of education infrastructure to occur within development period and post according to the housing growth triggers	Minimum requirement, assuming off-site mitigation and no account of existing surplus/deficit in existing surrounding facilities. Education costs and calculations based upon *The Essex County Council Developers' Guide to Infrastructure Contributions - Revised Edition 2016*
Secondary Schools Form Entry	0.3				
Early Year Facilities	0.4				
Healthcare & Community					
General Practioners	1	£2,250	£1,656,000	Phasing of healthcare infrastructure to occur within development period and post development, according to the housing growth triggers for each facility	Minimum requirement, assuming off-site mitigation and no account of existing surplus/deficit in existing surrounding facilities. All AECOM Social Infrastructure Modelling (SIF) standards as set out in Appendix 2 of the North Essex Garden Communities Options and Evaluations Report..
Dentists	1				
Acute Hospital Beds	3				
Library Space	42				
4 Court Sports Centre	0.4				
4 Lane Swimming Pool	0.1				
Open Space					
Outdoor Sport	2.16	£2,750	£4,469,183	Phasing of open space infrastructure to occur within development period and post development, according to the housing growth triggers for each type	Minimum requirement based on standards as set out in Appendix 2 of the North Essex Garden Communities Options and Evaluations Report..
Children's Play Space	0.49				
Semi Natural Open Space	2.82				
Parks and Gardens	1.86				
Amenity Green Space	1.25				
Allotments	0.32				
Utilities - Scheme-wide Enabling Works					
Energy		Scheme Wide Enabling Works Cost/unit: £16,250 Environment/ Sustainability/ Waste Cost/unit: £500	Scheme Wide Enabling Works Total Cost: £11,960,000 Environment/ Sustainability/ Waste Total Cost: £368,000		
3 No. 11 kV to 400 V distribution substations	1.4 MW			Phasing of energy infrastructure to occur within development and post development period, according to housing growth triggers	Distribute end-user loads
400 V LV circuits from distribution substations to end users	-				
Potable Water					
New network of distribution pipework	268 m3/day			Phasing of potable water infrastructure to occur within development and post development period, according to housing growth triggers	New supply pipework
Waste Water					
Connections for all properties to existing waste water collection network	-			Phasing of waste water infrastructure to occur within development and post development period, according to housing growth triggers	Raw sewage to existing treatment plants
Expansion of existing waste water network to local Water Recyling Centre	-				
Possible expansion of existing local Water Recycling Centre	-				
Gas					
Plot connections for all properties to gas distribution network	-			Phasing of gas infrastructure to occur within development and post development period, according to housing growth triggers	Connecting to end users

Infrastructure	Demand Arising from Development Option	Cost per Unit (£)	Total Cost (£)	Phasing	Justification
Utilities - Off-Site Requirements					
Energy					
1 No. 11 kV ring circuit from primary substation to connect to distribution substations	-	-	£2,540,000	Initial Phase	Provide electrical power capacity for development
Waste Water					
Assumed 5km connection to existing waste water treatment works -Enabling	-	-	£2,500,000	Initial Phase	Sewage network connection and flow to small existing treatment plants in early phases
Telecommunications					
Development of access chambers for BT Telecoms network, BT Openreach fibre optic network and private telecoms network throughout development	-	-	£500,000	Initial Phase	ICT and data networks to end users
Transport - On-Site / Off-Site Requirements					
Travel plan measures (smarter choices, car clubs, charging points, etc) - Straight Period			£625,600	Up to Plan Period	To ensure non-car mode transit is embedded from the outset and to connect with the sub-regional transport connectivity solutions.
Upgraded pedestrian & cycle networks - Up to Plan Period			£500,000	Up to Plan Period	
Bus service subsidies & other public transport improvements - Straight Line			£294,400	Up to Plan period	
New site access junction - Initial Phase			£4,500,000	Initial Phase	To facilitate vehicular connection to the site
Upgrade existing site access junction - Initial Phase			£3,000,000	Initial Phase	
Upgrade to Cockaynes Lane B1027 - Enabling			£750,000	Initial Phase	

****Total Cost**	**£36,423,183** (Total Cost at May 2016 Prices but excluding Professional Fees and Design Development and Construction Contingency)

Table 20: Key Infrastructure Requirements for Alresford

This Section sets out the Site Option and Performance Review against each option.

06 Review against the North Essex Garden Communities Charter

6.1 Review

The Garden Communities Charter has been prepared by the North Essex Councils (Colchester Borough Council, Tendring District Council, Braintree District Council and Essex County Council) articulate their ambition for the Garden Communities. It sets out 10 placemaking principles based on the TCPA's Garden City Principles, but adapted to for the specific North Essex context for the 21st Century.

The Charter is divided into three themes, under which a series of placemaking principles sit. This section of the report provides a high-level review of how the CAUSE proposal satisfies the Charter.

Theme 1: Place & Integration

Principle 1: Green Infrastructure – the garden communities should provide generous amounts of open space, providing multi-functional and integrated natural environments.

Because of the rural nature of the four settlements identified for expansion, existing natural landscape assets generally exist within the rail-station walk net areas, the wider 800m buffer zone and beyond this. It should therefore be possible to use these as structuring elements of a green infrastructure strategy and connected grid. However, because not all sites at the individual settlement levels are contiguous, there may be some limitations to achieving a fully integrated and connected green grid at the settlement level.

Principle 2: Integrated and Sustainable Transport – the garden community should be planned around achieving a step change in integrated and sustainable transport, placing walking, cycling and public transit systems at the heart of the development.

The Colchester Metro Town proposal is based on the notion of expanding settlements that benefit from an existing railway station, providing direct connectivity to the employment centres of Colchester and Clacton-on-Sea, which will also provide much of the retail and leisure requirements too. In this context, this proposal theoretically responds to the Garden Communities principle of transit-oriented development.

New development that would fall within the 10 minute walk net at each of the four expanded villages would need to include good provision of convenient and safe walking and cycling routes to the station, which should be possible. However, it is likely to be far more challenging to achieve a fully integrated and sustainable transport network throughout the settlement as whole (i.e. the old or existing development as well as the new). In general existing dedicated cycle ways don't exist or are limited, and the need therefore to retrofit these with improved footways as well, especially in and around the stations, may be difficult. Additionally, none of the villages and specifically their railway stations has adjacency to an A-classified road, with access dependent on B-classified (rural) roads only; Wheely railway station is the shortest distance to an A-road (A133) at approximately 1km. This may impact on the ability to fully integrate these settlements with a North Essex BRT system for example, which might be required to compliment the rail service. This would increase public transit choice and flexibility which is necessary to achieve the overall step-change in uptake of sustainable transport modes required. In these locations, despite the presence of the railway station, the transport modes required to underpin development are starting from a low base.

Principle 3: Employment Opportunity – the garden community will seek to provide access to one job per household within the new community or within a short distance by public transport.

Whilst advances in technology and changing working patterns may overtime increase the attractiveness of the individual Metro Town settlements as employment locations, in comparison to larger and better connected centres such as Colchester, this is always likely to be limited and potentially niche. Metro-Town is therefore based on the principle of out commuting for employment, albeit using the railway to ensure sustainable mode use. However, to be successful this will require the concentration of businesses and employment opportunities within walking distance of the railway stations of Colchester and Clacton. Or high frequency and reliable connecting bus services (or BRT) from the station to other employment clusters, but distances should be short.

Principle 4: Living Environment - to create a place that is inclusive, walkable, sociable and vibrant, with a diverse mix of homes and a range of community services.

Good design can create walkable and attractive places regardless of scale, but achieving a diverse mix of homes, a range of community services, and sociable and vibrant neighbourhoods maybe more challenging as a result of the limited scale of the individual settlements, which can be achieved consistent with the primacy of the rail station walk net. In each case the existing village settlement (population /facilities/ community) maybe helpful in generating a sense of community and place, including the blend of old and new, but equally there could be resentment and objection from existing residents. Pooling community infrastructure requirements across the four settlements may be a solution to securing viable and deliverable infrastructure and services. But this would be dependent on the provision of high frequency and reliable public transit and the provision of safe and attractive active mode (walking and cycling) infrastructure linking the individual settlements.

Principle 5: Smart and Sustainable Living – Embracing a smart, innovative and sustainable approach that fosters resilient environments and communities.

Designed in from the outset it should be possible for the new development to embrace smart technology and be planned to maximise natural resource efficiency. The rural location of each settlement may however require an overall uplift in local area fixed line and mobile telecommunications required to enable smart technology provision and use. The presence of the rail corridor linking the settlements may be beneficial in this respect. It is likely to be harder to improve the sustainability of existing property. However, in terms of power for example, the ongoing shift to decarbonise the national grid means there is increasingly less need for new communities to consider decentralised (sustainable or green) energy solutions, which are often more effective and viable when serving larger scale communities, with a mix of landuse.

Principle 6: Good Design – promoting the highest quality of design and development in the built and public realm, with local assets capitalised to help create distinctive places.

Good design should be possible in all development, both in terms of block layout and the within buildings themselves, and across all scales. The design challenge for each of the four settlements is more likely to be the integration of the new with the existing, and in particular managing density variation. The Charter envisages that higher densities (i.e. above 35 dph) would be used in public transit corridors or nodes, but this might be inappropriate for these settlements. For example where potential development sites have been identified in these villages through Tendring DC's call-for-sites process, the Council has theoretically assumed a density of 16-20dph, which would be much more in keeping with existing density. The planning and design processes would need to be used to test the extent to which the character and identify of the existing villages might be changed through expansion, and the community desire for this.

Theme 2: Community

Principle 7: Community Engagement – locally-led initiative, shaped by existing and new communities as they emerge.

As an existing settlement, with an established community, there is likely to be an interested local population whom will want to be engaged in the process at each if the four sites. The extent of understanding or engagement with the CAUSE proposal is not known to AECOM at this time, but from experience it would be typical to observe both support and opposition.

Principle 8: Active Local Stewardship – a settlement and community managed in perpetuity with the direct involvement of their residents and businesses, and fostering a shared sense of place.

As existing settlements amenity groups or trusts might already exist on which stewardship initiatives related to the wider promotion and delivery of the Garden Community and management of community assets could be developed. Alternatively, new arrangements could be identified. Such systems should be capable of operating as a single entity across the four villages where community assets or facilities are intended to be shared, but the governance processes will inevitably be more complex.

Theme 3: Delivery

Principle 9: Strong Corporate & Political Public Leadership - the North Essex Councils will provide a clear vision for the Garden Communities and a commitment to their long term success, high quality placemaking, timely infrastructure provision and a steady pace of housing and employment development.

AND

Principle 10: Innovative Delivery Strategy – delivered through a genuine and pro-active partnership approach between public and private sector, where risk and reward is shared and community empowerment enabled.

By expanding existing settlements the presence of an established population on which to grow may enable the quicker attainment of population critical mass, which may have benefits in terms of some infrastructure or services provision, particularly public transit and community facilities. In other respects however the ability of the North Essex Councils to develop a comprehensive and long term strategy and delivery mechanism to bring forward the expansion of the villages of Alresford, Great Bentley, Weeley and Thorp- le-Soken as a genuine Garden Community, maybe challenging for the following reasons

- With only limited exception in the villages of Weeley, Great Bently and Alresford, land within the 10 minute walk net of the railway station in each village is not currently being promoted for development. The desirability of individual landowners to release their land for the garden community is therefore unknown at this time. The degree of landowner fragmentation is also an unknown.
- The quantum of developable land provisionally identified within the 10 minute walk net of the railway stations, both at the individual settlement level and in aggregate across the four villages is relatively small. And is unlikely to provide a long term pipeline of housing supply.
- Without a large volume of new housing either at the individual settlement level or in aggregate across the four villages, the ability to fund and implement comprehensive and or innovative infrastructure solutions may be more difficult. Albeit the requirements are likely to be less in the first instance commensurate with the scale of garden community achievable individually or collectively. An example of this relates to the power upgrades required, which because of the distances to the primary sub-stations is generating very high unit costs.
- Because of the rural location of the settlements and their limited scale under this proposal, there may be fewer opportunities to attract private sector development partners, alternative financing or innovative delivery mechanisms, to assist the Councils in achieving their Garden Community ambitions. This may limit the extent of variation in the types and tenures of the homes provided and who provides them. In this location the market demand is also likely to be less diverse than a location closer to a main urban centre or strategically better connected.
- As significant extensions to existing settlements, the scale of public and stakeholder engagement, including Parish Councils, would need to be far more involved than in locations which are more sparsely populated, predominantly agricultural, or where the relationship or impact of the potential Garden Community with existing villages is far less direct. As consequence timeframes and deliverability might be more protracted.

About AECOM
AECOM is at the forefront of urban planinng practice and thought leadership within the UK and across the world. AECOM is one of the top employers of chartered town planners in the UK and overseas. Our design, planning + economics team benefit from working in a multi-discipline environment for the world's leading professional and technical services firm.

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