LAND AT JUNCTION 11, M20 ADVICE NOTE

April 2016

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Revision	Date	Details	Prepared by	Reviewed by	Approved by
01	March 2015	Draft	Giuseppe Verdone Urban Designer	Mark Hughes Associate	Jonathan Crabb Technical Director
02	May 2015	Draft	Giuseppe Verdone Urban Designer	Mark Hughes Associate	Jonathan Crabb Technical Director
03	June 2015	Draft	Giuseppe Verdone Urban Designer	Mark Hughes Associate	Jonathan Crabb Technical Director
04	April 2016	Final	Giuseppe Verdone Urban Designer	Mark Hughes Associate	Jonathan Crabb Technical Director

01

INTRODUCTION

Introduction

This document explores the potential for development, at different scales and with different mixes of land use, on land adjacent to Junction 11 of the M20, located within Shepway District Council, Kent.

The study is intended to assist Shepway District Council (SDC) in its assessment of what might constitute appropriate development at this location and also to inform discussions between SDC and the various landowners and others with an interest in the study area.

Scope

AECOM has been appointed by SDC to provide strategic planning advice in respect of the opportunity for development adjacent to Junction 11 of the M20. AECOM has worked on a number of studies in the area and is able to bring considerable local knowledge to the commission. In addition, the team comprises a mix of landscape architects, planners, urban designers, transport planners and utilities engineers, allowing AECOM to address the full range of complex issues that might impact on a large and potentially complex site, such as Junction 11.

Figure 1.1: The study area (showing the various parcels and their areas)

Background

The potential suitability of land adjacent to Junction 11 was identified in SDC's emerging economic development strategy. This potential was further reinforced by the accompanying land and property market analysis, which noted the viability of introducing high quality employment sites close to the M20 and the associated rail route (the strategic nature of these two transport corridors being a key factor in this current assessment).

Demand for development in the vicinity of Junction 11 is evident from the number of recent proposals for commercial and residential developments in the area. Development proposals included those submitted through the Council's Places and Policies Local Plan 'Call for Sites', such as the completed Stop 24 service station. However, a co-ordinated plan for the site and the surrounding area has not been prepared, to date.

In terms of planning policy, there is currently no provision for a strategic development at Junction 11, beyond the references to the potential for a strategic employment site to be development at this location. However, given the cyclical nature of the planning process, SDC will , at some point in the near future, begin to give consideration to the next iteration of its Local Plan. On that basis, there is scope for a more considered assessment of the capacity for development at Junction 11, how that capacity might be framed in terms of revised policy and, also, how the potential for development might in turn help shape policy, particularly in terms of strategic council objectives in respect of the continued economic development of the district.

SDC has, therefore, identified the need for a co-ordinated planning approach for the area, and this current study is the first step in that process. As the land is not owned by the Council, this work represents a feasibility study rather than a definitive plan for the area. The Council has received sufficient positive feedback, from landowners, to commission this current technical assessment and, in doing so, SDC sees itself as performing an enabling role. Once this initial assessment is complete, the Council intends to engage further with the landowners to discuss how matters might move forward.

Purpose of the Document

This document has been prepared on behalf of SDC in its capacity as the plan making authority - it is not have any material interest in the land under consideration. The purpose of this study is to provide a comprehensive, high level overview of the constraints and opportunities and the potential for development at Junction 11. It is SDC's intention to be able to put emerging proposals into a strategic context, both in terms of need and opportunity.

It is also SDC's intention to scope the nature of the development that might be delivered at Junction 11, both in terms of land use and scale. While initial discussions with landowners focused on a more limited piece of development, on land close to the junction, SDC is keen to understand the implications of a more comprehensive scheme, particularly in light of the aims of the emerging economic development strategy and the potential for policy to be updated in the medium term.

As noted, above, there is also the possibility that this study might also feed into emerging, revised policy relating either to this location or to the more general principles of development opportunity, whether it be residential, mixed use or commercial/employment.

Scope

At the project inception meeting with SDC, it was confirmed that the study, while focusing on a core area for the main outputs, should not be limited to that smaller parcel of land. It was agreed that if there was a rationale for a more comprehensive study area to be considered as part of the commission, AECOM would define that area, assess the constraints/opportunities and prepare strategic options that supported the more detailed options proposed for the core study area.

The intention is that both the core and wider study area exercises should provide SDC with a range of options, each with a high level evidence base providing a rationale for that development option. The options will have their origins in current planning policy, with the proviso that policy is continually updated and revised.

Given the likelihood that some of the development potential at Junction 11 might not be realised within the current Local Plan period, it is not unreasonable for SDC to begin a process of assessing where future development opportunity might be located and how planning policy might develop to allow for that opportunity to be realised.

With reference to the original brief and the themes set out above, SDC identified the following as key tasks for this commission:

- Prepare a baseline assessment of the existing transport infrastructure (rail and road) and its capacity;
- Prepare a baseline assessment of the existing utilities and their capacity;
- Undertake a desk top site investigation study to identify potential for abnormal cost items;
- Prepare a constraints plan identifying physical, environmental (including flooding and archaeological constraints) and planning constraints;
- Undertake a 'high level' landscape character assessment;
- Identify employment development areas around J11, within Areas A and B, proposing boundaries to development areas;
- Prepare sketch layouts to identify floor areas for Areas A and B;
- Prepare indicative layouts for lorry parking as part of the mix, using existing studies, where possible;
- Identify access and new road layouts, and
- Assess requirements for reinforcement of utilities.

Crucially, SDC anticipate a key output of the work being consideration of the broader spatial context and infrastructure requirements recognising that policy supporting development across a wider area would probably form part of a Core Strategy Review.

However, it should be borne in mind that the core study area, for the purposes of this current exercise, comprises Parcels A and B (Figure 1.1, above).

02

THE SITE

Strategic Site Context

To properly understand the capacity of Junction 11 to accommodate development, it is vital that we have a clear picture of the physical context within which development might be delivered.

Given the strategic nature of this document, the initial studies were, for the most part, desk-based, with database information from Envirocheck and utilities providers, for example, informing the definition and assessment of physical constraints. These desk-studies were augmented by a site visit, early in the project. The assessment considered the following themes:

- Environmental designations, including landscape and ecology, flooding, etc.;
- Built heritage, including archaeology;
- Transport infrastructure, and
- Utilities.

This section of the report covers matters relating to the physical and environmental constraints including:

- Landscape and environmental designations;
- Built heritage designations;
- Hydrology and topography;
- Flood risk;
- Ground conditions;
- Agricultural land classification;
- Transport, and
- Utilities.

Strategic Setting

The study area is located within Shepway District Council, approximately is 8 km from the centre of Folkestone, 3.5km from Hythe and 14km from Ashford. There are no other major urban areas in close proximity to the study area.

The infrastructure corridor comprising the M20 motorway and railway lines serving HS1 and local services, is a major structuring element. The station at Westenhanger, with local stopping services to both Folkestone and Ashford is a key consideration, as there may be considerable scope for an improved service, should development occur in some form.

To the north, south and east lie designated and protected landscapes (including Kent Downs AONB).

The Study Area

At the project inception meeting with SDC, it was confirmed that this current study, while initially conceived of as focusing on a core area for the main outputs, should not be limited to that smaller parcel of land. It was agreed that if there was a rationale for a more comprehensive study area to be considered as part of the commission, AECOM would define that area, assess the constraints/opportunities and prepare strategic options that supported the more detailed options proposed for the core study area.

The intention is that both the core and wider study area exercises should provide a range of options, each with a high level evidence base providing a rationale for that development option. The options will have their origins in current planning policy, with the proviso that policy is continually updated and revised.

Figure 2.1: Strategic location

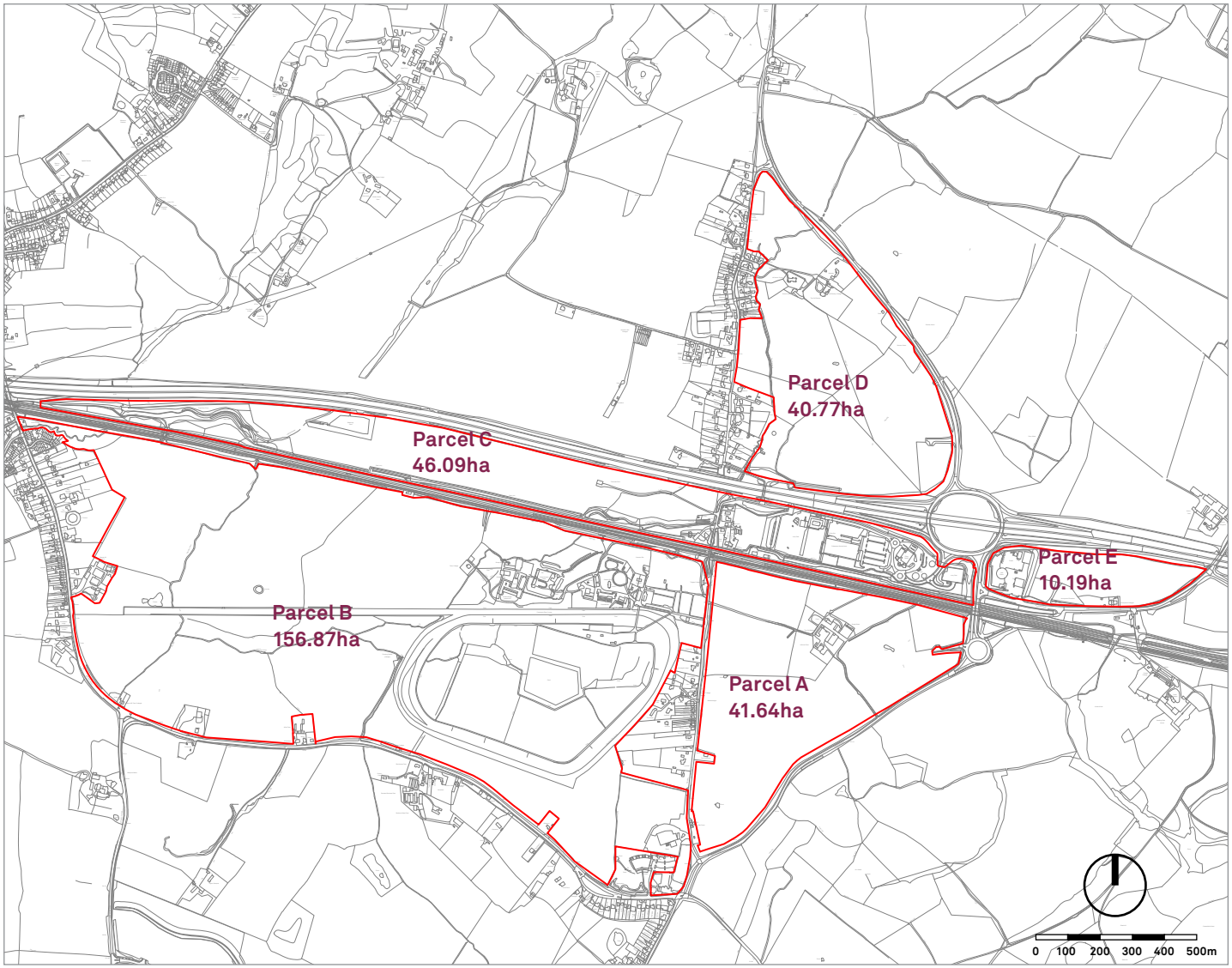


Figure 2.2: The study area (showing the various parcels and their areas)

The expanded study area is located to the south of the M20, at Junction 11, and is shown on Figure 2.2, opposite, and comprises the following parcels of land:

Area A: a triangle of land, bounded by the railway line, along its northern boundary, Ashford Road on its eastern boundary and Stone Street to the west and encompasses some 41.64 ha.

Area B: a large, loosely rectangular parcel of land (156.87 ha), bounded by the railway line on its northern edge, Stone Street to the east, and Ashford Road to the south and west.

Area C: a linear parcel, on an east-west axis adjacent to Stop 24, extending to some 46.09 ha situated between the M20 (to the north) and the railway line to the south;

Area D: a triangle of land, north of Junction 11, encompassing some 40.77 ha, and bounded by the M20 on its southern edge, the B2068 to the east and Stone Street to the west, and

Area E: a parcel of land opposite Stop 24, also bounded by the M20 to the north and the railway line to the south, covering approximately 10.19 ha.

Figure 2.3: Land ownership within/adjacent to the study area (courtesy of BPP)

Land Ownership

As stated above, in Section 1, SDC has no interest in any land parcels in either the core study area or the wider study area.

It is important, however, to understand where the principal ownerships reside and the extent of those land holdings.

This is especially true should it become apparent that there is a more extensive, strategic development opportunity to be pursued at Junction 11.

Figure 2.3, opposite, sets out our understanding of land ownership at the time of writing, and the table, adjacent, gives further detail for those land holdings for which we currently have information.

Land ownership known

Land ownership unknown

REF	DESCRIPTION	PROPRIETOR
1	Folkestone Racecourse	Folkestone Race Course Limited
2	Westenhanger Castle	G Forge (Civil Engineering) Limited
3	North side of Westenhanger Castle	G. Forge Limited
4	North side of Ashford Road	Richard Price and Richard Cleveland Price
5	North of Ashford Road	Peter Lawrence Murphy, Sarah Jane Murphy and Gerrard Tyler
6	Hillhurst Farm	William John Hurley
7	Fairmead Farm	Carolyn Hardy
8	Brook Farm	David Thomas Holt
9a	Stanford Motorway Service Area	The Secretary Of State For Transport/Highways Agency
9b	Phase 1 Saltwood MSA, Folke Site boundary	Henry Boot Developments Limited
9c	Stop 24	
9d	Lorry Park and ancillary facilities	Channelports Limited
9e	Land east of Stone Street	Henry Boot Developments Limited
10	Part of the M20 Motorway	Secretary of State For Transport/Highways Agency
11	East of Stone Street, Stanford, Ashford	Secretary of State For The Environment Transport & Regions
12	Land at M20 and west of Stone Street	Secretary of State For Transport/Highways Agency
13	East of Stone Street	Saltwoodend Limited

Landscape and Environment

The study area is located in a landscape that might best be described as rolling countryside, which has been characterised in the Landscape Character Assessment of Kent (KCC, 2004) as being part of the Sellindge Plateau Farmlands character area.

The KCC document describes the landscape as having the following traits:

- flat to undulating plateau farmlands on good quality soils;
- open arable landscape with pasture locally important on more undulating ground, and
- small copses and gappy hedgerows on undulating ground.

In terms of its current condition, the character area is considered to be fragmented, with any historic patterns now lost and considerable intrusion into the landscape by road and rail infrastructure. The predominance of arable agriculture limits the potential for natural habitats and rural heritage features, such as tree cover are limited and of poor quality. Importantly, the study states that existing built form is already sufficiently intrusive as to have a negative impact on the character of the landscape, with recent built development impinging upon historic development which was more likely to use local ragstone and brick.

The comment in respect of landscape character sensitivity is worth quoting in its entirety:

'Historic land patterns are generally obscured or have no real function in the present landscape, with the notable exception of some estate landscape to the north of the character area. The flat landscape is apparent and has long views: visibility is therefore high. The sensitivity of the area is considered to be moderate'.

This has important consequences for the proposed actions to be taken when delivering any new development within the character area:

- create a new framework for this transitional landscape which respects the open, arable use, transport corridors and adjacent small scale character area patterns.
- existing built form and settlement edges need to be defined,
- the impact of the many visual detractors needs to be controlled.
- this landscape presents an opportunity to create new landscape features, and
- restore ecological interest to selected areas of arable land by sensitive management.

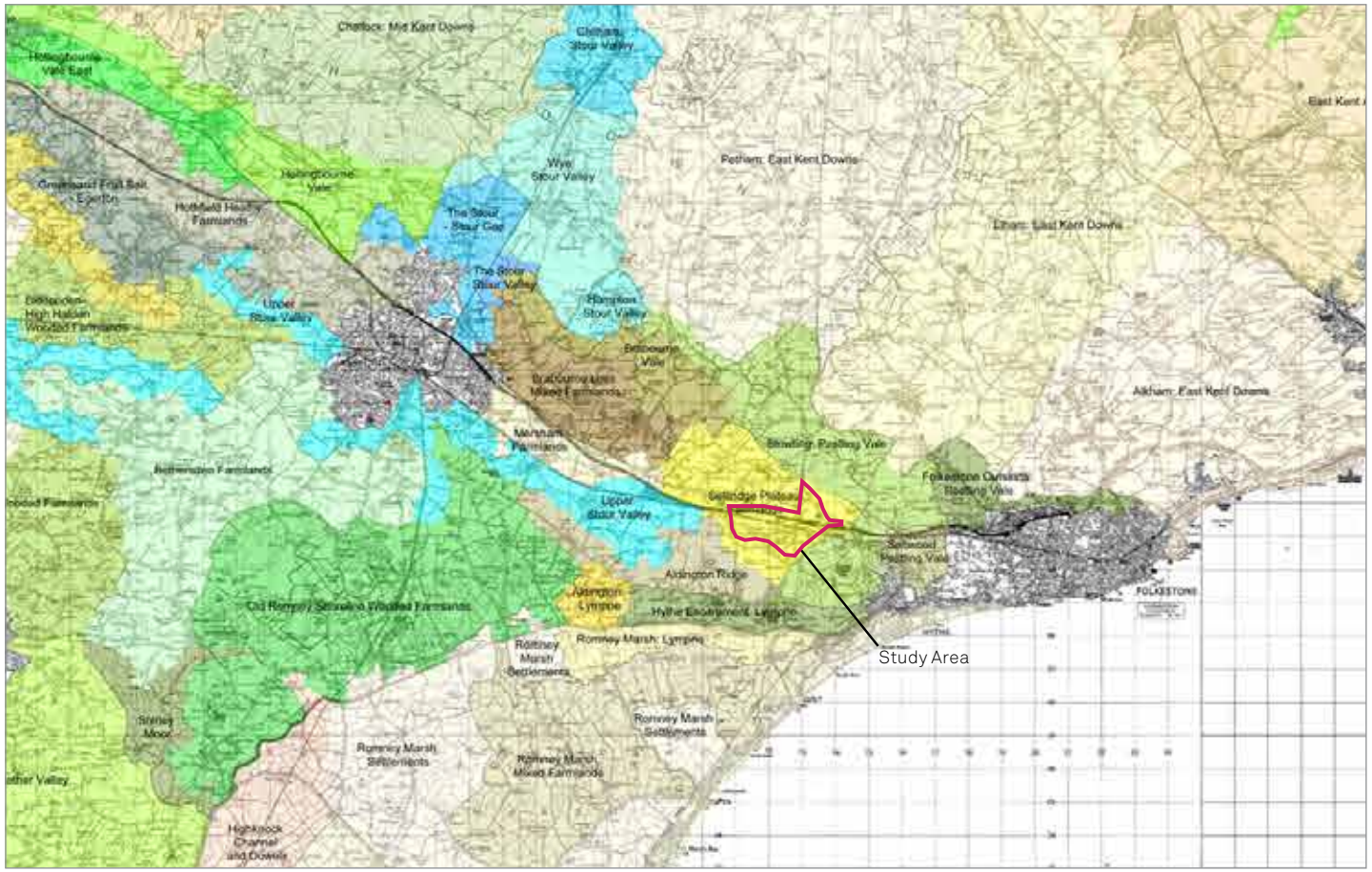


Figure 2.4: Extract from the KCC Landscape Character Assessment (2004) with th study area illustrated in red.

View across Parcel A and Parcel B towards Folkestone Racecourse and the transport corridor (HS1 and M20)

View across the southern triangle (Parcel A) out over the rolling landscape that is typical of this part of Kent

View towards Westenhanger Station and the infrastructure corridor that runs through the middle of the landscape character area

View back towards the study area from the higher land to the north and west (approximately on the line of the North Downs Way)

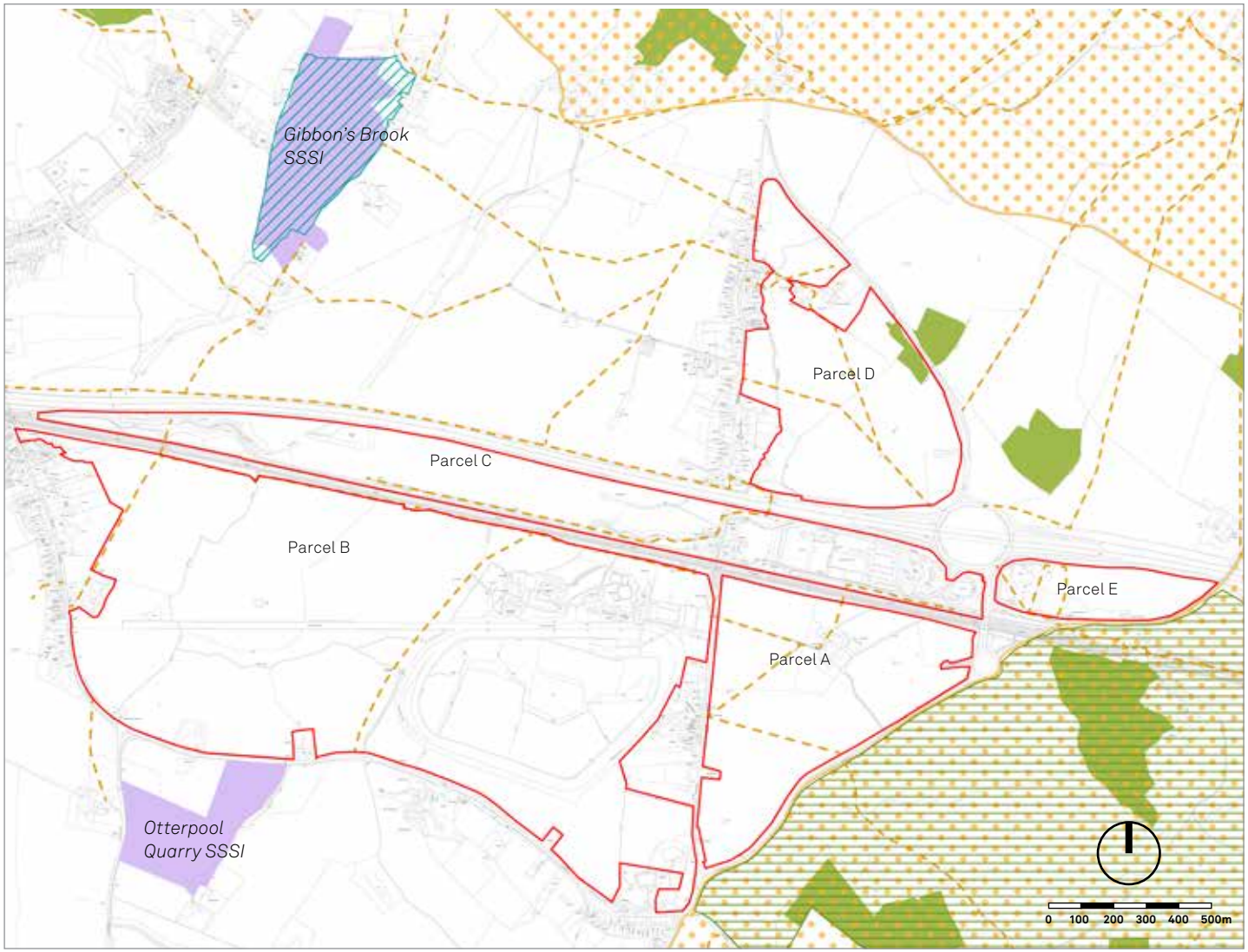


Figure 2.5: Landscape assets within and adjacent to the study area

Designations

There are a number of designated sites in the local area, relating to visual and landscape amenity and, also, to habitat and ecological interest.

Kent Downs AONB wraps around the study area to the north, south and east. The land immediately to the south east of Parcel A is a Registered Park and Garden (Sandling Park). There are two SSSI's close to the site , Otterpool Quary, immediately to the south of the A20 Ashford Road, and Gibbon's Brook, to the north of the motorway and east of Sellindge. Occasional stands of Ancient Woodland are dotted across the landscape, but the prevailing land use is farming, in one form or another.

Key

- Study Area
- Public Rights of Way
- Woodland
- SSSI
- Registered Parks and Gardens
- Countryside Rights of Way
- Kent Downs Area of Outstanding Natural Beauty

Built Environment

The site is, for the most part, surrounded by open countryside, albeit with significant components of infrastructure with the M20 and HS1/local rail network corridors.

In terms of urban areas, there are four small settlements, including Westenhanger and Newingreen to the south of the railway/motorway corridor, Stanford to the north and Sellindge, located to the west of the study area and bisected by the M20 and railway lines.

The ruins of Westenhanger Castle are the main built heritage asset on or close to the site. It is a Scheduled Ancient Monument, with listed buildings sitting within its curtilage - Westenhanger Manor (grade I) and associated barns (also grade I). Immediately to the south, on the junction of Ashford Road and Stone Street, listed the Royal Oak public house (grade II). Stone Street, although not designated, is a Roman road dating from the 3rd century AD, at the very least. Stanford Windmill (grade II*) and groups of cottages in Sellindge, just to the south of the rail/road corridor are the other, key listed building in close proximity to the study area.

Immediately to the east of Parcel A, and set within the Kent Downs AONB, lies Sandling Park, a grade II registered landscape.

Key

- Study area
- Scheduled Ancient Monument
- Listed Buildings
- Ancient Woodland
- Registered Parks and Gardens

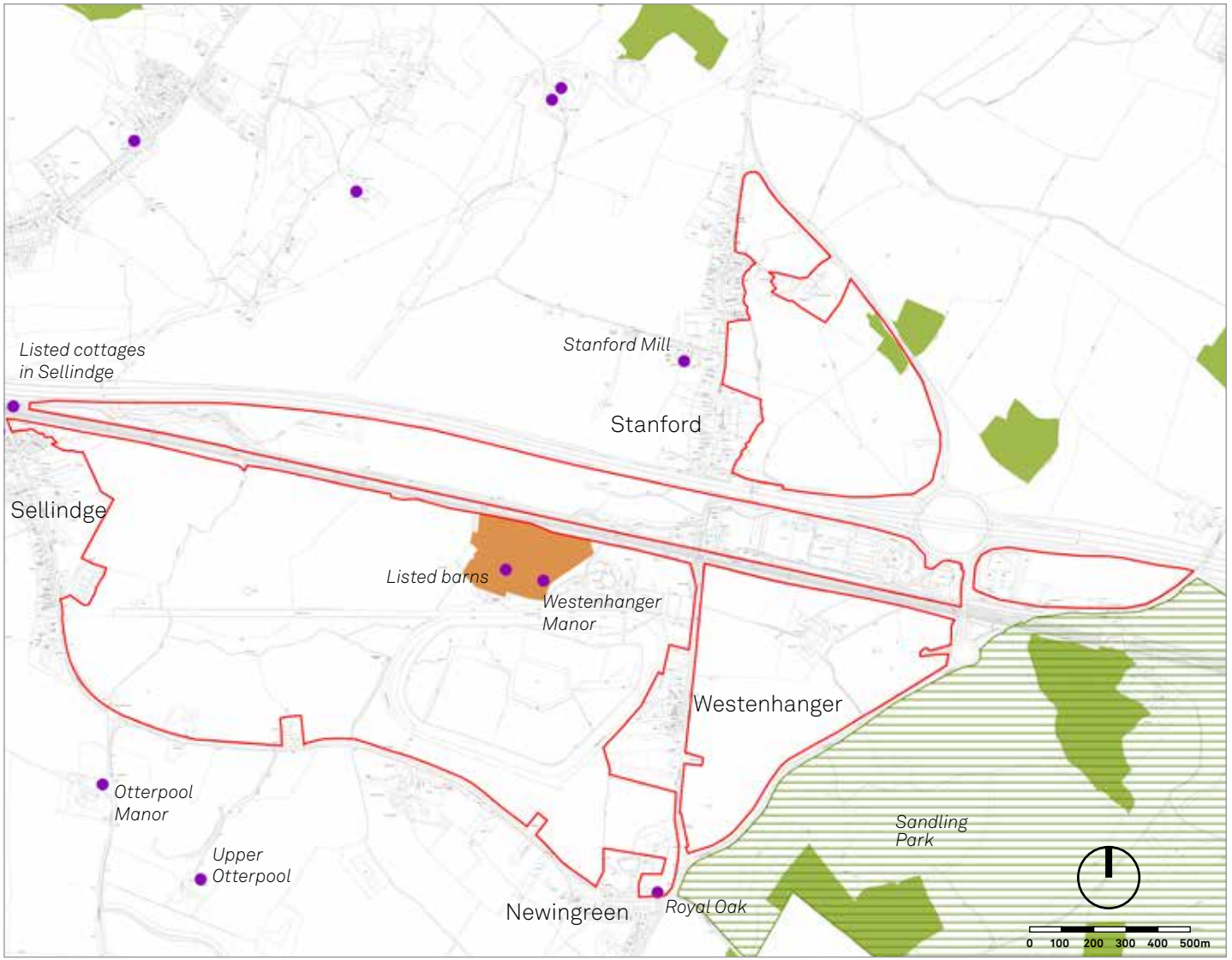


Figure 2.6: Built heritage assets within and adjacent to the study area

Westenhanger Castle ruins

Westenhanger Castle main building

It will be incumbent on any development proposals to ensure that the setting, special interest and significance of each of these heritage assets is protected and, wherever possible, enhanced. The Scheduled Ancient Monument, in particular is both a key constraint and also an opportunity requiring careful management through the design and planning processes. There are precedents for this significant heritage asset to be incorporated into a park that functions as an integral part of the wider open space network, e.g., Colchester Castle and Berkhamsted Castle.

Westenhanger Castle, listed barns

The Royal Oak, Newingreen

Topography

The site nestles in relatively low lying, rolling countryside, with higher land to the east and north (part of the Kent Downs AONB).

The site itself is relatively flat, with localised high spots, for example, on the south eastern edge of Parcel A and the eastern boundary of Parcel D. For the most part, however, the scale of the site tends to make these localised variations less significant. The relatively prominent landforms in the south of Parcel A and east of Parcel D may be an issue in terms of the location of buildings that would be visible in strategic views from the AONB, and may require some element of landscape buffer to help integrate development into the wider landscape in a more sensitive manner.

Key

- Study area
- Primary River
- Secondary River
- Tertiary River
- Extended Current
- Flood Risk Zone 2
- Flood Risk Zone 3
- 50m AOD
- 55m
- 60m
- 65m
- 70m
- 75m
- 80m
- 85m
- 90m
- 95m
- 100m
- Urban areas

Figure 2.7: Main water courses and topography

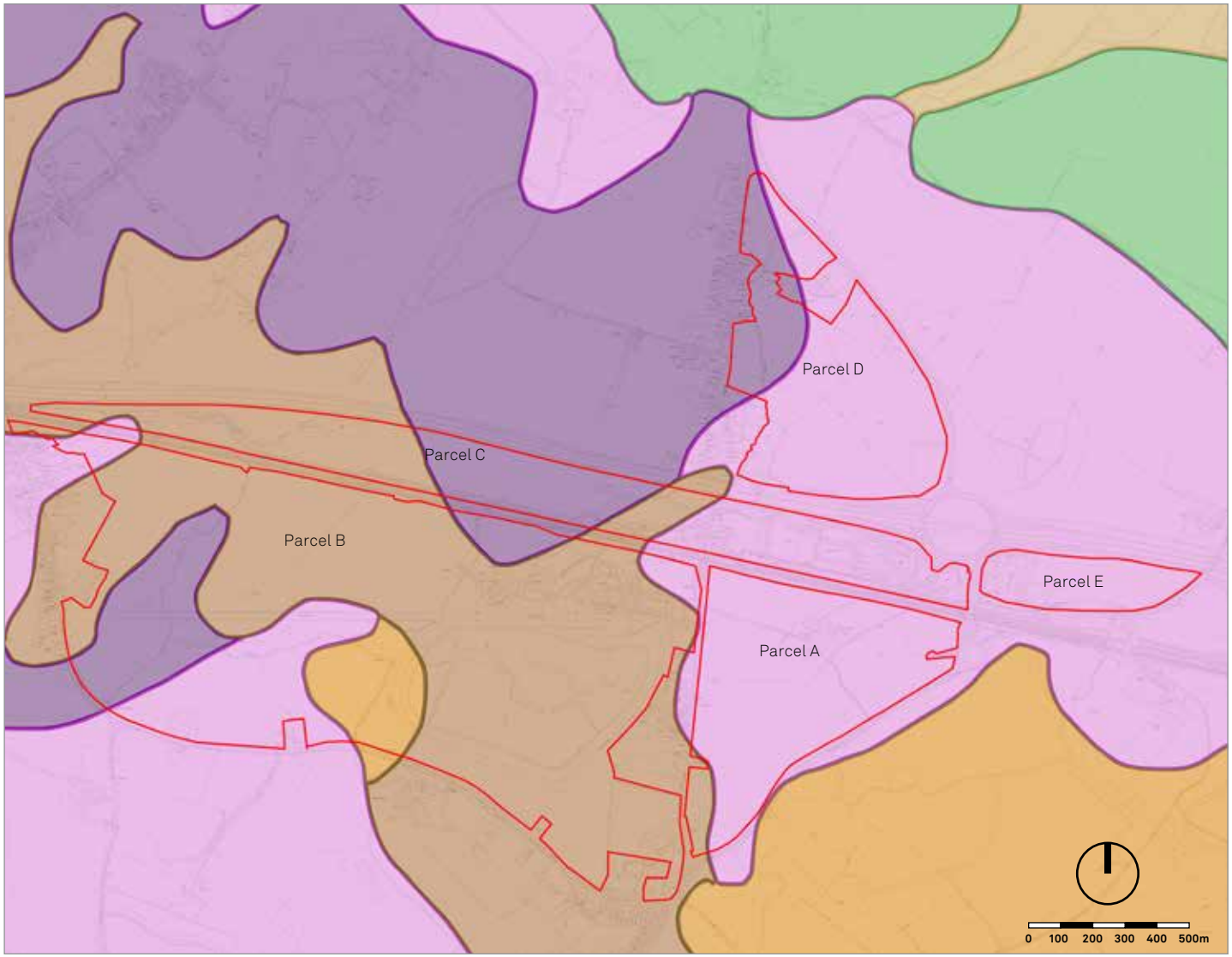


Figure 2.8: Groundwater vulnerability

Hydrology

The site is permeated by a number of waterways some of which are designated as primary and secondary river. The EA's flood mapping tool shows a clear correlation between these routes and the extent of flood risk zones. The scale and nature of the water courses, and the surrounding landscape, would seem to contain the extent of flooding, although it would seem to be more extensive in parts of Parcel D, especially towards the southern boundary with the M20.

It is clear from the Figure 2.8, that there are flood management issues that will have to be addressed by development proposals on all of the major parcels, bar Parcel A. It may be that careful integration of the green/blue infrastructure, with open spaces organised in such a way as to accommodate flood plain, would be a key component of any design proposal.

Most of the site sits on top of Principal or Secondary Aquifer. This doesn't preclude development, but employing the precautionary principle, careful consideration will be needed as to the nature of development in some locations, on the basis that some types of land use can have harmful consequences for the aquifer. The site does not sit within a Water Source Protection Zone, Surface Water Safeguard Zone or Groundwater Safeguard Zone.

Key

- Study area
- Major aquifer - high leaching potential
- Major aquifer - intermediate leaching potential
- Major aquifer - low leaching potential
- Minor aquifer - high leaching potential
- Minor aquifer - intermediate leaching potential
- Minor aquifer - low leaching potential
- Non-aquifer - negligible permeability

Ground Conditions

A quick study of the ground conditions within the study area suggests that there are no major landfill sites within the boundary.

There is, however, a possibility of historic landfill associated with the castle, which would only become apparent with further site-based assessment.

The Nitrate Vulnerable Zone designation relates to farming good practice, in particular in relation to arable farming. It is not envisaged as being a limiting factor in respect of the potential for commercial or mixed use development.

More detailed investigations will be required, in the event of any proposals being developed, to ensure that ground conditions across the study area do not pose an obstacle to development.

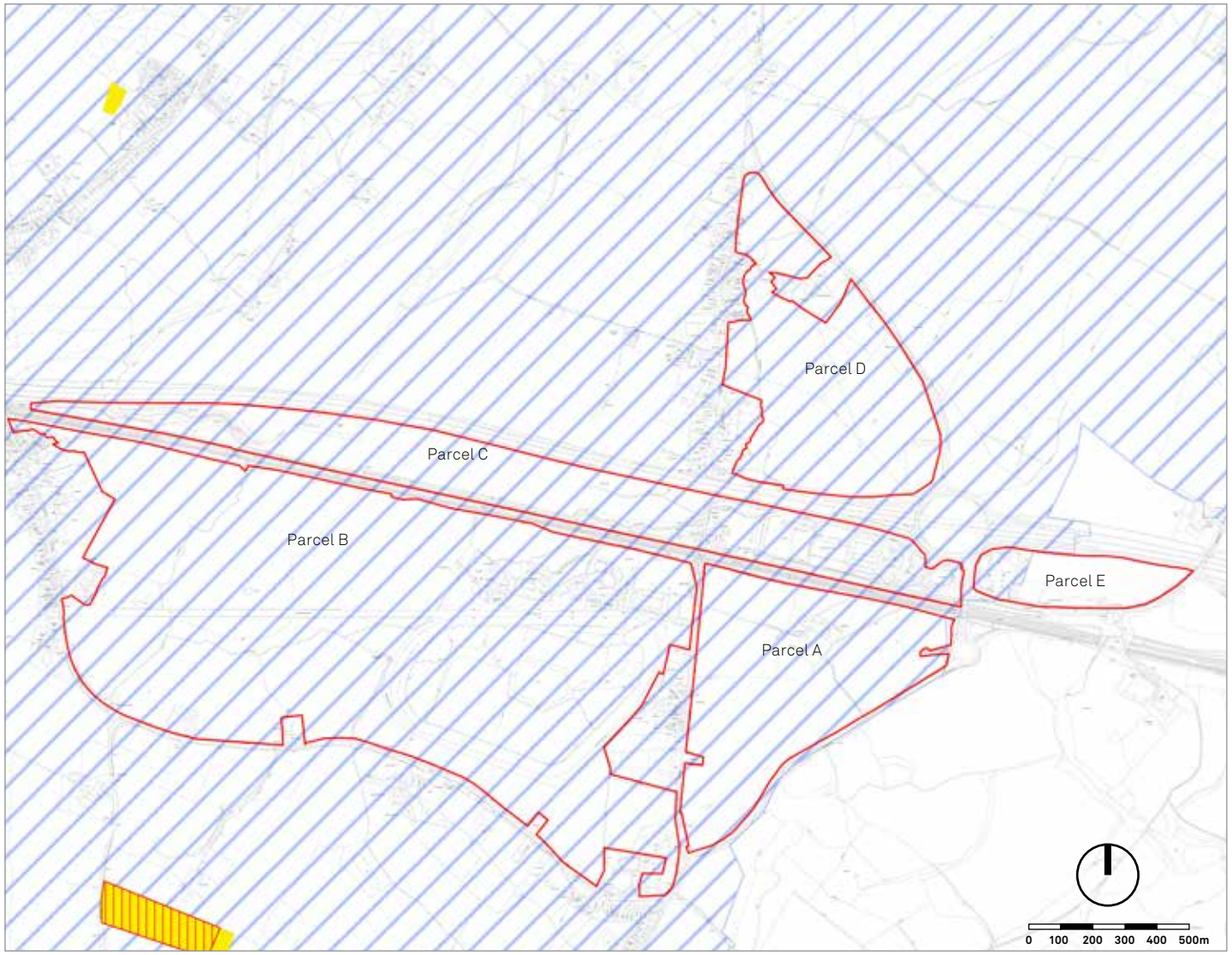


Figure 2.9: Key ground conditions data

Key

- Study area
- Waste Management Facility
- Landfill Site
- EA Historic Landfill Site
- Nitrate Vulnerable Zone

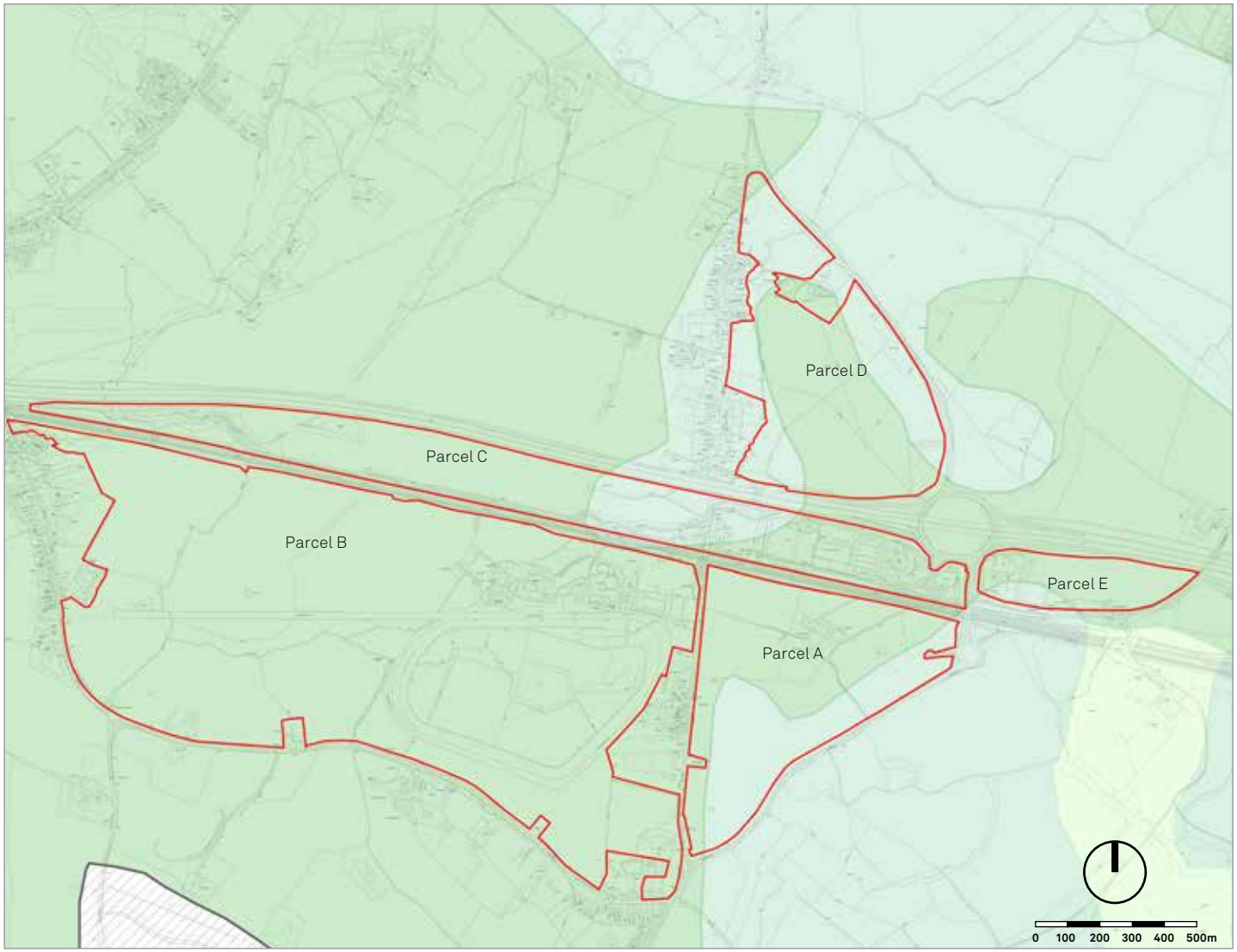


Figure 2.10: Agricultural Land Classification

Agricultural Land

The majority of the study area sits within Agricultural Land Classification Grade 2 and 3. These designations confer certain levels of protection on land, with respect to development, but further investigation is required to ascertain whether the land within the study area is actually farmed. For example, a large tract of land classified as ALC 2 in Parcel B is actually the race course. There are policy implications for SDC and consultation would be required with Natural England in the event of major policy changes at Junction 11 or a significant development scheme being proposed.

Key

- Study area
- ALC Grade 2
- ALC Grade 3
- ALC Grade 4
- Non-Agricultrual

Transport

The study area is bounded and bisected by roads that form a key part of the strategic network in this part of Kent - the A20 and the M20. The transport infrastructure corridor which passes through the site from east to west is a major constraint on connectivity across the various land parcels, but it is also a significant opportunity, providing access onto the main transport networks, both locally and regionally. In particular, Westenhanger railway station clearly has the potential to provide access from a new development to Folkstone and Hythe, but also to Ashford and from there, via HS1, to London (in less than 40 minutes) and, via Eurostar, to mainland Europe.

The M20 is the principal route adjacent to the site, with the A20 Ashford Road looping around the southern boundary of Parcels A and B and offering a number of connections into other routes leading to Hythe, Lympne and Canterbury. Stone Street, a Roman road connecting Lympne (originally a Roman port) with Canterbury, is broken by the intervention of the rail road corridor. A network of public rights of way permeates through the wider landscape. Parcel A and D are relatively well connected, but Parcels A and C are less so, with access limited to a couple of north south routes.

Key

- Study area
- Motorway
- Principal roads
- Railway line
- Public rights of way
- Railway station

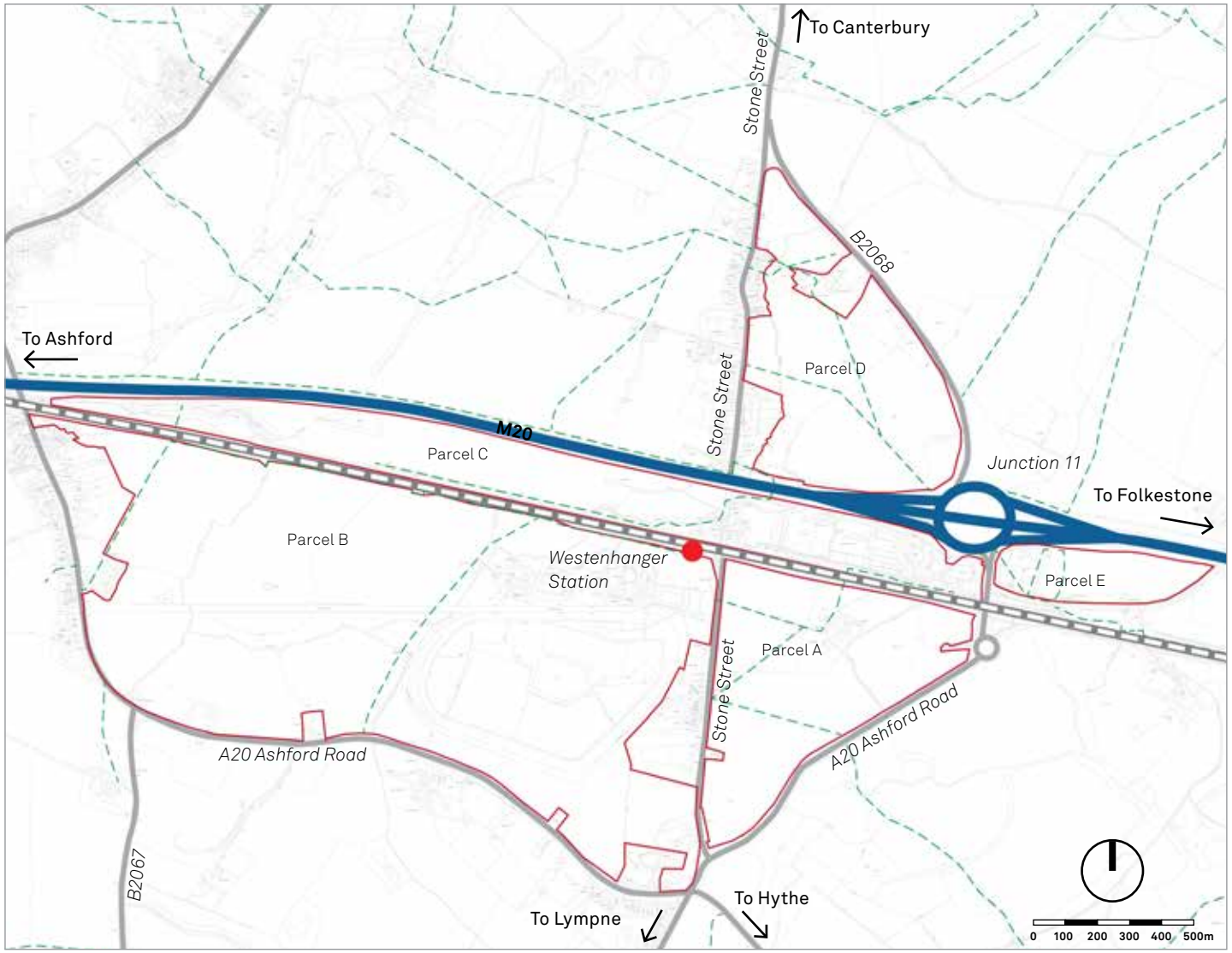


Figure 2.11: Existing transport infrastructure and movement networks

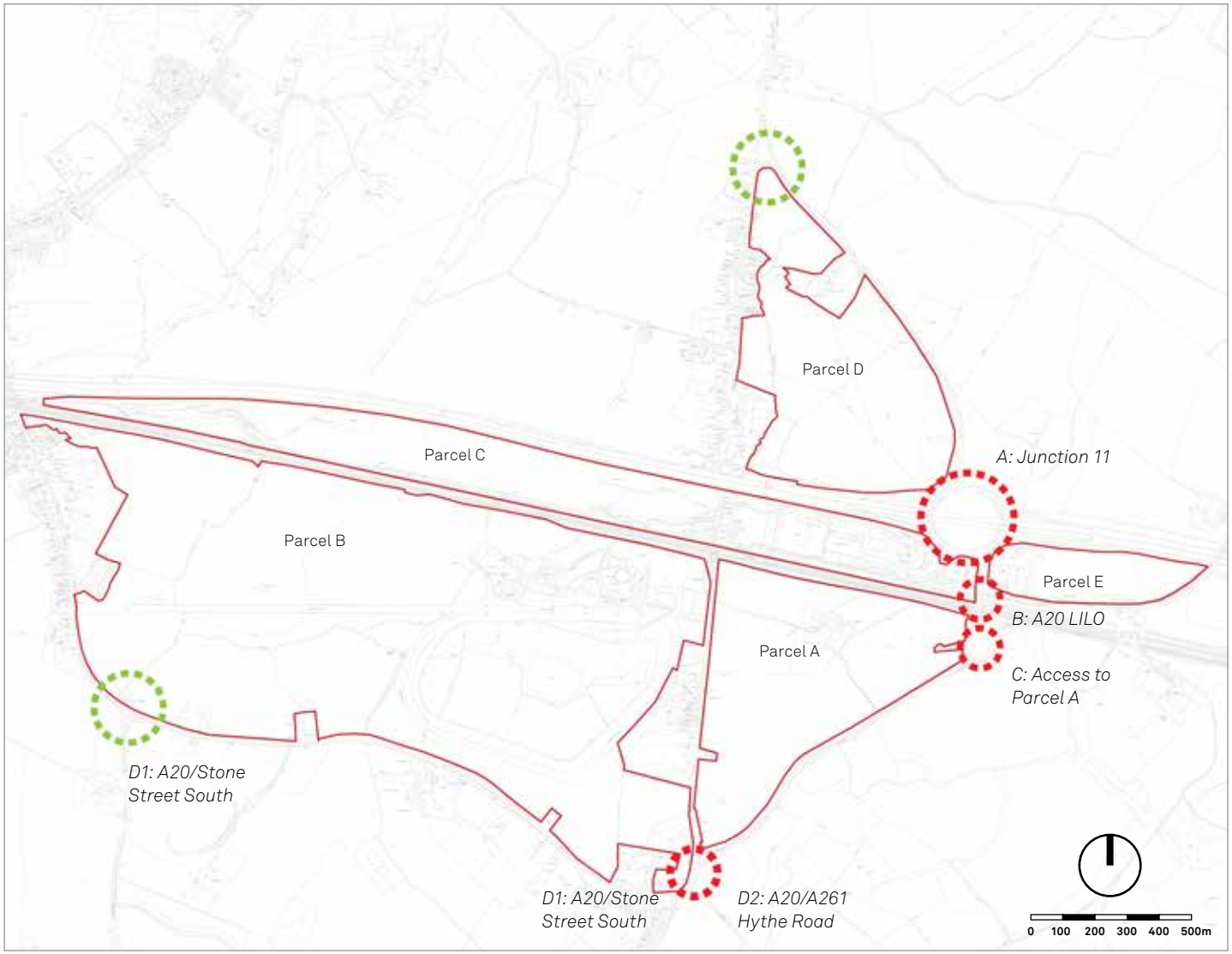


Figure 2.12: Assessment of the existing road network

Initial Assessment of the Existing Road Network

In order to understand the potential impacts of development, at different scales, on the existing network, an analysis of junction capacity was undertaken. This analysis considered the AM peak hour (0800-0900) and PM peak hour (1700-1800) for the scenarios requested. The initial assessment looked at the network, as it stands, with consideration given to new, committed developments in the local area which would have the potential to affect traffic flows.

Some junctions were not assessed, on the basis that new junctions elsewhere on the network, introduced to serve any new development, would mitigate the potential effects of traffic in those locations (Figure 3.12, adjacent, shows the location of the junctions). This assessment is intended as a high-level review of the current situation, and any further consideration of development potential would require a more detailed assessment of the full network.

For the purpose of this assessment, baseline condition is defined as:

2026 Do Minimum (DM): No Parcel A development or additional Stop 24 trips relating to enhanced lorry parking capacity (i.e., forecast situation in 2026, accounting for traffic growth and committed developments).

Key

Study area

Junctions assessed

Junctions not assessed

For Stop 24, the following sources were uses:

- Data source – Transport Statement (October 2014), for observed trips at the Stop 24 lorry park, and
- Trip distribution – No turning movements existed in the spreadsheet model for the Stop 24 arm of M20 Junction 11. As such, assumed proportions for arrivals/departures were used (comprising 40% for M20 west, 40% for M20 east, 20% for A20 and 0% for B2068). Distribution on the remaining study junctions to the south used turning proportions.

Presented below are the outputs from the analysis, showing the sum of vehicle movements at each junction.

The analysis undertaken presents results in terms of the Ratio of Flow to Capacity (RFC) and queue length (in vehicles) for each junction approach. With respect to capacity, the following parameters apply:

- An RFC of 0.85 or lower indicates that the approach is predicted to operate within its ideal capacity;
- An RFC between 1.00 and 0.85 indicates that the approach is predicted to operate beyond its ideal capacity, but within its theoretical capacity, and
- An RFC of above 1.00 indicates that the approach is predicted to operate over capacity.

The maximum RFC at each junction is presented in bracket, below, in a table setting out whether each of the assessed junctions is currently working within ideal capacity.

In summary, it is clear that some parts of the network are working well under capacity, while others are already at, or beyond capacity.

In particular the junctions of the A20, especially those with Stone Street and the A261 are significantly over capacity, as matters stand. Any new development would be adding to an already difficult situation. However, it should be noted that significant new development would be able to address the local transport issues, including the matter of local junctions which are over capacity, as part of a suite of transport interventions across the local network.

Vehicle movements by junction

Junction	AM Peak	PM Peak
M20 Junction 11	2,449	2,324
A20 LILO (Left in -left out)	3,098	3,092
Parcel A Access	2,771	2,753
A20/Stone Street (south)	2,549	2,721
A20/A261 Hythe Road	Combined with A20/Stone Street (south)	

Question: Does junction operate within ideal capacity (maximum RFC across all approaches of 0.85 or lower)?

Junction	AM Peak	PM Peak
M20 Junction 11	Yes (0.45)	Yes (0.36)
A20 LILO (Left in -left out)	No (1.03)	Yes (0.52)
Parcel A Access	Yes (0.80)	Yes (0.80)
A20/Stone Street (south)	No (2.10)	No (0.86)
A20/A261 Hythe Road	No (2.10)	No (2.05)

Utilities and Infrastructure

The provision of infrastructure and utilities to serve any new development, regardless of its size or location, is a key issue when considering the potential for development at Junction 11. The provision of new or upgraded services at a scale capable of meeting the demands of new businesses or residents is clearly important, but it is also necessary to understand the location and nature of any services that lie within the study area. The management of existing services - whether they are left in situ or re-aligned/re-located such that there is continuity of provision for existing users is a major consideration.

A high-level, desk-based survey of existing services was undertaken, the aim being to identify by type, scale and location the extent of existing utilities provision. Thereafter, this understanding of existing provision will inform an assessment of the different development scenarios.

Our assessment looked at the following types of infrastructure:

- Electrical supply;
- Gas supply;
- Potable water:
- Foul Water, and
- Telecommunications

Electrical Supply

National Grid Electricity Transmission indicate that there is a network of existing extra high voltage cables in close proximity of the study area, as described below:

- 270kV DC cables extend from Sellindge to Folkestone along the northern side of the M20;

UK Power Networks Asset location plans indicate that there is a network of existing high voltage cables in close proximity of the Application Site, as described below:

- 132kV DC cables extend below ground along the northern side of the M20 and the junction 11 roundabout, through the southern edge of Parcel D;
- 132kV overhead cables extend through the land to the north side of Parcel C and Parcel D and cross the M20 and railway on the western side of Parcels B and C;
- 33kV cables extend through the land to the east of Butcher Wood through the northern part of Parcel D;
- 33kV cables extend through the land to the west of Parcel B and C;
- Electricity substations are situated near to the Westenhanger station to the east of Parcel B, and near the airport café to the south of Parcel B;
- Electricity substations are also situated within the M20 Services and Filling Station and near to the grandstand for the Folkestone Racecourse;
- 11kV networks extend along existing roads, including Stone Street, Ashford Road, Barrow Hill, Sandling Road, and
- The existing buildings that are situated in and around the site are generally supplied with electricity by a series of overhead lines.

Enabling Works - Electricity

An easement will be required to accommodate the 132kV DC cables extend below ground along the northern side of the M20 and the junction 11 roundabout, through the southern edge of Parcel D. This easement is likely to have a width of approximately 25m on either side of the cables, which is likely to preclude the construction of buildings, roads or drainage features on the southern boundary of Parcel D.

The existing 33kV and 11kV electricity networks that extend through the other development areas will either require diversion, or it will be necessary to include areas of open space within any emerging proposals to ensure that proposed development plots and buildings do not conflict with the existing electricity apparatus.

Localised diversions of existing electricity apparatus are also likely to be required elsewhere to ensure that this apparatus will not be affected by junction improvements or new accesses, depending on their final location and extent.

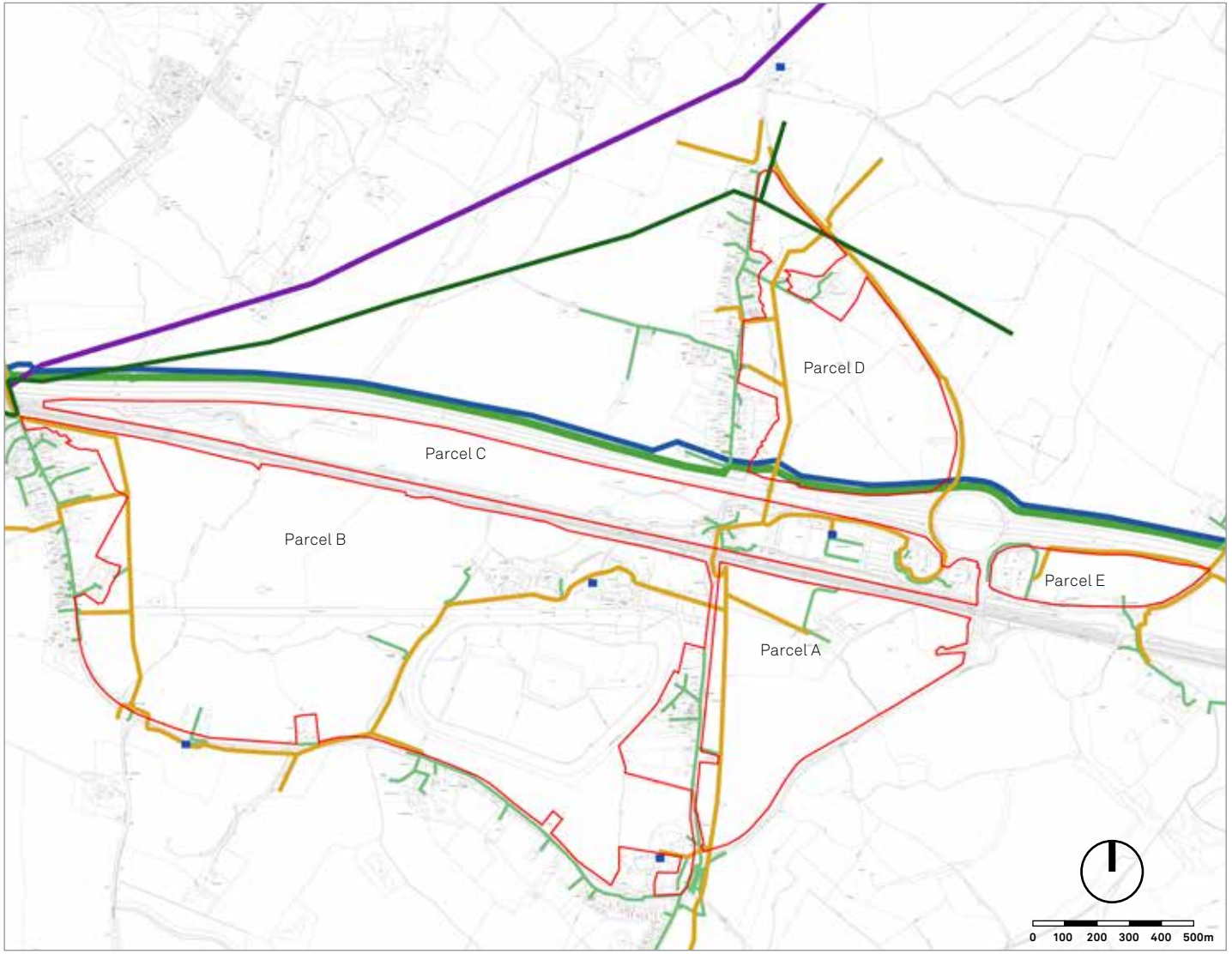
Existing electricity supplies to buildings that are to be demolished will require disconnection at the boundary.

Gas Supply

Southern Gas Networks (SGN) record drawings indicate that a network of low pressure gas mains extend through the local roads to serve the existing residential dwellings. We await confirmation from SGN but, at the time of writing, there does not appear to be any evidence of any strategic or high pressure gas apparatus within or close to the study area.

Enabling Works - Gas

The existing low pressure gas mains that extend along the existing roads could be affected by junction improvement works and new accesses. These existing gas mains may require diverting or protecting depending on the location of new accesses and on the extent of junction improvement works.



Key

- Study area
- 260kV DC route (National Grid)
- 132 kV overhead route
- 132 kV underground route
- 33kV route
- EHV primary cable further information required from provider
- EHV primary cable further information required from provider
- Electrical sub-station

Figure 2.13: Existing electricity apparatus within and adjacent to the study area

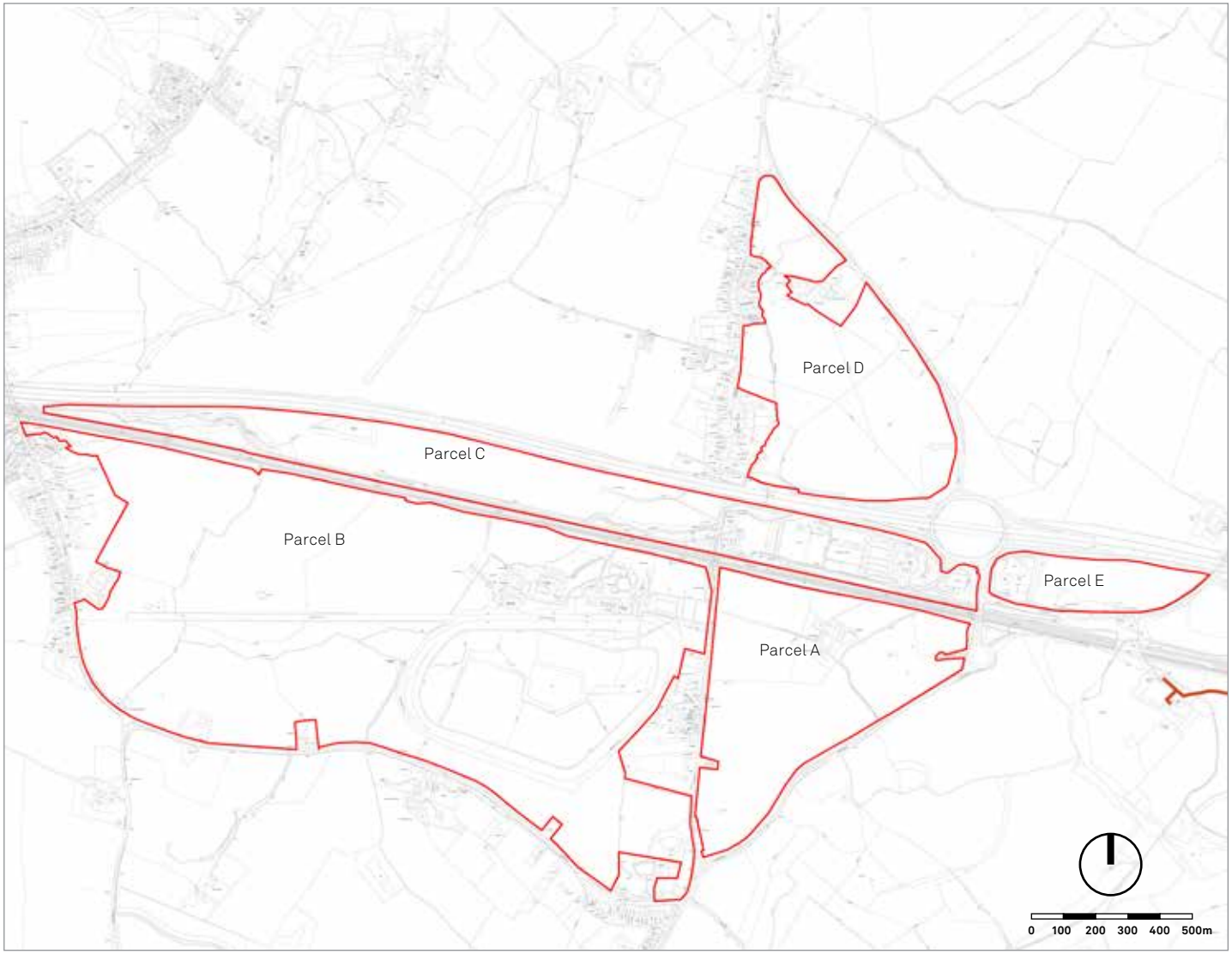


Figure 2.14: Existing gas apparatus within and adjacent to the study area

Potable Water

Our queries were referred to Affinity Water, who are responsible for the supply of potable water data in this part of the country. Asset location plans indicate that there is a network of water mains in close proximity of the Application Site, as described below:

- 300mm diameter ductile iron water mains extending along Ashford Road;
- 180mm diameter water main extending along Otterpool Lane;
- 150mm diameter water mains extending along Stone Street, and
- 4" diameter water mains extending along Barrow Hill and into the existing residential estates surrounding the development.

Enabling Works - Potable Water

The existing water mains that extend along the roads adjoining the development parcels could potentially be affected by junction improvements works or new accesses, depending on their location and extent.

In the event that the highway construction works cause the cover to the existing potable water mains to be reduced to less than 900mm, then it will be necessary to lower the existing water mains.

Key

- Study area
- Low pressure gas main
- Medium pressure gas main
- Intermediate pressure gas main
- High pressure gas main

Water Cycle Study

Appendix 5 of the Shepway Water Cycle Study contained information supplied by Veolia Water SE, which state that the existing potable water network in the vicinity of Westenhanger is likely to be capable of supporting between 400 and 900 additional units, although some off site connection work is likely to be required. This Appendix also indicates that the local mains within the adjoining Sellindge area lack capacity and that reinforcement is likely to be required for the 100 to 250 units that were originally envisaged within this area.

Foul Water

Southern Water (SW) is the local sewerage authority and is responsible for the treatment and disposal of foul water from the Shepway area.

The Southern Water Asset location plans indicate that a series of foul gravity sewers extend below Stone Street and below the M20 to a pumping station that is situated on the northern side of the railway. A 125mm diameter rising main extends from the pumping station to a gravity sewer on the southern side of the railway, which conveys foul flows west alongside the Westenhanger railway station to the Newingreen Sewage Pumping Station. This pumping station is situated on the west side of the racecourse, also receives foul flows from foul sewers that flow in a westerly direction along Ashford Road and through the land to the south of Parcel B.

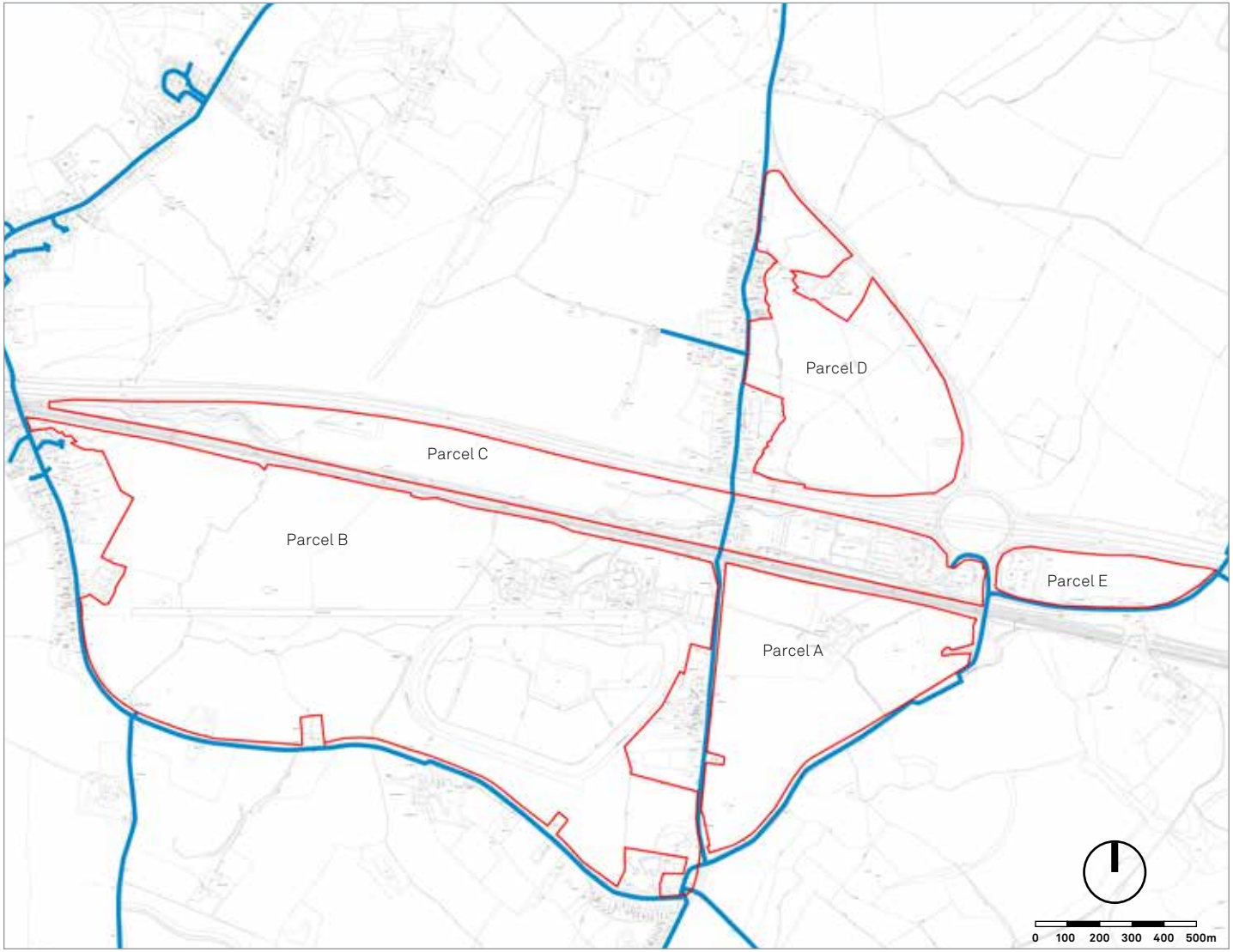


Figure 2.15: Existing potable water apparatus within and adjacent to the study area

Key

Study area

Water distribution main

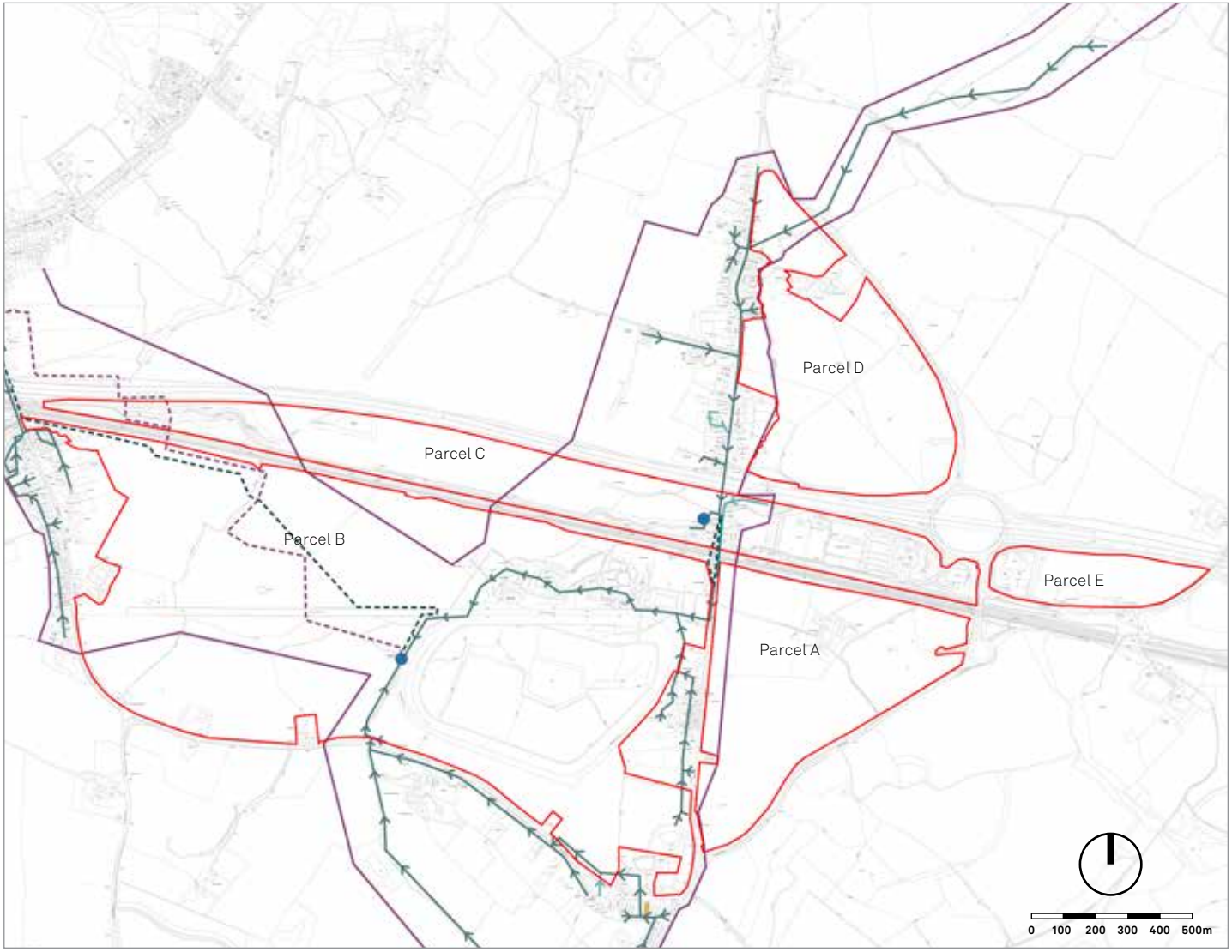


Figure 2.16: Existing foul water apparatus within and adjacent to the study area

A 180mm diameter rising main extends in a north-westerly from the pump station through Parcel B and below the railway line and M20 before discharging to 300mm diameter foul sewers within Sellindge, which convey the foul flow to the Sellindge Wastewater Treatment Works.

Enabling Works

Existing foul sewers or rising mains that extend through proposed development areas are likely to require diversion to avoid forming a constraint to the position of new buildings. Alternatively, the emerging masterplans will be required to include sections of open space allow easements along existing sewers and rising mains to be maintained.

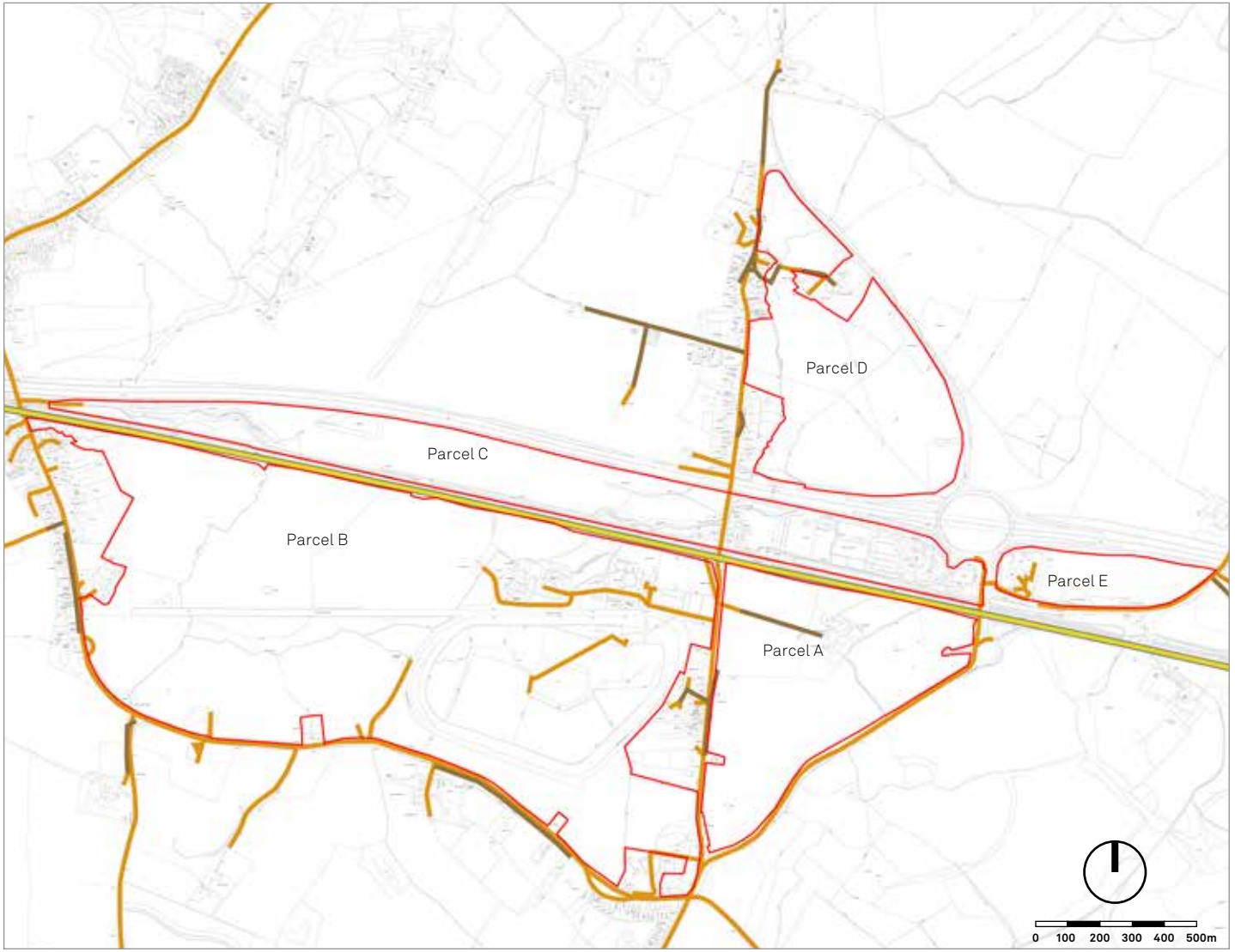
Key

- Study area
- Combined main
- Combined rising main
- Foul main
- Foul rising main
- Sewer catchment
- Lateral drain
- Building over agreement area
- Sewage pumping station

Water Cycle Study

The 2011 Shepway Water Cycle Study (SWCS) identifies the main strategic deficiency in wastewater connections being the link between the Westenhanger area and Sellindge WWTW. SDC identifies the need for landowners and the utility company to work together to address this deficiency and reserves the right to require direct developer funding and manage the delivery of development or withhold support for strategic development in this area, depending on the degree to which the wastewater deficiency is addressed.

The SWCS assumed that there was capacity (as measured by Dry Water Flow Headroom - DWF Headroom) for approximately 1,250 dwellings in the wards dependent on the Sellindge WWTW. Housing growth was estimated, for those same wards, to be potentially in the region of 1,100 homes, based on the outcome of the Strategic Housing Land Availability Assessment (SHLAA) and subsequent representations by landowners/ developers in the area. These figures do not, however, reflect other potential development, for example, the enhanced lorry parking at Stop 24 or strategic employment land provision at Junction 11, as well as other residential or commercial development in the wider area. The SWCS, therefore, recognises that it is entirely likely that the small headroom identified may, in practice, be non-existent at or before the end of the plan period. It notes that the strategic deficiency identified in the Westenhanger/Sellindge area should be



Key

- Study area
- Underground plant
- Overground plant
- Railway/underground data route

Figure 2.17: Existing telecommunications apparatus within and adjacent to the study area

addressed by the private sector, explicitly linking the delivery of 'further development' with upgrades to infrastructure and capacity.

Improvements to Sellindge WWTW

Souther Water applied for funding and submitted investment proposals relating to Westenhanger/ Sellindge. Although these proposals failed to achieve funding, Southern Water completed a £2.3 million upgrade of Sellindge Wastewater Treatment Works in the middle of 2013. New screens have been installed to filter out non-biodegradable items from wastewater before it is sent on for treatment.

In addition, to the screens, Southern Water has also installed three new filters at the treatment works alongside other major improvements as part of wider plans to increase capacity in the wastewater treatment system in the Ashford area to allow for future population growth. The wider scheme included a £12 million upgrade at Southern Water's Ashford treatment works, adjacent to the M20 motorway.

Telecommunications

BT Openreach is the main telecommunications provider within and adjacent to the study area. Telent, GeneSYS, Interroute and Instalcom also have apparatus in the area. Asset location plans indicate that the following telecommunications apparatus is located in close proximity of the study area:

- BT Openreach apparatus is present within Ashford Road, Sandling Road, Hythe Road, Stone Street and Otterpool Lane;
- Telent have apparatus extending along the B0267 and Barrow Hill;
- GeneSYS telecommunications have apparatus extending along the northern and southern side of the M20 near Junction 11;
- Interroute have ducts and fibre optic apparatus extending along the A20, Barrow Hill and the B0267, and
- Intalcom have telecommunications apparatus extending along the railway, Barrow Hill and the B0267.

Enabling Works

The existing telecommunications apparatus that runs along the roads within the development could be affected when junction improvement works are undertaken or when new accesses are formed, depending on their location and extent.

Diversions or protection works are likely to be required where new carriageways are extended over existing telecommunications apparatus.

Development Constraints

This current exercise is concerned only with exploring and assessing the capacity of the land adjacent to Junction 11 to accommodate development. However, it is helpful if the concept layouts generated to enable that assessment are couched, as far as possible, in reality. To that end, Figure 2.18, overleaf, is a summary of the main constraints to development at Junction 11. A constraint is not necessarily an obstacle to development, but it may require some form of mitigation, either by design, spatial planning or planning policy to allow development to occur in a specific part of the site and in a particular way.

Environmental Constraints

The flood plain that permeates through the centre of Parcel B and the western edge of Parcel D will require careful design and planning such that mitigation of the effects of flooding on site and elsewhere on the network is delivered as a core component of any development proposals.

The proximity of parts of the site, Parcel A in particular, to the Kent Downs AONB will require sensitive planning and siting of development such that the visual quality and amenity of the AONB are preserved and protected.

Clearly, ecology will be an issue moving forward, but the extent and scope of the ecological assets is not known at this time and will only become apparent following a Phase 1 and subsequent surveys.

Built Environment Constraints

The existing settlements, at Sellindge, Westenhanger, Newingreen and Stanford will all be affected by development,to varying degrees depending on the scale and location. It will be necessary to manage any potentially negative effects, which might include:

- Development in proximity to existing settlement;
- Uplift in traffic numbers on the network and at key junctions, and
- Loss of access to open space

The Scheduled Ancient Monument at Westenhanger Castle (and the associated listed buildings) will require sensitive site planning and ongoing management.

Physical Constraints

The various utilities corridors within and adjacent to the site will be affected by development and will require careful management, whether they are retained in situ or re-located.

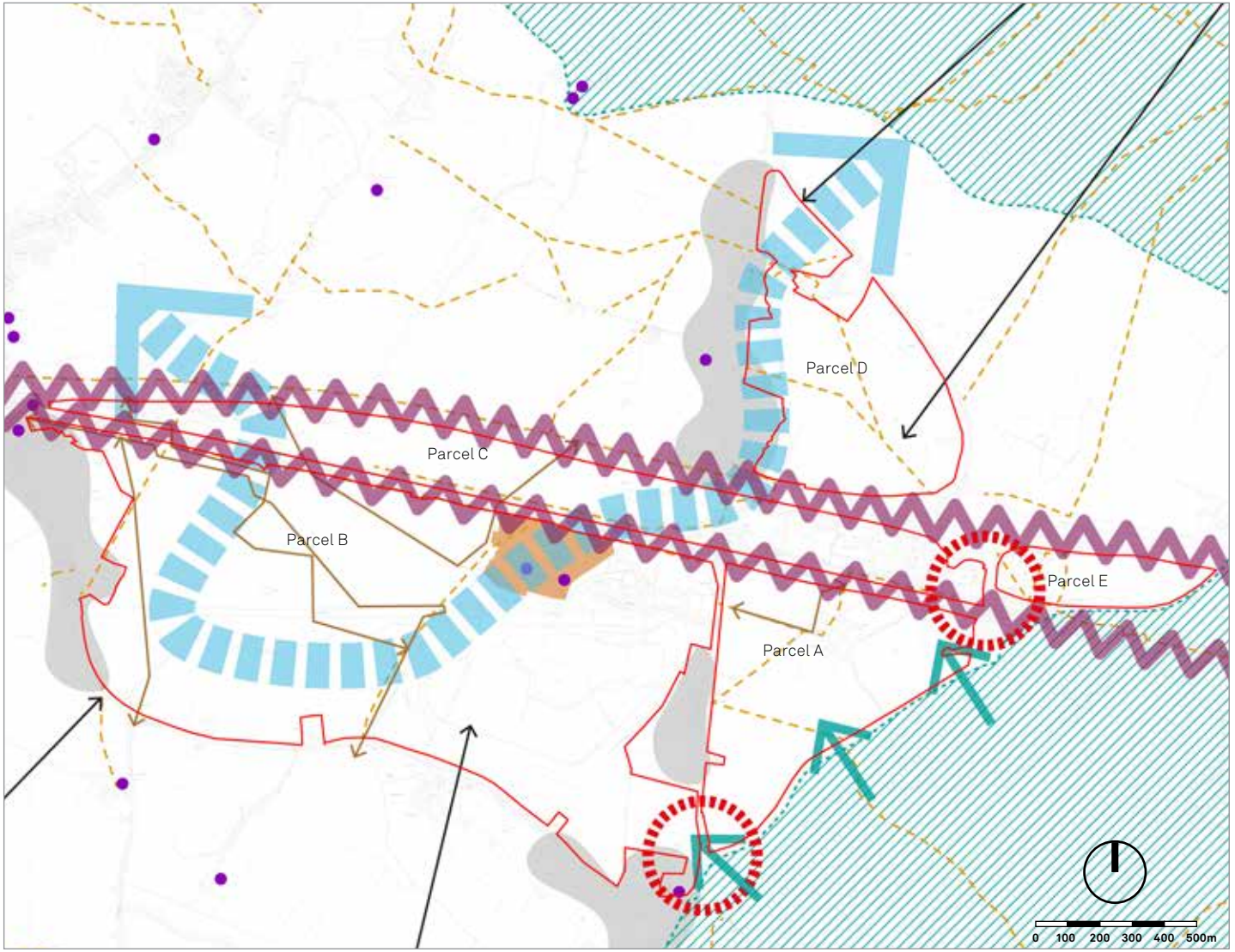


Figure 2.18: Constraints to development

Key

- Study area
- Existing urban area
- Scheduled ancient monument
- Area of outstanding Natural Beauty (AONB)
- AONB influence
- Flood plain
- Public rights of way
- Utilities routes
- Long distance views
- Infrastructure corridor (movement & utilities)
- Critical junctions
- Listed buildings

03

DEVELOPMENT SCENARIOS

Introduction

To test the capacity for development at Junction 11, a number of development scenarios were devised. The scenarios reflect different levels of intervention, by scale, location of development and mix of land uses. The aim is to provide a sufficiently wide range of development options which can be assessed, at a high level, in terms of their potential to impact on the constraints identified in Section 2, above, and their requirements in terms of transport and infrastructure interventions.

The three scenarios, illustrated below, are intended to be realistic propositions, in terms of their spatial arrangement, scale and mix of uses, but they do not reflect a detailed assessment of the environmental, physical and economic constraints affecting the site, nor do they necessarily reflect current policy relating to development, generally, and Junction 11, specifically. A clearer understanding of the constraints to development would only be gained as a consequence of a comprehensive site analysis and design development exercise. It should also be noted that the scenarios illustrated, below, make assumptions about the availability of land and are effectively 'boundary blind'. The three development scenarios are set out, below.

Limited Development Scenario

Development on Parcel A (commercial plus associated infrastructure) and at Stop 24 with an additional 360 lorry parking spaces.

Intermediate Development Scenario

Development on Parcel A (commercial plus associated infrastructure) , with up to 850 dwellings on Parcel B and an additional 1,360 lorry parking spaces at Stop 24 (Parcel C).

Intermediate Development Scenario

Development on Parcel A (commercial plus associated infrastructure) , with up to 3,200 dwellings on Parcel B and D and an additional 1,360 lorry parking spaces at Stop 24 (Parcel C).

Extent of the Study Area

However, before introducing the development scenarios, it is important to identify and agree which parts of the overall study area might be available for development, for each scenario.

The original core study are comprised Parcel A, therefore, it is deemed to be available for inclusion in all scenarios. Similarly, Parcel C, as the potential location for an enhanced lorry parking provision (see opposite), is also deemed to be potentially available so is included in each scenario.

Parcel B, particularly the land to the east in the ownership of Folkestone Racecourse, has been the subject of a number of representations to the Local Plan process, some of which have focused on the delivery of residential development at various scales. This being the case, Parcel B is included as part of the Intermediate scenario and, to a much larger extent, as part of the enhanced scenario, which includes all the land to the west, in addition to the Folkestone Racecourse land ownership.

There is some logic to considering the potential for a 'whole junction' scenario, with development located to the north of Junction 11, as well as to the south. To that end, Parcel D is included, although there is a recognition that this may prove more difficult to deliver, in the short to medium-term.

Finally, Parcel E is potentially the least accessible of the various parcels that make up the original study area. It is also has a use that is important to the functioning of the wider strategic road network. Consequently, for the purposes of the current exercise, it is not included as a potential development site, although there is scope for it to be added, should circumstances change.

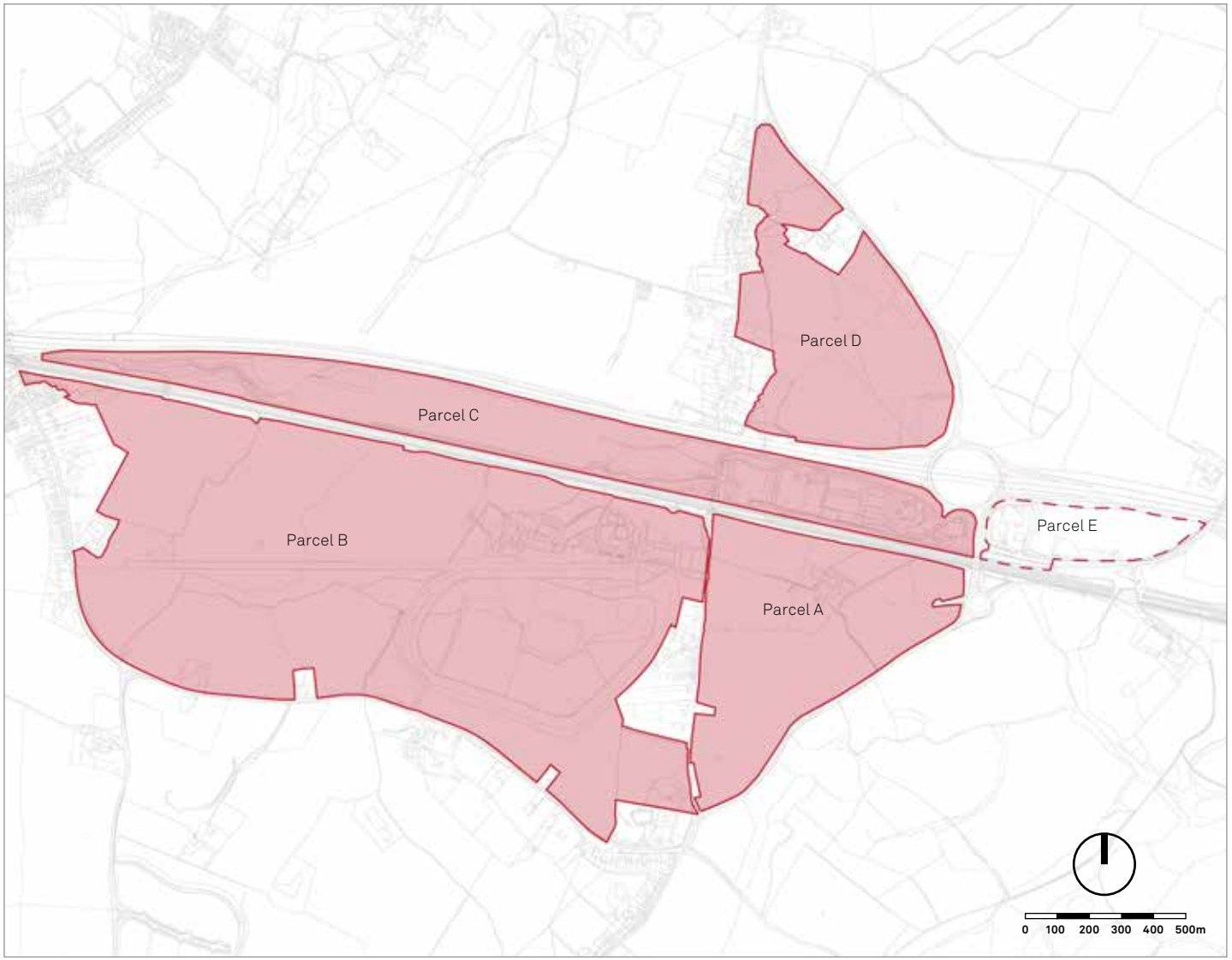


Figure 3.1: Parcels to be included in the development assessment scenarios

Figure 3.2: Extent of lorry parking at Stop 24 - different options

Lorry Parking Provision at Stop 24

There is currently provision for approximately 130 lorry parking spaces at Stop 24. This is the base case for lorry parking at Stop 24 and was factored into our assessment of existing traffic conditions (Figure 3.2A).

Henry Boot has submitted an application for an additional 60 space, an uplift achieved by means of re-planning the existing lorry parking area. They are also considering the potential for an expansion of approximately 300 additional spaces, on land to the west of Stone street, located in the corridor of land between the M20 and the railway lines. This composite of an additional 60 spaces, plus a potential expansion of 300 spaces, forms part of the Limited Development Scenario, in addition to development for commercial uses on Parcel A (Figure 3.2B).

There is also potential for additional lorry parking at Junction 11, and for the purposes of this current study, we have proposed a further 1,000 spaces to be located on the remaining land to the west of Stone Street and this larger uplift in lorry parking numbers forms part of the Intermediate and Enhanced Development Scenarios (Figure 3.2C).

Limited Development Scenario

The first scenario posits a development scheme focused on the Triangle of land that is Parcel A. The original premise for development at Junction 11, which was the initial impetus for the preparation of this paper, is based on the delivery of employment uses on Parcel A. The proposed development would comprise a mix of B1, B2 and B8 uses, plus a hotel close to Junction 11 and a park and ride facility to serve Westenhanger Station. For this scenario, it has been assumed that Parcel C has been developed, in part, to create lorry park totalling 360 spaces. This is the base case scenario.

In addition to the base case scenario, two variants were also considered, each with a small amount of residential development fronting onto Stone Street at Westenhanger.

Key

- Study area
- Residential
- Employment
- Local centre
- Open space
- Landscape buffer
- Allotments/sports pitches
- Hotel
- Lorry parking
- Station
- Station parking
- Primary routes
- Secondary routes
- Junction improvements

Total Area: 41.38ha/ 102.26 acres

Land uses
Commercial: 23.66ha/ 58.45 acres
Landscape*: 13.83ha/ 34.18 acres
Infrastructure: 3.89ha/ 9.62 acres**

*** Includes landscape buffers to AONB and existing settlement**
**** Includes primary road network and Park and Ride associated with Westenhanger Station**

Total Commercial Floor Space
B1 (office): 23,540 m²
B8 (logistics): 39,079 m²

Plus 80 room hotel

Total of employees (projected): 2,450

Number of dwellings: 0-59-150

Figure 3.3: Limited development scenario with Parcel A developed for employment uses only

Figure 3.4: Limited development scenario, plus small residential development

Figure 3.5: Limited development scenario, plus larger residential development

Intermediate Development Scenario

This second scenario constitutes a more substantial development scheme, with a larger component of residential. The employment uses are retained on Parcel A, but the scheme is now augmented by approximately 850 dwellings on Parcel B , on land immediately to the west of Westenhanger which is currently occupied by Folkestone Racecourse. It is envisaged that development on Parcel B would be primarily residential, with associated open space and infrastructure (roads, services) provided, as necessary, for this scale of development. Parcel C is assumed to have been developed to a greater degree, delivering a 1,360 lorry park spaces.

Total Area: 94.59ha/ 233.73 acres

Land uses
Residential: 28.30ha/ 69.94 acres
Commercial: 26.75ha/ 66.10 acres
Landscape*: 26.34ha/ 65.08 acres
Infrastructure: 10.68ha/ 26.38 acres**

*** Includes landscape buffers to AONB and existing settlement**
**** Includes primary road network and Park and Ride associated with Westenhanger Station**

Total Commercial Floor Space
B1 (office): 31,087 m²
B8 (logistics): 39,079 m²

Plus 80 room hotel

Total of employees (projected): 2,450 (plus additional jobs in town/local centres, education, etc.)

Number of dwellings: 872

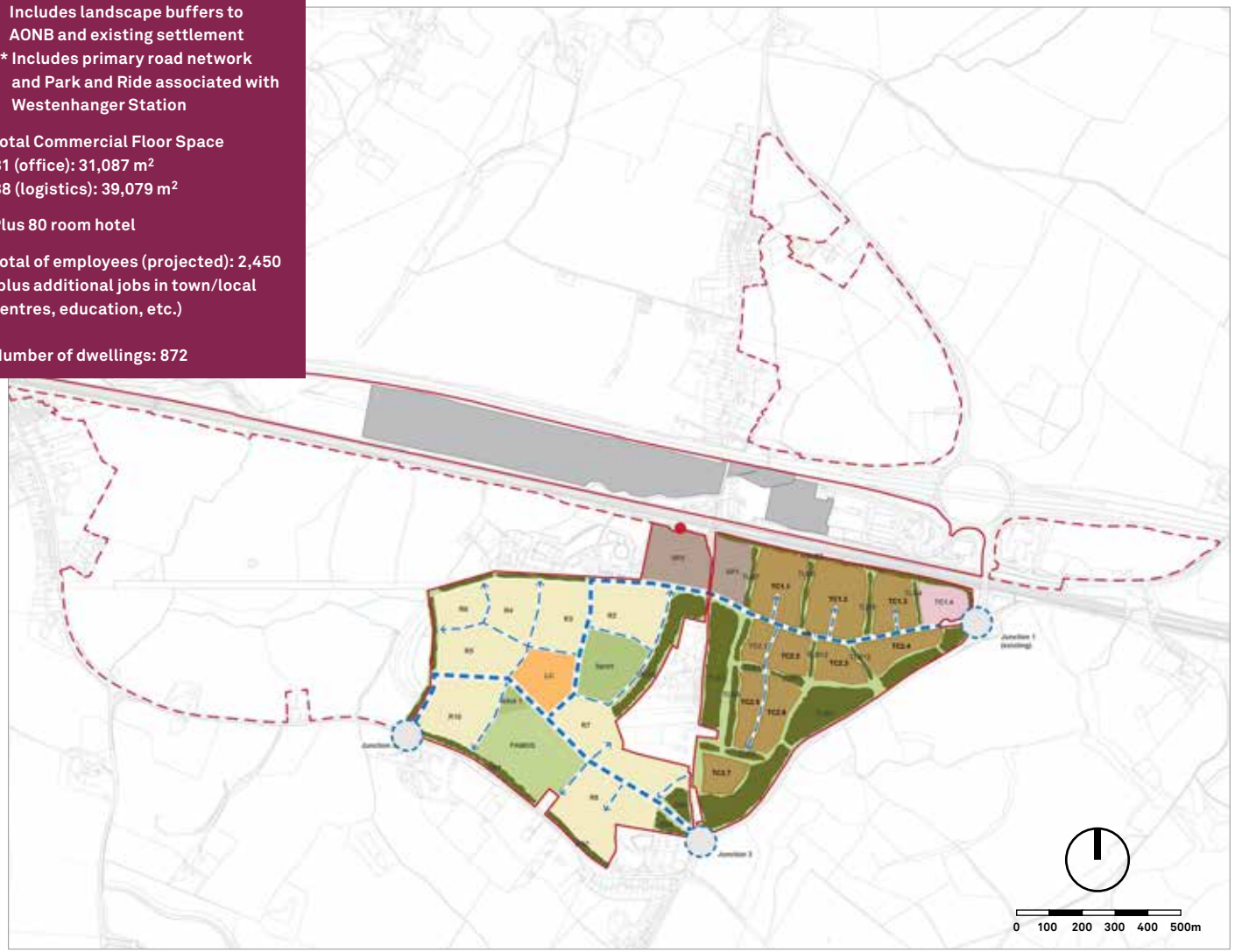


Figure 3.6: Intermediate development scenario, across Parcels A and B

Total Area: 235.48ha/ 581.87 acres

Land uses
Residential: 106.23ha/ 262.50 acres
Commercial: 28.85ha/ 71.29 acres
Landscape*: 74.32ha/ 183.66 acres
Infrastructure: 15.92ha/ 39.34 acres**

*** Includes landscape buffers to AONB and existing settlement**
**** Includes primary road network and Park and Ride associated with Westenhanger Station**

Total Commercial Floor Space
B1 (office): 31,087 m²
B8 (logistics): 39,079 m²

Plus 2 x 80 room hotel

Total of employees (projected): 2,450 (plus additional jobs in town/local centres, education, etc.)

Number of dwellings: 3,273

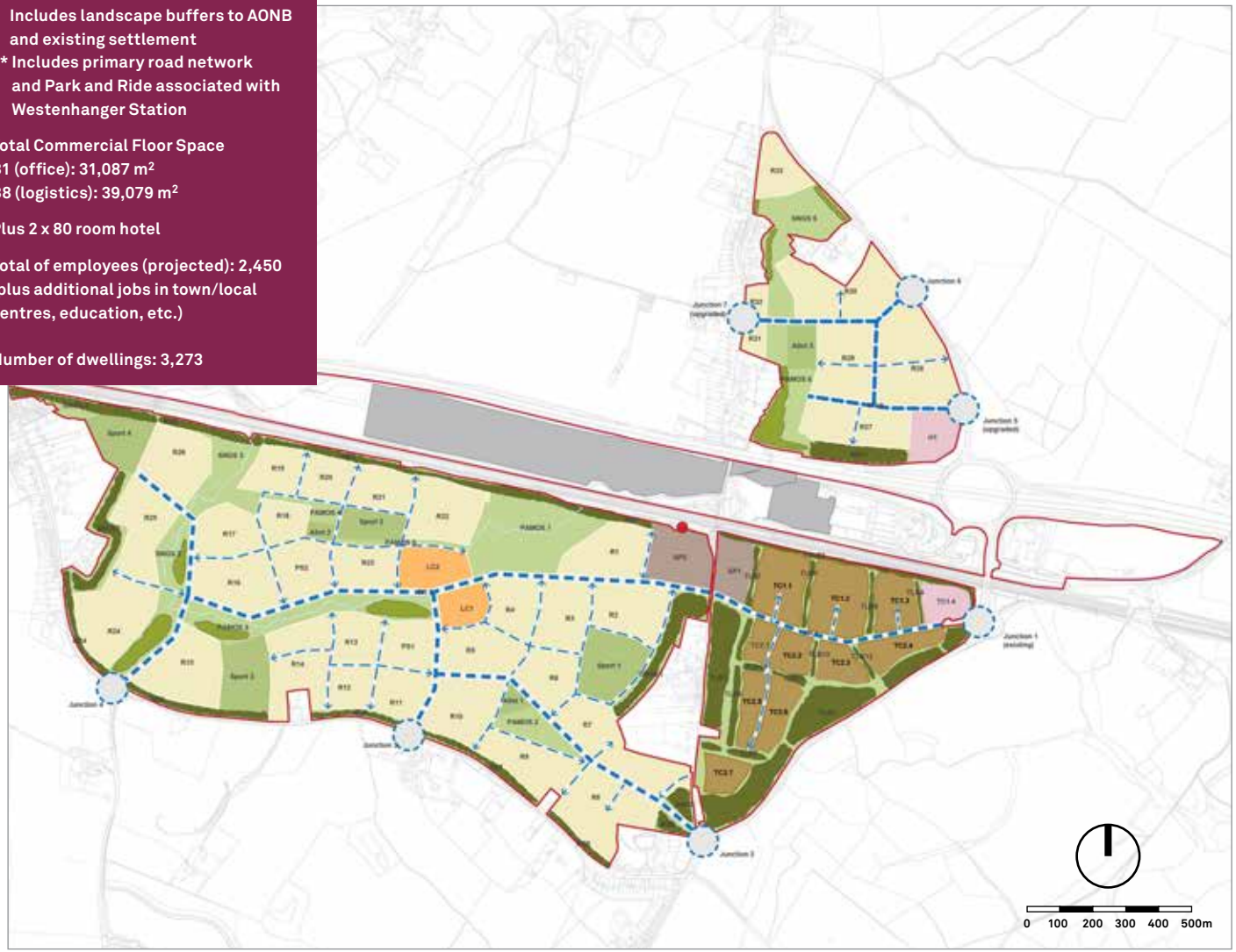


Figure 3.7: Enhanced development scenario, across Parcels A-D

Enhanced Development Scenario

This final scenario envisages the delivery of a substantial, mixed-use comprehensively planned development across Parcels A-D. Parcel E is not developed, in this scenario, for the reasons cited, above. The large-scale scenario includes a wider mix of uses as well as a greater quantum of development. Parcel A is developed for employment uses, as before, but the extent of mixed use, residential-led development is extended on Parcel B and introduced to Parcel D, for the first time. The range of uses, in addition to residential, includes education, social and community facilities and commercial/retail/leisure in a new central location. Open space and infrastructure/services are also delivered, in a manner appropriate to the scale and type of development. As with the previous scenario, Parcel C is developed to provide 1,360 lorry park spaces.

Key

- Study area
- Residential
- Employment
- Local centre
- Open space
- Landscape buffer
- Allotments/sports pitches
- Hotel
- Lorry parking
- Station
- Station parking
- Primary routes
- Secondary routes
- Junction improvements

04

TESTING THE SCENARIOS

Introduction

Our assessment of the spatial options relates, primarily, to the following themes:

- Transport, and
- Utilities and infrastructure.

This section considers how the three initial development scenarios perform in terms of transport and utilities. For the purpose of this exercise, although three variants of the Limited Development scheme were generated, it is Option 1 - where the main focus is on employment provision, with no residential - that is the preferred option.

Limited Development Scenario

This development scenario comprises a range of employment uses located entirely on Parcel A (with an area of 41.38ha/ 102.26 acres)

In terms of land uses, the following mix is proposed:

- Commercial: 26.75ha/ 66.10 acres
- Landscape (including landscape buffers to the AONB and existing settlement): 13.83ha/ 34.18 acres
- Infrastructure (including primary road network and a Park and Ride facility associated with Westenhanger station): 3.89ha/ 9.62 acres

The total commercial/employment floor space break down is as follows:

- B1 (office): 31,087 m^2
- B8 (logistics): 39,079 m^2

In addition, there is an 80 room 3 star hotel located on land immediately adjacent to Junction 11, in the north eastern corner of Parcel A. The total number of employees which might be delivered by a fully developed scheme is estimated to be 2,450.

Transport

The assessment sets out the predicted uplift in vehicle movements across the relevant junctions, in the event that a Limited Development Scenario comprising employment uses on Parcel A goes ahead. The absolute number of movements at each junction, together with the uplift from the

Figure 4.1: Limited development scenario with Parcel A developed for employment uses only

2026 Do Minimum scenario is shown in the table, below.

As before, the capacity of each junction to accommodate change is based on an assessment of its ideal capacity and current loading - expressed as Ratio of Flow to Capacity (RFC) and queue length (in vehicles) for each junction. The parameters used to assess whether a junction works or not are as follows:

- An RFC of 0.85 or lower indicates that the approach is predicted to operate within its ideal capacity;
- An RFC between 1.00 and 0.85 indicates that the approach is predicted to operate beyond its ideal capacity, but within its theoretical capacity, and
- An RFC of above 1.00 indicates that the approach is predicted to operate over capacity.

The maximum RFC at each junction, as a consequence of the Limited Development Scenario being delivered, is shown in brackets, in the tables below.

From the analysis, it is clear that Junction 11 would continue to function well within capacity, while the other junction assessed are over capacity to varying degrees. In the case of the A20 LILO, A20 Stone Street and A20 Hythe Road junctions, they would be over capacity by the 2026 target date, regardless of whether there is any development at Junction 11 under any of the three proposed scenarios.

Interestingly, the junction originally built to provide access to development Parcel A is over capacity, even with a smaller tranche of development limited only to that Triangle of land.

Vehicle movements by junction for Limited Development Scenario (plus uplift from 2026 Do Minimum Scenario)

Junction	AM Peak	PM Peak
M20 Junction 11	2,768 (+320)	2,702 (+378)
A20 LILO (Left in -left out)	3,423 (+326)	3,348 (+256)
Parcel A Access	3,354 (+583)	3,266 (+513)
A20/Stone Street (south)	2,832 (+283)	3,010 (+289)
A20/A261 Hythe Road	Combined with A20/Stone Street (south)	

Question: Does junction operate within ideal capacity (maximum RFC across all approaches of 0.85 or lower)?

Junction	AM Peak	PM Peak
M20 Junction 11	Yes (0.46)	Yes (0.46)
A20 LILO (Left in -left out)	No (2.46)	No (0.96)
Parcel A Access	No (1.01)	No (1.05)
A20/Stone Street (south)	No (2.76)	No (1.04)
A20/A261 Hythe Road	No (2.84)	No (3.23)

Utilities

Each of the different utilities has its own risks and issues attached to the delivery of development. The requirements, in terms of new apparatus and upgrades to existing, to deliver the Limited Development Scenario, are set out below

Electricity

High voltage connections are likely to be required to approximately two electricity substations within the commercial development. A low voltage network will be required to extend from the substations to proposed buildings.

The supply arrangements, number of substations and extent of reinforcement listed above will be only be more clearly understood following detailed discussions with providers.

Gas

Enquiries have been issued to Southern Gas Networks to determine if it will be practical to provide a gas supply to the new development parcels and to establish the extent of network reinforcements that may be required. However, a response has not yet been received.

Given the limited extent of existing high or medium pressure gas apparatus situated in close proximity to the development areas, the overall energy strategy should ideally seek to minimise any requirement for additional natural gas connections to the site. For example, the development could be designed to avoid a default to a gas main to service the development on the basis that more practicable and energy efficient systems are available.

Potable Water

A new distribution main will need to be extended through Parcel A to serve the commercial development, potentially from the existing 300mm diameter water main that extends to the south of that parcel. The SWCS indicates that off-site connection works are likely to be required for development scenarios with a quantum of up to 900 units but that extensive off-site reinforcements are unlikely to be required.

Although there is no mention in the SWCS of the capacity to provide for a development scenario predicated entirely on the provision of employment land uses, it is assumed that the mix proposed - B1 and B8, rather than B2, would result in a demand for potable water that would be no greater than that generated by 900 dwellings.

On that basis, we would envisage the Limited Development Scenario being capable of delivery without major reinforcement works being required. Regardless of the mix of uses, it is likely that water demand reduction measures are likely to be required to reduce potable water demand in order to minimise the impact of the development on existing water resources and comply with the requirements of the SWCS (for example, for residential development the aim would be to reduce demand from 150 litres per person per day to 105 litres per person per day).

Foul Water

A network of new foul sewers will be required to be extended through Parcel A to convey foul flows from the new commercial units to a new adoptable pumping station situated at the low point on the site.

A new rising main will be extended from the pumping station to a suitable connection point on the existing foul sewer network, potentially where the sewer extends in a westerly direction from Stone Street. The foul flows generated by the commercial development will be relatively small in comparison to scenarios that include residential development and the peak discharge is unlikely to occur at the same time as the surrounding residential development.

Consideration should, therefore, be given to the provision of ultrasonic level detectors within the existing foul sewer network that will enable the pumping station on Parcel A to discharge foul water to the existing sewers when capacity is available. The SWCS indicates that the existing Sellindge WWTW has a maximum headroom of 1,250 dwellings. On the basis that there is no significant residential development within the area served by Sellindge WWTW, it is unlikely that it will be necessary to upgrade the existing treatment works to accommodate the foul discharge from the commercial development. However, it may be necessary to provide localised improvements to the existing sewerage network to accommodate the additional discharge, such as the provision of additional emergency storage at the Newingreen Sewage Pumping Station.

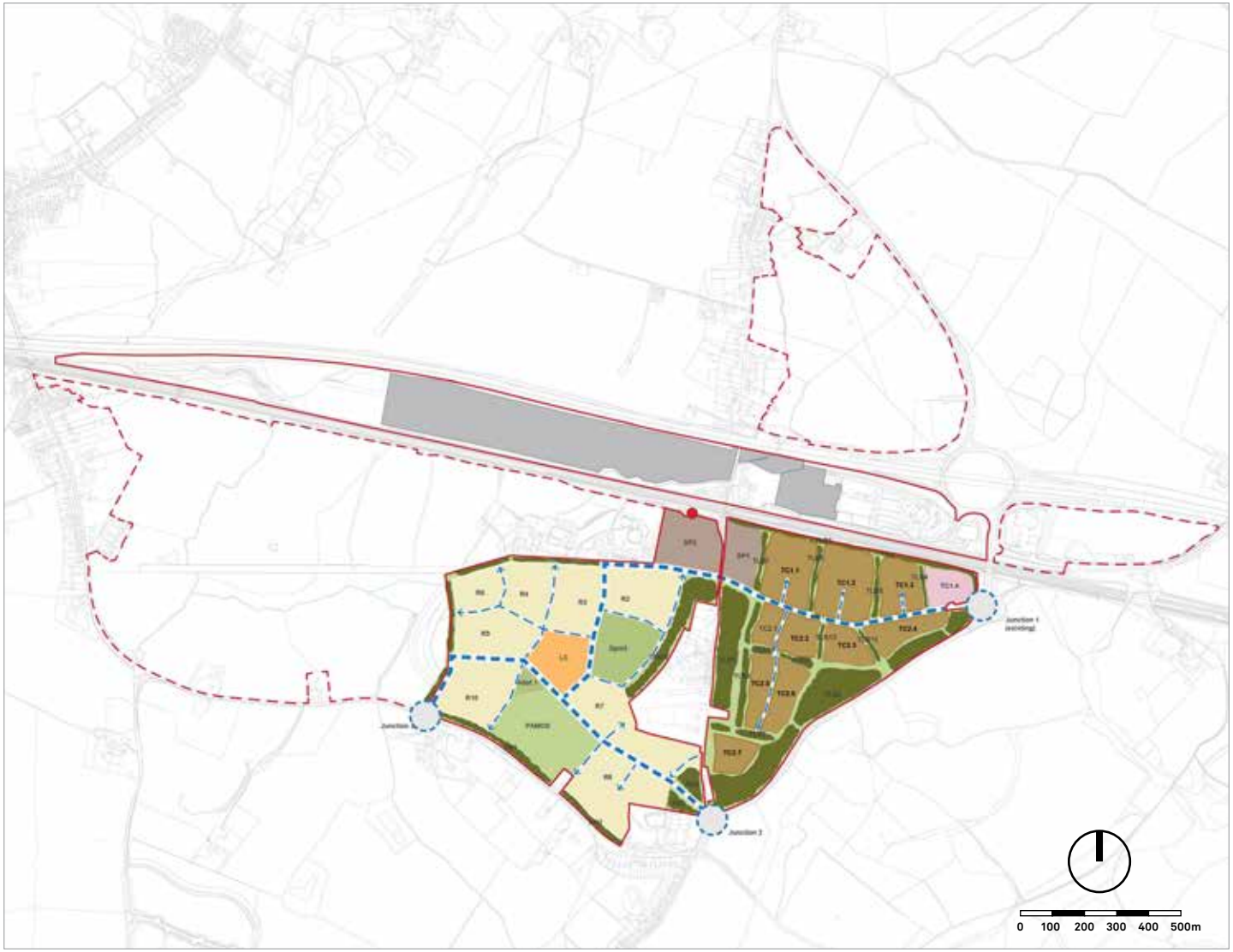


Figure 4.2: Intermediate development scenario, across Parcels A and B

Intermediate Development Scenario

This development scenario comprises a range of employment uses located entirely on Parcel A, together with a residential-led development of approximately 850 dwellings on the eastern half of Parcel B (having a total area of 94.59ha/ 233.73 acres)

In terms of land uses, the following mix is proposed:

- Residential : 28.30ha/ 69.94 acres
- Commercial: 26.75ha/ 66.10 acres
- Landscape: 26.34ha/ 65.08 acres
- Infrastructure: 10.68ha/ 26.38 acres

The total commercial/employment floor space break down is as follows:

- B1 (office): 31,087 m^2
- B8 (logistics): 39,079 m^2

In addition, there is an 80 room 3 star hotel located on land immediately adjacent to Junction 11, in the north eastern corner of Parcel A. The total number of employees which might be delivered by a fully developed scheme is estimated to be 2,450, with potential for additional jobs to be created should there prove to be potential for some form of retail or other land uses in a small local centre within the residential component.

Transport

The assessment sets out the predicted uplift in vehicle movements across the relevant junctions, in the event that an Intermediate Development Scenario comprising employment uses on Parcel A goes ahead. The absolute number of movements at each junction, together with the uplift from the 2026 Do Minimum scenario is shown in the table, below.

As before, the capacity of each junction to accommodate change is based on an assessment of its ideal capacity and current loading - expressed as Ratio of Flow to Capacity (RFC) and queue length (in vehicles) for each junction. The parameters used to assess whether a junction works or not are as follows:

- The maximum RFC at each junction, as a result resulting of the Limited Development Scenario being delivered, is presented in brackets, opposite and below.

From the analysis, it is clear that, as with the Limited Development Scenario, Junction 11 would continue to function well within capacity, while the other junctions assessed are over capacity to varying degrees. In particular, the two junctions on the A20, to the south west corner of Parcel A (at the southern end of Stone Street and at the A26 Hythe Road) are significantly over capacity as, indeed, they would be even without the presence of any new development. That being the case, the delivery of some form of development at a scale that allows it to deliver improvements to the local road network, especially at key locations where there is an issue with capacity, would potentially be of interest.

Utilities

The risks and issues attached to the delivery of development under the Intermediate Development Scenario, in respect of utilities, are set out below.

Electricity

An electrical supply is likely to be required from one of the 33KVA routes and a new 33kVA/11kVA sub-station is likely to be required on or close to the site. It is also likely that it will be necessary to install an 11kVA ring main throughout each of the development areas with approximately four substations within the residential development and two substations within the commercial development.

Gas

As with the first development scenario, given the limited extent of existing high or medium pressure gas apparatus situated in close proximity to the development areas, the overall energy strategy should ideally seek to minimise any requirement for additional natural gas connections to the site. For example, the development could be designed to avoid a default to a gas main to service the development on the basis that more practicable and energy efficient systems are available.

Vehicle movements by junction for Intermediate Development Scenario (plus uplift from 2026 Do Minimum Scenario)

Junction	AM Peak	PM Peak
M20 Junction 11	3,189 (+740)	3,213 (+889)
A20 LILO (Left in -left out)	3,770 (+672)	3,699 (+608)
Parcel A Access	3,667 (+896)	3,607 (+854)
A20/Stone Street (south)	3,062 (+513)	3,289 (+568)
A20/A261 Hythe Road	Combined with A20/Stone Street (south)	

Question: Does junction operate within ideal capacity (maximum RFC across all approaches of 0.85 or lower)?

Junction	AM Peak	PM Peak
M20 Junction 11	Yes (0.53)	Yes (0.55)
A20 LILO (Left in -left out)	No (3.19)	No (1.50)
Parcel A Access	No (1.13)	No (1.64)
A20/Stone Street (south)	No (3.25)	No (1.41)
A20/A261 Hythe Road	No (3.76)	No (6.67)

Potable Water

New distribution mains will need to be extended through the new development parcels to serve the commercial and residential development. The distribution mains extending through Parcels A and B are likely to be connected to the existing 300mm diameter water main that extends to the south of these parcels. The distribution mains extending through Parcel C is likely to be connected to the existing 200mm diameter water main that extends to the east of this area.

Limited existing water mains are present in the vicinity of Parcel D and it is, therefore, likely to be necessary to extend a new main along the B2068 or Stone Street and potentially form a new crossing below the M20. Rainwater harvesting or grey water recycling are likely to be required to reduce potable water demand from 150 litres per person per day to 80 litres per person per day in order to minimise the impact of the development on existing water resources.

Extensive reinforcements are likely to be required to the water supply network as the SWCS indicates that the existing network is capable of accommodating the demand of approximately 900 dwellings, but makes no mention of the effect of a sizeable commercial development on available supplies or the proposed residential development at Sellindge (c.200 dwellings)

Foul Water

The SWCS indicates that the existing Sellindge WWTW has a maximum headroom of 1,250 units; therefore, it is unlikely to be necessary to upgrade the existing treatment works to accommodate the foul discharge from the commercial development.

However, the existing foul sewers and pumping stations are unlikely to have sufficient capacity to accommodate the considerable additional foul flow generated by the residential component of the Intermediate Development Scenario and it is likely, therefore, that it will be necessary to consider providing an on-site wastewater treatment works to accommodate foul water generated by this scheme.

This approach would remove the requirement for extensive improvements to the existing foul sewers that convey foul flows from the catchment to the Sellindge WWTW. A network of new foul sewers will be required to be extended through Parcels A and B to convey foul flows from the new commercial and residential units to a new adoptable pumping station situated at the low point on the site, which will direct flows to the on-site Wastewater Treatment Works via a new rising main.

Telecommunications

New telecommunications apparatus will need to be extended through the Parcels A, B and C to serve the commercial and residential development. The telecommunications apparatus that serves Parcels A and B are likely to be connected to the existing telecommunications apparatus that extends to the south of these parcels. The distribution mains extending through Parcel C is likely to be connected to the existing telecommunications apparatus to the east of this area.

Enhanced Development Scenario

This development scenario comprises a range of employment uses located entirely on Parcel A, together with a residential-led development of approximately 3,200 dwellings on Parcels B and D (having a total area of 235.48ha/ 581.87 acres)

In terms of land uses, the following mix is proposed:

- Residential: 106.23ha/ 262.50 acres
- Commercial: 28.85ha/ 71.29 acres
- Landscape: 74.32ha/ 183.66 acres
- Infrastructure: 15.92ha/ 39.34 acres

The total commercial/employment floor space break down is as follows:

- B1 (office): 31,087 m^2
- B8 (logistics): 39,079 m^2

In addition, there are two 80 room 3 star hotels, one located on land immediately adjacent to Junction 11, in the north eastern corner of Parcel A, and the other in the south east corner of Parcel D, again immediately adjacent to Junction 11. The total number of employees which might be delivered by a fully developed scheme is estimated to be 2,450, with potential for additional jobs to be created by the retail and service offer in the local centre, plus the education and social/community uses located throughout the larger development site.

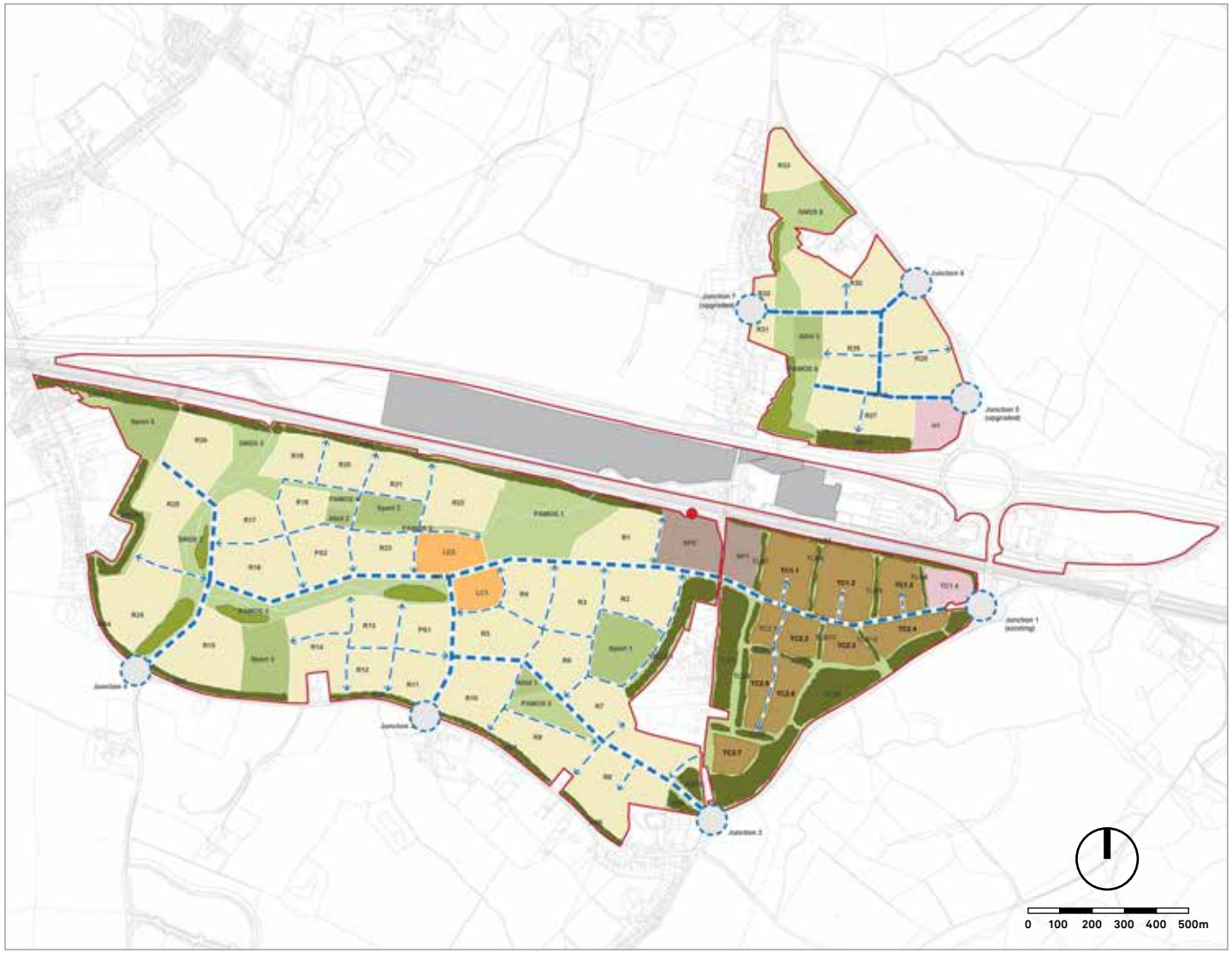


Figure 4.3: Enhanced development scenario, across Parcels A-D

Transport

The assessment sets out the predicted uplift in vehicle movements across the relevant junctions, in the event that an Enhanced Development Scenario goes ahead comprising employment uses on Parcel A and residential-led, mixed-use on Parcels B and D. The absolute number of movements at each junction, together with the uplift from the 2026 Do Minimum scenario is shown in the table, below.

As before, the capacity of each junction to accommodate change is based on an assessment of its ideal capacity and current loading - expressed as Ratio of Flow to Capacity (RFC) and queue length (in vehicles) for each junction. The parameters used to assess whether a junction works or not are as follows:

- The maximum RFC at each junction, as a result resulting of the Limited Development Scenario being delivered, is presented in brackets, opposite and below.

From the analysis, it is clear that, as with the two previous development scenarios, Junction 11 would continue to function well within capacity, while the other junctions assessed are over capacity to varying degrees. As before, the junctions on the A20, to the south west corner of Parcel A (at the southern end of Stone Street and at the A26 Hythe Road), as well as the A20 LILO junction, are significantly over capacity.

Given that the A20/Stone Street and A20/Hythe Road junctions are over capacity without any significant development, the same argument applies as for the Intermediate Development Scheme; that delivery of development at a scale that allows it to deliver improvements to the local road network, especially at key locations where there is an issue with capacity, would potentially provide a wider benefit.

Vehicle movements by junction for Enhanced Development Scenario (plus uplift from 2026 Do Minimum Scenario)

Junction	AM Peak	PM Peak
M20 Junction 11	3,661 (+1,212)	3,739 (+1,415)
A20 LILO (Left in -left out)	4,184 (+1,086)	4,197 (+1,105)
Parcel A Access	3,991 (+1,220)	4,012 (+854)
A20/Stone Street (south)	3,480 (+931)	3,830 (+1,109)
A20/A261 Hythe Road	Combined with A20/Stone Street (south)	

Question: Does junction operate within ideal capacity (maximum RFC across all approaches of 0.85 or lower)?

Junction	AM Peak	PM Peak
M20 Junction 11	Yes (0.76)	Yes (0.66)
A20 LILO (Left in -left out)	No (4.29)	No (3.07)
Parcel A Access	No (1.26)	No (2.47)
A20/Stone Street (south)	No (5.56)	No (3.49)
A20/A261 Hythe Road	No (9.65)	No (Infinitely over capacity)

Utilities

The risks and issues attached to the delivery of development under the Enhanced Development Scenario, in respect of utilities, are set out below.

Electricity

An electrical supply is likely to be required from one of the 33KVA routes and a new 33kVA/11kVA sub-station is likely to be required on or close to the site. It is also likely to be necessary to install an 11kVA ring main throughout each of the development areas with approximately sixteen substations within the residential development and two substations within the commercial development.

Gas

As before, given the limited extent of existing high or medium pressure gas apparatus situated in close proximity to the development areas, the overall energy strategy should ideally seek to minimise any requirement for additional natural gas connections to the site. For example, the development could be designed to avoid a default to a gas main to service the development on the basis that more practicable and energy efficient systems are available.

Potable Water

New distribution mains will need to be extended through the new development parcels to serve the commercial and residential development. The distribution mains extending through Parcels A,B and C are likely to be connected to the existing 300mm diameter water main that extends to the south of these parcels. The distribution mains extending through Parcel C is likely to be connected to the existing 200mm diameter water main that extends to the east of this area. Limited existing water mains are present in the vicinity of Parcel D and it

is therefore likely to be necessary to extend a new main along the B2068 or Stone Street and potentially form a new crossing below the M20.

Rainwater harvesting or grey water recycling are likely to be required to reduce potable water demand from 150 litres per person per day to 80 litres per person per day in order to minimise the impact of the development on existing water resources.

Extensive reinforcements are likely to be required to the water supply network are likely to be required as the Water Cycle Study indicates that the existing network is capable of accommodating the demand of approximately 900 dwellings, well below the proposed 3,200 homes, plus commercial land uses, education and other, associated uses.

Foul Water

The SWCS indicates that the existing Sellindge WWTW has a maximum headroom of 1,250 units; therefore, it is likely to be necessary to consider providing an on-site wastewater treatment works to accommodate foul water generated by the larger scheme proposed by the Enhanced Development Scenario. A network of new foul sewers will be required to be extended throughout the site to convey foul flows from the new commercial and residential units to new adoptable pumping stations situated at the low points within the sites. Pumping stations will be required on site to intercept flows from gravity sewers that will be installed within each catchment and to direct those flows to the on-site Wastewater Treatment Works via new rising mains that may be required to extend below the M20. The provision of an on-site treatment works for the Enhanced Development Scenario development scenarios provides potential to redirect existing flows from the Newingreen Sewage Pumping Station to the new on-site Wastewater Treatment Works in order to relieve pressure on the existing Sellindge WWTW.

As with the Intermediate Development Scenario, the on-site wastewater treatment works that is likely to be required for the Enhanced Development Scenario could potentially take the form of an Enhanced Sequential Batch Reactors (ESBR), such as the system developed by Plantwork Systems. This form of technology is capable of increasing biological removal rates of Total Nitrogen and Total Phosphorus by up to 95%. In addition, the works is odour free and it occupies a relatively small footprint, as it is capable of producing a very high quality of effluent without the requirement for significant additional tertiary treatment. The lack of primary and tertiary clarifiers reduces the capital build cost of these works and also helps to reduce energy usage. In order to prove the ESBR technology in the UK market, Plantwork Systems intend to construct a works on the Southern Water site at Petersfield, Hampshire to demonstrate that the process will produce a final effluent with a very low nutrient content.

Telecommunications

Telecommunications apparatus will need to be extended through the new development parcels to serve the commercial and residential development. The telecommunications apparatus extending through Parcels A, B and C are likely to be connected to the existing apparatus that extends to the south of these parcels. The telecommunications apparatus extending through Parcel C is likely to be connected to the existing apparatus that extends to the east of this area. Limited telecommunications apparatus is present in the vicinity of Parcel D and it is, therefore, likely to be necessary to extend new telecommunication apparatus along the B2068 and potentially form a new crossing below the M20.

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SUMMARY

This report provides a high level summary of the current site conditions and context, across a number of themes, including:

- Landscape and environmental designations;
- Built heritage designations;
- Hydrology and topography;
- Flood risk;
- Ground conditions;
- Agricultural land classification;
- Transport, and
- Utilities.

It also posits a series of development scenarios, from a limited quantum of development in the immediate environs of Junction 11, through an intermediate level of intervention to either side of Stone Street and, finally, a comprehensive development scheme encompassing a much larger site area and delivering over 3,000 new homes and a mix of services and amenities. These development scenarios were assessed in terms of their impacts on transport infrastructure and utilities, to provide some level of guidance as to what might be required by way of upgrades.

Shepway District Council intends to use this report to inform ongoing internal discussion as to the potential for development to be delivered at Junction 11. Dependent on the outcome of those discussions, additional work will be required to provide further detail and certainty as to the nature and scale of that development opportunity and, also, to identify options for its delivery.

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AECOM
6-8 Greencoat Place
London
SW1P 1PL
T: 020 7798 5000
F: 020 7798 5001
www.aecom.com