Report

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Deal Transport and Flood Alleviation Model Study

Phase 1 – Baseline Report

August 2011

DOVER DISTRICT COUNCIL

gva.co.uk

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For and on behalf of GVA Grimley Ltd

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1. Introduction

The Town of Deal

1.1 Deal is a coastal town of 30,080 people (ONS Mid-Year Estimate, 2006) located within the Dover District Council area. It is renowned for its historic character town which is highly valued by residents. Many people work in the town or commute to jobs in Dover or Sandwich. Betteshanger Colliery was a significant employer in the past.

1.2 Residents, businesses and local leaders have identified issues faced by the town. These include flood risks, traffic pinch points and the provision of local services. The town will also face new challenges in the future. These include increased risk of coastal flooding due to rising sea levels, and the potential for traffic congestion associated with higher rates of car ownership. The Council's Core Strategy provides for housing and commercial growth in Deal. The local economy will also need to grow to provide local jobs.

1.3 Additionally, the potential for the expansion of Deal beyond the Core Strategy levels will place increased demands on infrastructure, such as highways and has the potential to impact the town and the surrounding environment in other ways. These present potential constraints on future expansion. There is potentially a strong inter relationship between addressing current issues, mitigating future challenges and mitigating constraints on future expansion. There is the potential to provide net benefits. This report is the first stage of an investigation of these inter-related issues.

Figure 1 - Deal and the surrounding area

Planning for Dover District

1.4 Dover District has been identified as an area which will undergo significant growth and change. As the district's second largest settlement, Deal has been identified as having the potential to accommodate a significant share of this District's housing and economic growth. This has been reflected in the Council's LDF Core Strategy. A number of planning applications have also come forward which propose new housing and jobs in the Deal area.

Purpose of this Study

1.5 The purpose of this Study is to understand the existing issues faced by the Deal community. Transport, flooding, ecology, landscape, town character and the town centre have been investigated. There are also future challenges in these domains that the Deal community will face which will need to be addressed, such as increased flood risk. These current issues and future challenges also present constraints on growth.

1.6 A range of interventions are investigated that could successfully alleviate current issues and address, or mitigate, future challenges. Some of these interventions, in improving existing conditions, may create opportunities for future growth. At the same time, this growth may also be required to address some of the current issues and future challenges. The Council has embarked on this study to avoid uncoordinated and ad-hoc public and private investments in single issues or constraints that do not add up to a net benefit to the Deal community as a whole.

1.7 This study investigates Deal to identify existing conditions, issues, challenges and constraints in detail. It also investigates interventions the Deal community requires, as well as the relationship between this local mitigation and future growth. The goal is to understand what Deal needs today and in the future, and also whether new development can be accommodated in a manner which provides a net benefit to residents of Deal as a whole.

1.8 This is the first stage of the study. The purpose of this stage is to:

- Clarify key existing conditions in and around Deal;
- Identify future challenges that will be faced by Deal;

- Establish appropriate mitigation measures to tackle existing issues and future challenges – providing net benefits to residents;
- Identify any opportunities for future expansion created by mitigation measures;
- Identify potential delivery and implementation relationships between future expansion and mitigation measures.

1.9 Building on the understanding of current conditions, a set of test scenarios have helped explore the range of interventions, investments and mitigation that could be delivered to secure a net improvement to the town.

1.10 Following this stage, more detailed investigation will identify improvements that can be made to Deal to address current issues, how future threats can be mitigated against and also the relationship between mitigation and any future growth.

Overview

1.11 The Dover District Local Development Framework (LDF) Core Strategy sets out the growth aspirations for the District for the period 2006 to 2026. Adopted in 2010 the Core Strategy provides the statutory basis for the growth of Deal and its constituent communities, identifying a housing delivery target of 1,600 additional homes and also employment growth. The Core Strategy also identifies the potential for further development to be accommodated within Deal. However, this is required to be subject to detailed testing of the feasibility of overcoming constraints evident in the area.

Study Organisation

1.12 GVA, leading a team of URS/Scott Wilson, MVA Consultancy and Studio REAL, have been appointed to undertake a thorough examination of the constraints facing Deal, both today and related to opportunities for future growth. We have been tasked with identifying a deliverable strategy for accommodating growth and delivering appropriate mitigation measures particularly within the North and Middle Deal areas.

1.13 This Report provides the baseline understanding and evidence for Deal. It identifies and considers its current issues and constraints, particularly focussing on transport, flooding and drainage, ecology and environment, and urban form. Having established the baseline understanding the Report investigates routes to delivering mitigation measures that would

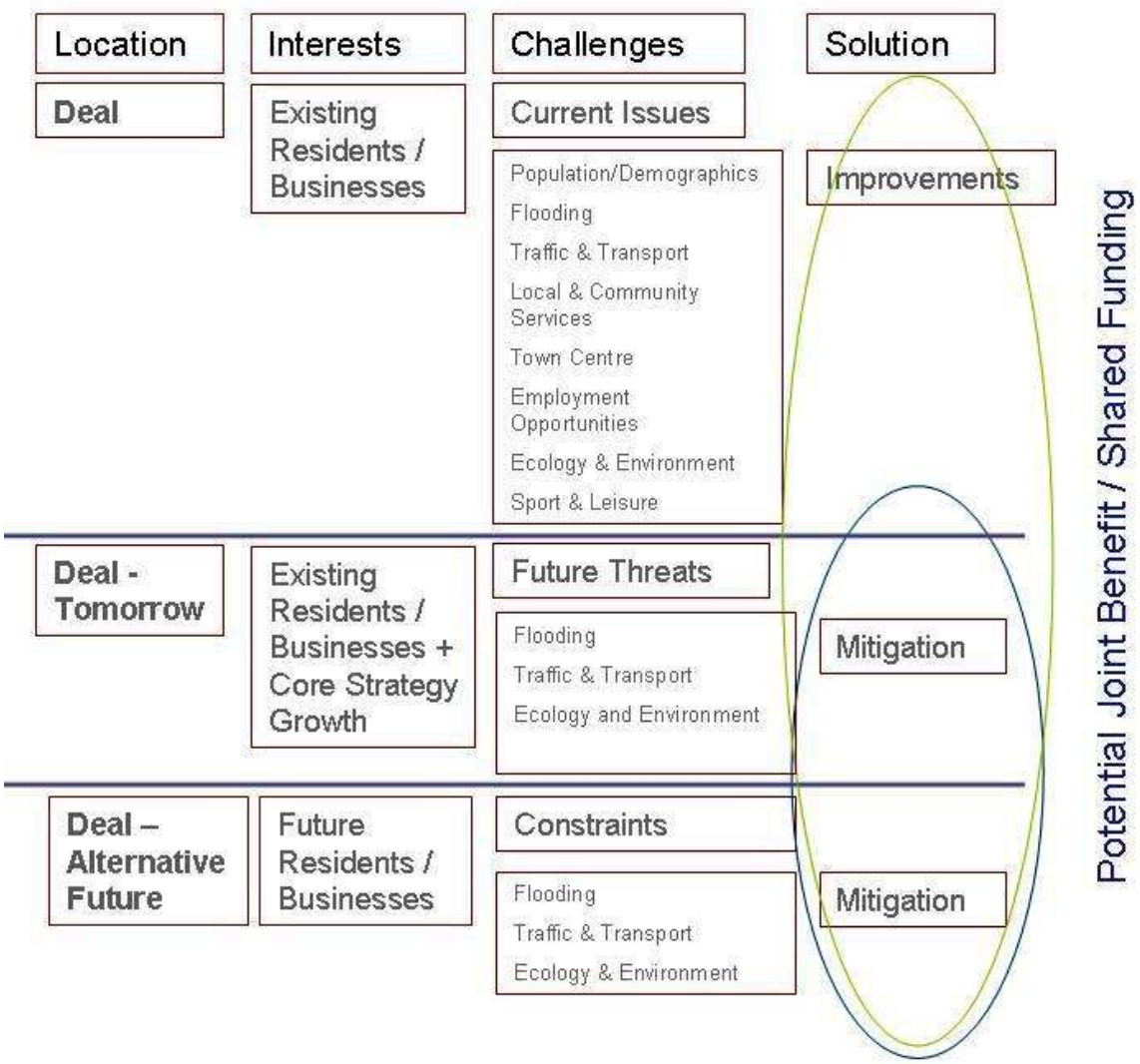
be required to address issues and alleviate constraints. Minimum mitigation measures that could also provide net benefits to the existing Deal community are identified. A set of scenarios are also explored to understand constraint thresholds requiring progressively greater mitigation measures. These measures are in some cases linked to new growth opportunities in North and Middle Deal specifically.

1.14 This Report is not intended to provide a definitive answer or growth strategy for Deal at this stage. It establishes what the existing community requires and parameters for potential future intervention and related opportunities. These form the basis for further testing and refinement at later stages.

Study Approach

1.15 To complete this Deal Transport and Flood Alleviation Model Study Baseline stage we have undertaken a 'three tier' approach to the analysis. This focuses on the needs of the existing community, a critical point for the Council. It also addresses the future challenges that will be faced by Deal. Additionally the potential impact of future expansion areas, and their mitigation requirements are investigated.

Figure 2 - Study approach



1.16 The framework set out above considers Deal from different perspectives starting with challenges faced today by existing residents. Current residents have raised a number of local issues and will also face new challenges in the future. Their children will face different prospects as they grow as Deal faces new and emerging challenges presented by the environment and our lifestyles. If Deal were to grow to accommodate new housing and jobs beyond Core Strategy levels a number of additional constraints would also need to be mitigated.

1.17 This report is organised in three steps:

- The first level of analysis is of the **current situation in Deal**, considering issues and challenges faced by existing residents and businesses. There are a range of issues

which existing communities face which require targeted local improvements to overcome; these are explored in more detail in the following section and Part One of this Baseline Report.

- The second level of analysis considers the issues facing the existing **Deal area in the future**. This is important given that even without expansion or new development beyond Core Strategy levels, the community will face threats in the future, most notably from increased flood risk and traffic congestion. These are likely to require specific mitigation interventions.
- The final level of analysis considers alternative **future growth scenarios** for Deal which could be accommodated beyond that identified within the Core Strategy. There are a number of constraints which face future growth-based scenarios which will primarily affect new residents and businesses. These constraints will require mitigations to be delivered.

1.18 The mitigation of future challenges to Deal and the wider constraints on expansion are likely to require similar interventions. For example, mitigation of future flood threats may create opportunities for further expansion. On the other hand, net improvements to the highways system may require contributions to funding associated with new development. As such there are likely to be joint benefits and opportunities from shared funding. If planned correctly these are also likely to deliver net improvements to conditions across the whole of Deal to support existing communities. Without planning and careful management, there is the potential for uncoordinated and ad-hoc public and private investments in single issues or constraints that do not provide a net benefit to the whole.

Sustainability Appraisal and Habitats Regulations Assessment

1.19 A Sustainability Appraisal (SA) and Habitat Regulations Assessment (HRA) are being prepared alongside this Report. The SA and HRA process have informed and been informed by the development of the baseline evidence within this Report and are integral to the later development of growth scenarios. The SA/HRA is an integral part of every step of the work, enabling baseline information, growth scenarios and suggested mitigations identified to be tested and evaluated in a consistent and compliant manner in accordance with national legislation and policy guidance.

1.20 At this point a Scoping Report and SA/HRA have been prepared and discussed with statutory consultees, the Reports and responses are appended to this Baseline Study for reference. The SA/HRA will continue to test and inform the Deal Transport and Flood Alleviation Model Study as it progresses through subsequent stages of work. A summary of the key responses to the Scoping Consultation and their impacts

Sustainability Appraisal

1.21 Consultation responses to the SA Scoping Report were received from the Environment Agency, Natural England and English Heritage. The key themes emerging from the consultation process which need to be addressed and taken into account as the project progresses are:

- Ensuring the EA continues to be engaged to ensure the most up to date evidence and data is available and used;
- Working collaboratively with neighbouring authorities to ensure a coordinated approach to green infrastructure and wildlife corridor provision is developed and included within the final Strategy;
- Ensuring that the SA evolves to provide more detailed assessment of the potential ecological impacts to provide confidence in the appraisal; and
- Making sure local water resources are protected to ensure further pressure is not placed on biodiversity.

1.22 The issues raised will inform and guide the approach taken within the SA as it progresses and also the manner in which the options are refined and tested within Stage 2 of the project.

Habitats Regulation Assessment

1.23 Consultation responses to the HRA Scoping Report were received from Natural England, Kent Wildlife Trust and the RSPB. The key themes emerging from the consultation process which need to be addressed and taken into account as the project progresses are:

- The need to identify potential sources of new information;
- Ensure other project and plans are considered 'in combination' with the impacts of this Study;

- Avoid over-reliance on previous evidence supporting major planning documents within the district with out critically assessing its relevance;
- Consider the need to assess air quality impacts on Folkestone to Etchinghill Escarpment SAC and Lydden to Temple Ewell Downs SAC; and
- Ensure ecological enhancements are developed in consultation with neighbouring authorities.

1.24 These issues will be taken into account as the HRA itself is developed and deployed to test and inform later stages of the Study. In particular it will inform the scenario refinement in Stage 2.

2. The Deal context

2.1 This section sets out the current context within Deal, highlighting both the issues faced by the town and its residents today and the current strengths and opportunities. This short introduction to the town draws upon the existing LDF evidence base and the analysis carried out within this Baseline stage, as set out in Part One of this Baseline Report.

The Policy Context

2.2 The Dover District Local Development Framework (LDF) Core Strategy was adopted in February 2010. Policy CP1 identifies Deal as a District Centre and a focus for urban scale development second only to Dover. Deal's ability to accommodate significant development is, however, constrained by transport and environmental considerations. The section regarding spatial issues in Deal (pages 48 to 50 in the Core Strategy) make a commitment to investigating these constraints, especially in and adjoining the northern area, to see whether solutions could be found for the benefit of existing residents and to create potential for further development.

2.3 The particular constraints relate to road access, tidal flood risk, hydrology and drainage, ecology and landscape. Over the past 20 to 30 years incremental development has taken place within the margins of these constraints against a background of increasing public concern, especially regarding access, traffic levels, the environmental impact of HGVs, flood risk and loss of biodiversity. Development during this period has, by and large, placed more pressure on these constraints without offering any significant community advantages.

2.4 From the local economy perspective it has proved extremely difficult to find suitable land for business development on any significant scale with the result that Deal experiences a high degree of out commuting. Current strategy is to rely on the redevelopment of the former Betteshanger Colliery to the north west of Deal and a relatively small redevelopment of Minter's Yard in north Deal. Both of these sites are shown on Figure 3.4 in the Core Strategy.

2.5 It has also proved difficult to accommodate modern shopping floorspace in the town centre due to constraints imposed by historic assets (conservation areas and listed buildings) and by the road system.

2.6 The Royal Cinque Ports Golf Course is located along the coast to the north of Deal and is accessed from Golf Road which runs through the northern end of Deal. The golf course is currently of national standing but has undertaken significant investment over recent years and has the potential to gain a higher profile similar to Royal St. George's at Sandwich. This would only be achieved through improved access and the provision of proximate hotel and service accommodation.

2.7 The Strategy makes provision for an additional 1600 homes over the period to 2026 (see Policy CP3) and identifies three areas for relatively modest urban extensions. Two of these are on the north side of Deal, in the Sholden vicinity and the third is in Walmer, with a combined estimated capacity of around 700 homes.

2.8 The two sites at Sholden are on the cusp of acceptability in relation to transport and flood risk. The current planning applications will need to demonstrate that all the elements which would have been examined as part of the Site Allocations Document are satisfied and deemed to be acceptable.

2.9 The Council's forthcoming LDF Site Allocations Document will need to identify other sites to meet the balance of the overall 1600 home requirement.

Previous Interventions

2.10 The Council and its partners have a longstanding commitment to improving Deal for its existing residents and during the current plan period have made a number of significant investments to tackle existing issues.

2.11 The table below highlights the key investments that have been made to improve Deal in the current plan period, i.e. since the beginning of 2006.

Table 1 - Public Sector Investment in Deal 2006 to Present

	Projects Included	Lead Delivery Partners	Approximate Cost
Traffic & Transport	▪ Upgrading of cycle paths, ▪ Improved links to Fowlmead Country Park ▪ Public realm improvements ▪ New safety signage ▪ Town centre public realm ▪ Bus stop upgrades	▪ Dover District Council ▪ Kent Highway Services ▪ SEEDA ▪ Stagecoach	£330,000
Local and community services	▪ Deal Library Improvements ▪ New Golf Road GP Surgery ▪ Golf Road community centre ▪ Deal Pier & Restaurant	▪ DDC ▪ KCC ▪ HCA ▪ Mild Valley Developments	£3.75mn
Ecology and Environment	▪ Fowlmead Country Park	▪ SEEDA	£18 million
Sports and Leisure	▪ Fowlmead Country Park Play Area ▪ Markewood Play Area ▪ Victoria Park play facilities ▪ North Deal Playing Fields ▪ Victoria Park Skate Park ▪ Tides Leisure Tennis Centre ▪ Castle Community College Artificial Pitch	▪ Fowlmead Country Park ▪ DDC ▪ Castle Community School ▪ North Deal Community Partnership	£2.8mn
Estimated total Investment			**£25mn**

2.12 Based on information provided by Dover District Council and Kent Highway Services in the region of £25mn has been spent within Deal since 2006. This is likely to be an underestimate of the total spend as it focuses on capital investments and improvements. We are aware that it excludes investments made by the Quality Bus Partnership in other bus service upgrades, where investment benefits but cannot be solely attributed to Deal. It also excludes the investment in a new nursery school in North Deal, where figures are not currently available.

2.13 We have also excluded from the analysis a number of ongoing 'revenue' investments being made by Deal Town Council, including:

- Running of local markets;

- Management and maintenance of allotments;
- Small grants made to local community groups;
- Christmas and Heritage Festival events; and
- Management of the Tourist Information Centre.

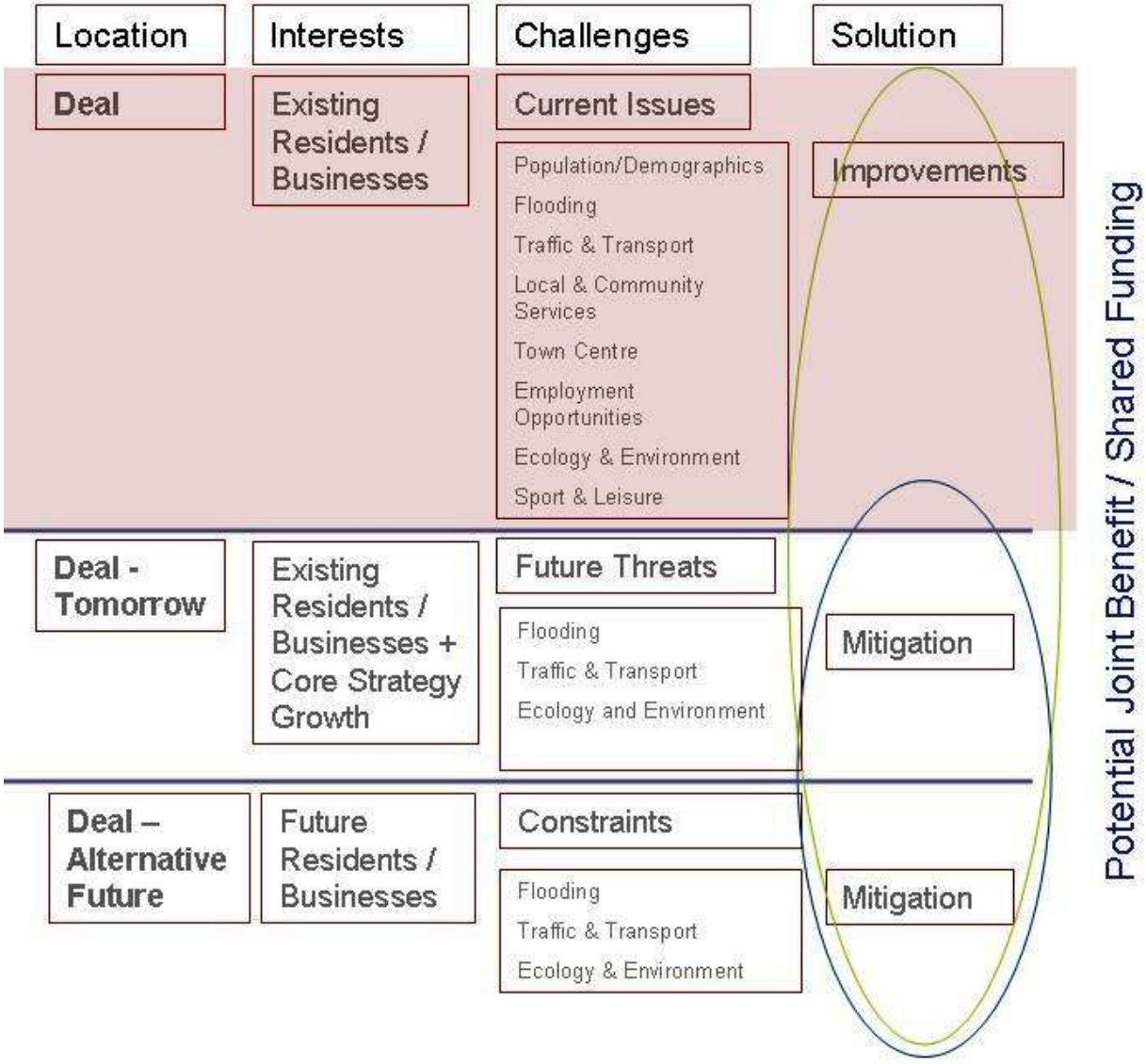
2.14 It is clear that the most significant investments have closely allied to the development of the Cannon Street site by Mild Valley, and the construction of the Fowlmead Country Park as part of SEEDA's wider development of the former Betteshanger Colliery site. These have provided significant benefits to the residents of North and Middle Deal.

Ongoing Considerations and Issues

2.15 Previous and ongoing investment within Deal has made a positive contribution to existing residents and communities however it has not addressed all issues which impact on the quality of life within the town. Therefore further intervention is likely to be required to continue to provide improvements for residents.

2.16 With reference to the study approach, this section considers current position and conditions of Deal, as highlighted in the figure below.

Figure 3 – Deal Today



Population and Demographics

2.17 The characteristics and profile of the Deal population is changing, both in terms of its overall size and also the demographic make up. KCC, on behalf of DDC, have completed a series of population and demographic forecasts to model the likely nature of these changes. More detail of the modelling process and its outputs can be found within the LDF Core Strategy evidence base document "Demographic Forecasts Dover District Council" KCC, April 2010).

2.18 Deal is the second largest urban area within Dover District to Dover town itself. In 2006 the town accommodated 30,080 residents within 13,770 dwellings. This equates to 28% of the total District population and 29% of the District's housing stock.

2.19 In 2006 the population of Deal was reasonably well balanced, with approximately 56% of residents over the age of 40. Half of these residents (28%) were over 60 years of age. 22% of residents were under the age of 20.

Flooding

2.20 The Strategic Flood Risk Assessment (SFRA) for the Deal area identifies that the town is predominantly affected by tidal and fluvial flood risk with the majority of the north of the town and the town centre lying within Flood Zone 3.

2.21 The town is protected by coastal defences, which include a shale embankment to the north of Sandwich Castle, a concrete sea wall between Sandown Castle and Deal Pier, and a natural shingle ridge to the south of the pier.

2.22 The north of the town is most acutely affected by flood risk but the defences in this area do reduce the extent of the flood risk area considerably; however the SFRA does recognise that this area is also most susceptible to breach given the nature of the defence structure. Both the shale embankment and shingle ridge require frequent maintenance to retain the level of defence.

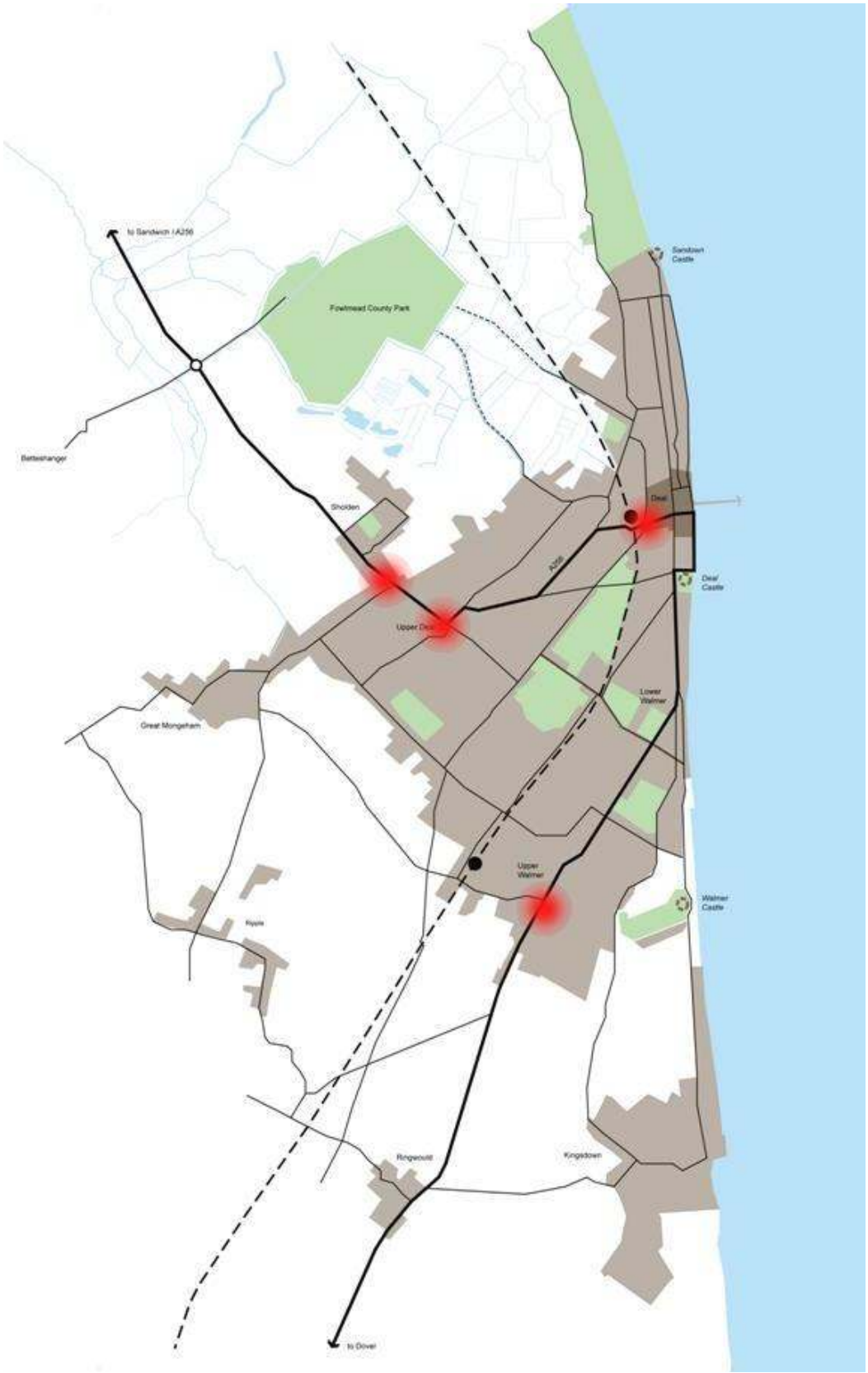
2.23 Ground and surface water flood risks are deemed to be low for the whole of Deal; albeit particular issues have been reported within the town centre when there have been particular instances of heavy or prolonged rainfall.

2.24 The level of flood risk within North Deal in particular has historically restricted the opportunities for development within the existing urban area and adjacent countryside for more vulnerable uses (such as care homes, leisure and health services, and housing). This has been the case for both new build and small scale householder applications, restricting the ability of Deal to adapt to meet resident's needs. Anecdotally the level of flood risk and protection has also affected both the cost and coverage of insurance for homes and businesses within North Deal.

Traffic and Transport

2.25 The capacity and performance of the highway network within Deal is a key concern for residents. The linear nature of the road network within the town, especially to the north of the town centre, creates challenges for vehicular movement creating localised congestion 'hotspots' at peak times.

Figure 4 - Traffic 'hotspots'



2.26 It should be recognised that traffic counts and surveys undertaken to inform this Baseline Report (as discussed in Chapter 6) highlight that generally the road network within the town functions well, with limited congestion only at peak times in certain locations. Principally, as shown in Figure 4, these locations tend to be where key local roads join the A258.

2.27 Detailed survey work also highlighted the primary contributor to congestion experience within Deal was local traffic movements, either via vehicles moving within the town or residents seeking to access other locations to the north and south (via the A258). Very little traffic was identified as 'through traffic'.

2.28 Public transport services within the town are limited to hourly on the majority of routes and services. Bus routes link Deal to Dover, Sandwich and Canterbury whilst rail services (half hourly during peak hours) link to London, Ashford, Dover and Ramsgate. Southeastern have recently announced the introduction of a peak time High Speed service from Deal to London in the peak periods, starting in September 2011.

Local and Community Services

2.29 The Core Strategy recognises that Deal currently experiences limitations in access to youth, health and community facilities. These limitations are felt more acutely in North/Middle Deal given the relative levels of social disadvantage experienced within some communities and therefore a higher reliance on such support services.

2.30 North Deal in particular has historically suffered from a lack of health and social care provision as well as community meeting space and nursery facilities. These deficiencies are largely being addressed by the development of a community hub at Cannon Street which will provide a community hall and meeting space, community café and GP surgery/pharmacy. A new nursery has also opened in North Deal.

2.31 Within Middle Deal there is an identified lack of leisure and social facilities for residents, with a particular focus on community hall/meeting space and outdoor play facilities. Further community needs have been identified for local adult education services and further nursery provision alongside new sports and accessible green space.

2.32 Changing demographics have also affected the provision of primary education within Deal. In 2007 Mongeham Primary and South Deal Primary were merged to form Hornbeam Primary School as a result of falling pupil numbers.

Town Centre

2.33 Deal town centre is the focus for local retail and service provision. In the main it has retained its historic character and street pattern, limiting the size of retail units and opportunities for expansion and new floorspace to be delivered.

2.34 Despite being regarded as a 'secondary' retail location behind Dover Deal's offer is well regarded and valued locally, offering a number of comparison 'high street' stores alongside independent retailers. Convenience retail is provided for on the edge of the town centre by Sainsbury's (on West Street) and Somerfield (on Park Street).

2.35 Deal town centre is somewhat constrained in its ability to accommodate large modern retailers and, as such, there are issues of trade diversion to other locations for comparison and specialist goods, most notably to Canterbury and Westwood Cross.

Employment Opportunities

2.36 Employment provision and commercial activity within Deal tends to be small scale and focussed on serving local markets and short stay visitor trips. Physical provision is focussed within the town centre and a series of small industrial and business locations across the town.

2.37 The range and scale of employment opportunities within Deal is therefore limited. B class employment is focussed on modest light industrial activity and smaller scale office floorspace, which is principally occupied by professional service companies. Future employment land has been identified within the town, although these tend to continue the scale and nature of space already provided. Development has commenced at North Barracks whilst an extension to Minter's Yard is subject to an extant planning application.

2.38 The limited employment offer within the town has driven a high level of out-commuting by residents for work. Principle destinations have traditionally been Dover, with a large proportion accessing the Port, and Sandwich, to access opportunities at Pfizer. The

closure of the majority of Pfizer's activity at its Sandwich plant is likely to further limit the employment opportunities locally in the short to medium term.

2.39 A strategic employment allocation has been identified at the former Betteshanger Colliery where SEEDA have put in place the enabling infrastructure for a 23,000sqm Betteshanger Business Park. Whilst the site has been marketed for a number of years there has been no take up of space.

Ecology and Environment

2.40 The area around Deal is one of high ecological and environmental value, providing large areas of protected habitat, important wildlife sites, and a range of informal open space and leisure opportunities.

2.41 The areas designated as SSSI (Sandwich Bay to Hacklinge Marshes and Dover to Kingsdown Cliffs) are of mixed quality, with particular areas suffering from issues related to over-grazing, choking of waterways and eutrophication.

2.42 Some of the NATURA 2000 sites are also considered to be at risk from 'over use' from visitors, particularly those to the north of Deal where the marshes are a particularly well used amenity space, especially for dog-walkers.

Sport and Leisure

2.43 As highlighted above the Core Strategy has identified certain deficiencies in the provision of sport and leisure facilities within the town. Currently the principle formal sport offer is made by the Tides Leisure Centre (which has just invested in a new tennis facility) and the Royal Cinque Ports golf club.

2.44 The golf course is located immediately north of Deal creating issues in terms of access and flood risk, which limit the potential to expand the course's offer and therefore its ability to host major tournaments.

2.45 Further informal leisure provision is made within the town's parks, including Victoria Park which has seen recent improvements, and the North Deal playing fields where the North Deal Community Partnership (NDCP) have invested in improved play equipment and landscaping.

Report Structure

2.46 Following this introductory section, the Report is divided into two inter-related parts.

2.47 **Part One** sets out the baseline understanding of Deal and therefore sets the context for the delivery of future growth within North and Middle Deal particularly. Within Part One specific chapters consider:

- Urban form and development – including the historic pattern of growth within the town, the current neighbourhood structure,
- Flooding and drainage – covering the existing geographic extent, severity and contributing factors to the level of flood risk (coastal and ground water) within Deal and an interpretation of the implications of existing future flood risk modelling data.
- Ecology – in particular the location of European designated sites and other sensitive or important areas, the presence of protected species and other locally relevant designations.
- Other environmental issues – including the extent of contaminated land, air quality, archaeology, ground stability and heritage assets.
- Transport – in terms of the existing conditions on the highway network (including updated transport survey information) including congestion, traffic speeds, journey times, origin-destination analysis, public transport service coverage and walking/cycling provision.
- Future opportunities - identifies how Deal is likely to change in the future and the impact these changes will have on conditions within the town.

2.48 **Part Two** builds upon the established constraints and opportunities baseline to identify a series of potential development scenarios against which identified constraints and opportunities can be evaluated in North and Middle Deal. Based on direction from Dover District Council Part Two of the study focuses exclusively on the mitigations required to deliver growth in North and Middle Deal with the wider urban area being considered through the adopted Core Strategy and within the emerging Site Specific Allocations DPD.

PART ONE – BASELINE UNDERSTANDING OF DEAL

3. Urban form & development

3.1 Deal has a distinct urban form with a number of unusual features. We have undertaken an analysis of the town's landscape, topography and historic development to:

- Understand how the town has developed over time to its current urban form;
- Identify key features that gives Deal its sense of place;
- Understand issues that originate from the way the town has developed over time;
- Provide directions for growth that would strengthen the town's urban form and benefit existing communities.

Figure 5 – Deal Key Features

The plan of Deal highlights some unusual features, such as the "dog-leg" in the route of the main road through the town (A258), the position of the town centre a considerable distance from the geographical centre of the town and the angle of the main streets in relation to the seafront.

Historic Development - Up To 1871/1890

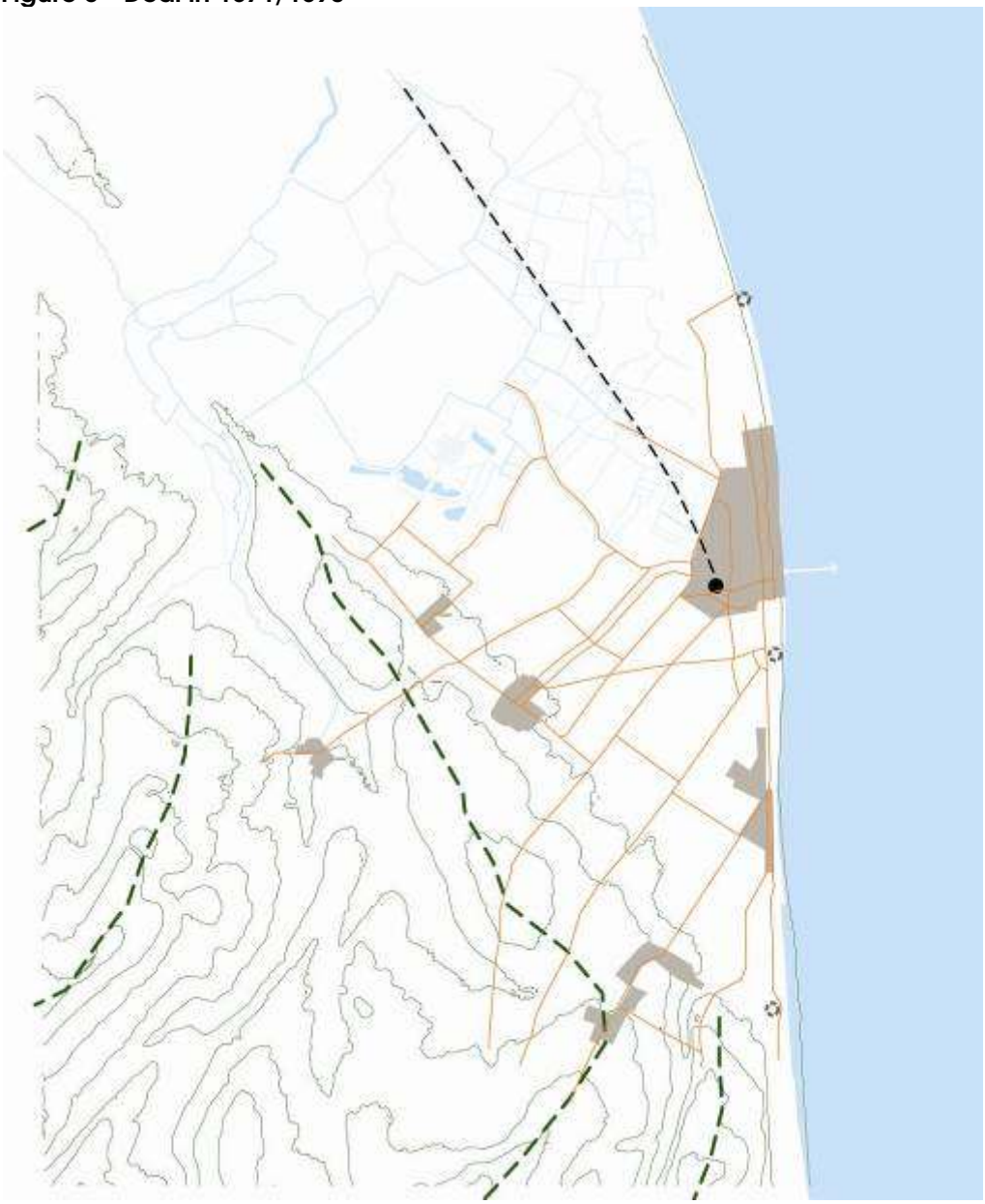
3.2 Deal originates as a series of villages. The agricultural settlements of Walmer, Upper Deal, Sholden and Great Mongeham are positioned on the higher grounds on the edge of the Downs. The coastal area used to be largely marsh-land washed by the sea at high tide and was not colonised until the 16th Century when a shingle bank formed and the land dried up.

3.3 King Henry VIII built three castles at Walmer, Deal and Sandown as part of a defence line along coast. The town of Deal developed to service the ships lying at anchor or to salvage the shipwrecks from the notorious Goodwin Sands. Lower Walmer was established as a base for the Royal Marines.

3.4 The pattern of roads and tracks linking the settlements on the Downs with the coastal settlements of Deal and Lower Walmer is determined by topography. They run parallel or at right angles to the slopes and ridges at about 40 degree angle to the coast. Within the old town of Deal, the streets follow the direction of the coastline and are aligned in parallel or right angles to the sea. The railway line was constructed in the area where the two urban grids intersect. Connections between the grids across the tracks are limited. As a consequence development in North Deal today feels isolated from the wider town.

3.5 Figure 6 is based on a series of maps prepared between 1871 and 1890. The pattern of villages connected by a series of track and lanes described above can be clearly identified. However, by the late 19th Century the town had lost its position as a port of strategic significance and developed as a genteel Victorian seaside resort.

Figure 6 - Deal in 1871/1890

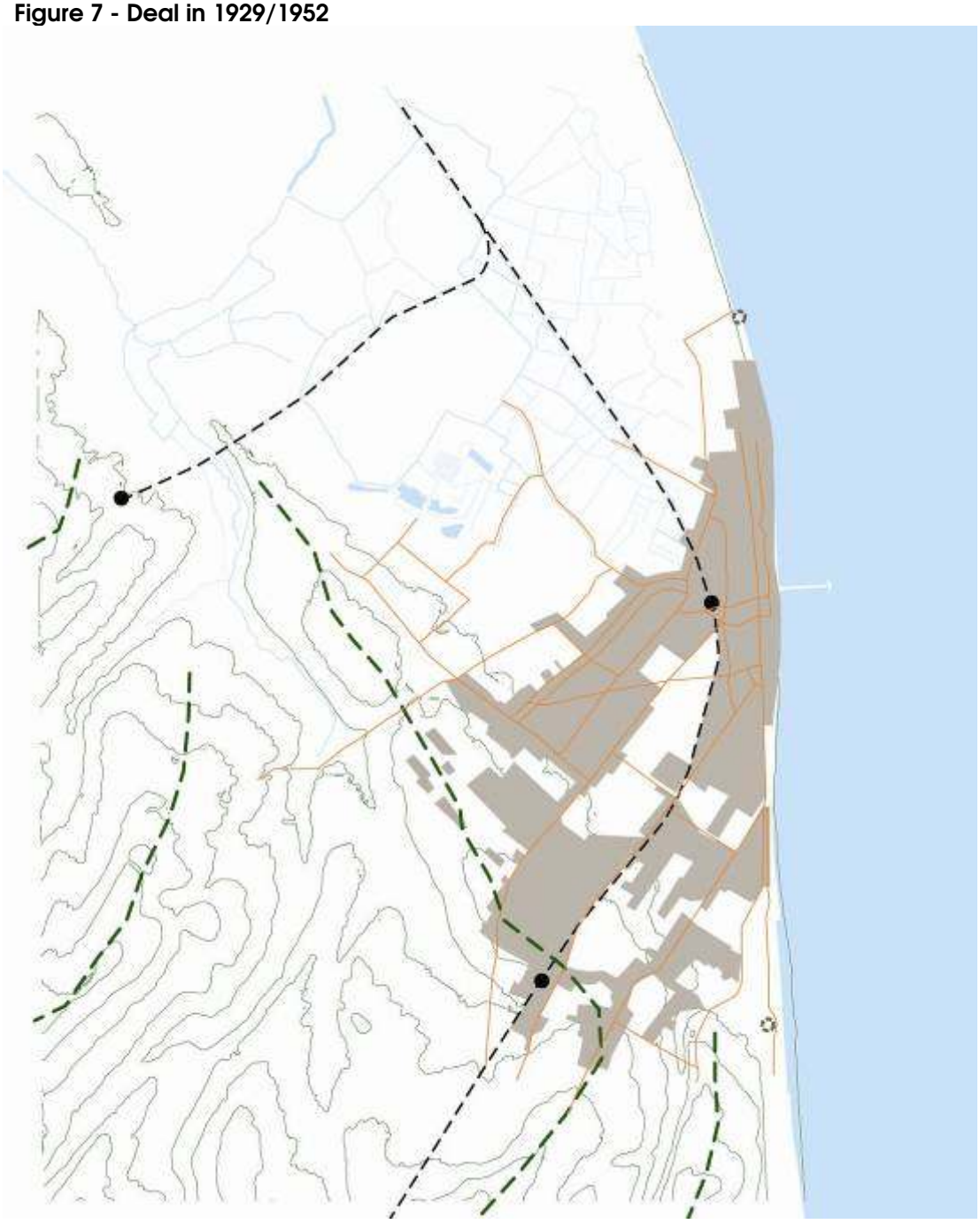


Historic Development – Up To 1929/1952

3.6 The most significant event to impact on the development of Deal in the 20th Century was the discovery of coal to the northwest of the town. The Betteshanger Colliery was established in the 1920's and drew coal until its closure in 1989. In a very short space of time, some 1,500 miners and their families migrated to Deal from across the UK and in 1929 a colliery estate was developed on the farmland around Mill Hill.

3.7 Further development took place on the fields that had previously separated the villages around Deal as illustrated in Figure 7. The development followed the street and field pattern that had been established in the previous centuries, ensuring well-connected places.

Figure 7 - Deal in 1929/1952

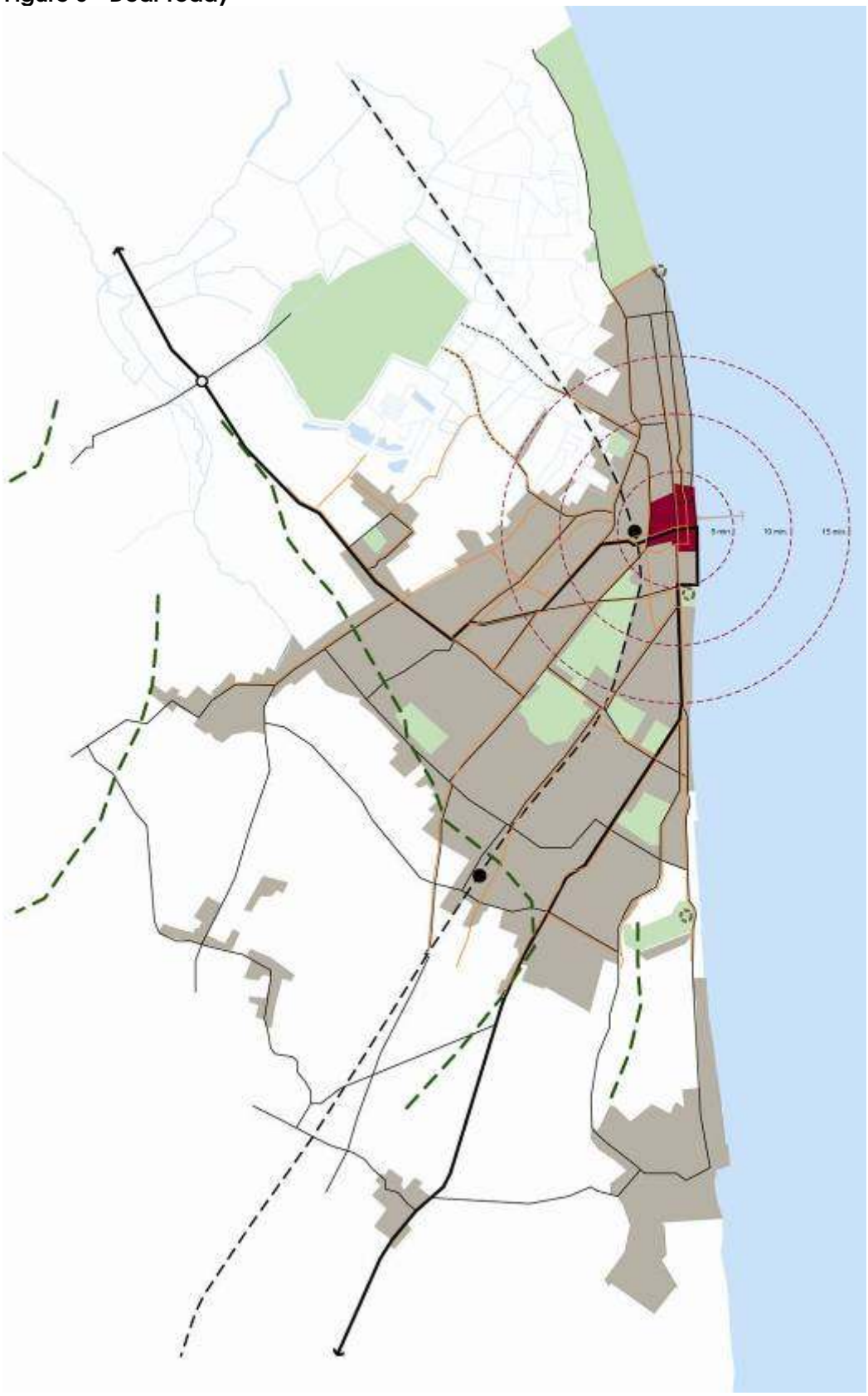


Deal Today

3.8 As illustrated in Figure 8 development between the villages in Deal today is nearly continuous, although Sholden and in particular Great Mongeham still experience a degree of separation and retain their "village feel". The expansion of the town has predominantly taken place on the higher grounds to the south of the old town of Deal. Development extends to the top, and in some locations over the ridgeline but the visual impact on the open fields in the valley to the south is still relatively modest. To the north of the town, development has been limited due to flood and access constraints. As a result, Deal town centre is located at some distance from the geographic centre of the town.

3.9 Deal's main road network aligns perfectly with the historic pattern of lanes and tracks. Development in more recent years has failed to respect the old field and movement patterns resulting in poorly connected estates that do not feel like a part of the town.

Figure 8 - Deal Today



Neighbourhood Structure

3.10 The villages of old give an identity to the neighbourhoods which may be experienced in Deal today as is illustrated in Figure 9. It will be crucial that any new development in Deal will form part of an existing neighbourhood, share its facilities and provide new facilities where needed.

3.11 Figure 9 also includes an inventory of existing schools, post offices, sport centres, open spaces, libraries and churches / church halls. North and Middle Deal have limited facilities (although a doctor's surgery and community hall are currently under development in North Deal).

Figure 9 - Neighbourhood Structure and community facilities

Lessons

3.12 The analysis of the historic growth of Deal provides some important lessons and a broad direction for the location and character of future growth to enable it to make a valuable contribution to the town:

- Development to the north of Deal may impact on the open character of the landscape of the Lydden Valley. Site analysis will be required to review to which extent new development could take place without compromising landscape character and the setting of the golf course.
- Extensive development to the south of Deal will push the town over the ridge into the valley beyond. The visual impact of this development will be significant at the ridge top level.
- Development to the west of Deal, and in particular in the area around the railway line, would result in a more compact urban form, providing homes and businesses within walking distance from the town centre and railway station.
- New development should respond to the established field and movement patterns to created well-connected places which will form an integrated part of the town.
- Any new small to medium scale development in Deal should be located and designed so it will form part of an established neighbourhood.

Landscape and Topography

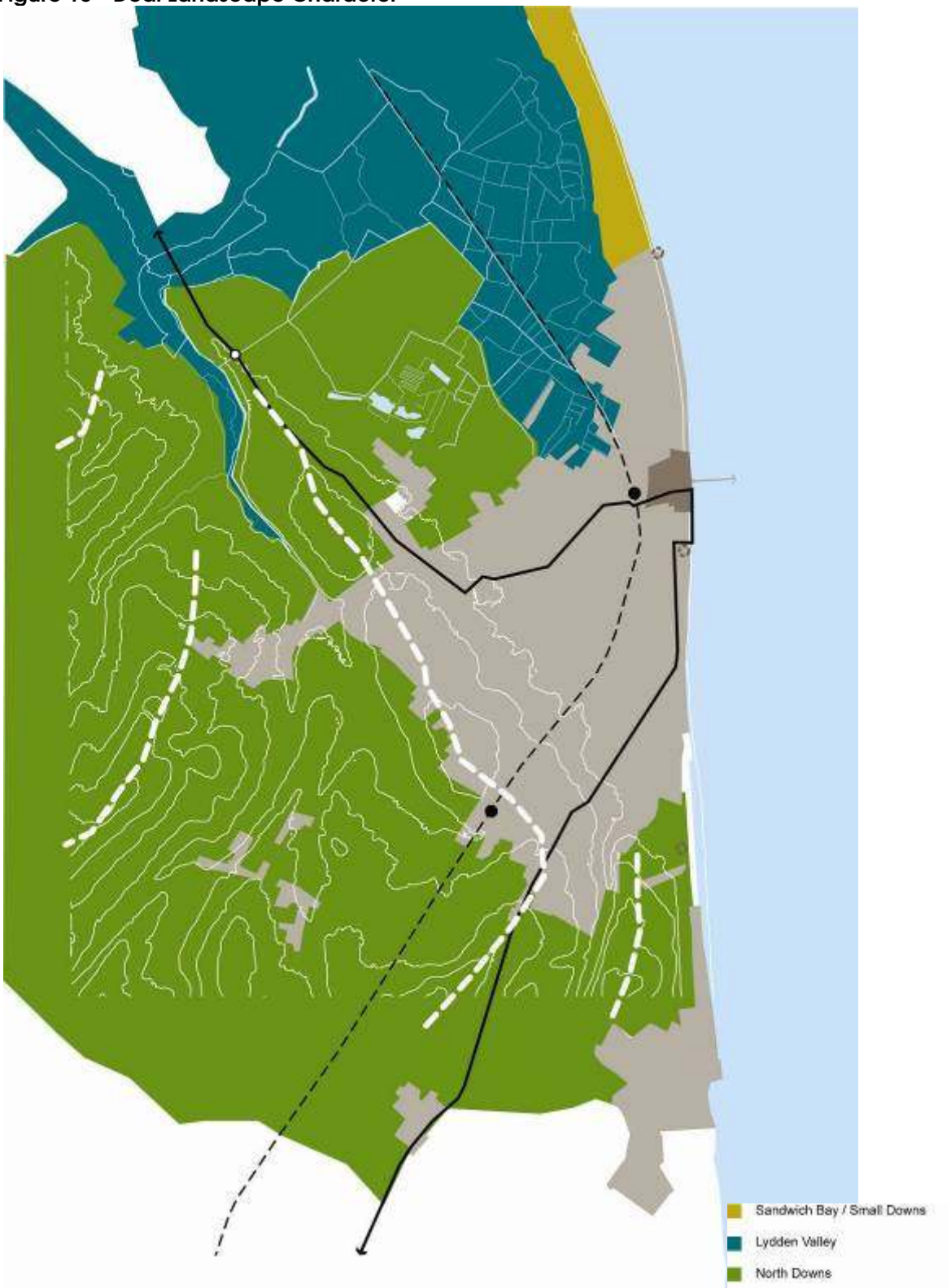
3.13 Deal is located on the boundary of three distinct landscape character areas as illustrated in Figure 10 and Figure 11:

a) Sandwich Bay and the Small Downs – The coastline to the north of Deal is characterised by low-lying and relatively flat sand dunes. The topography of the sea floor (Small Downs) is significant as it led to Deal's establishment as a port town.

b) Lydden Valley - An open area of land to the north of Deal with an extremely flat topography. A distinctive feature of the landscape is the fine-grained pattern of ditches and streams.

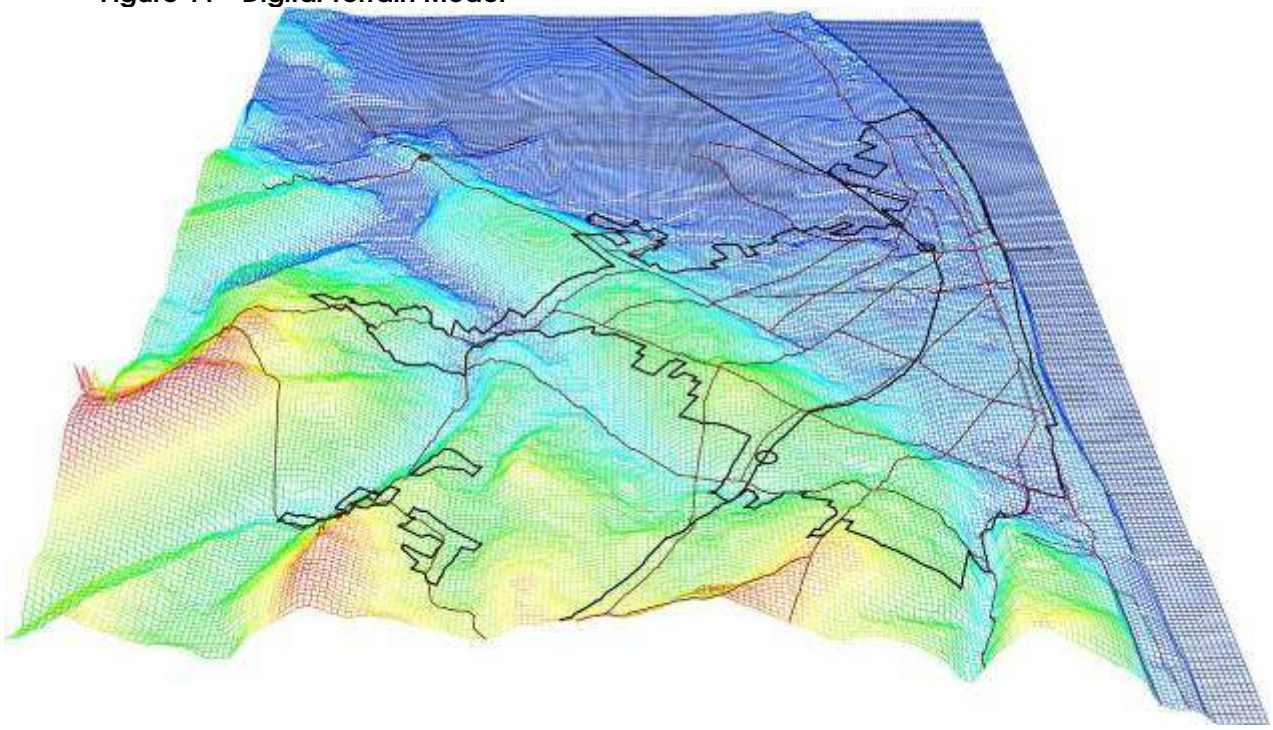
c) North Downs - To the south of the town the land rises and develops the distinct pattern of gentle ridges and valleys that characterise the Downs.

Figure 10 - Deal Landscape Character



Deal straddles three distinct landscape character areas which has had a strong impact on the town's development pattern.

Figure 11 - Digital Terrain Model



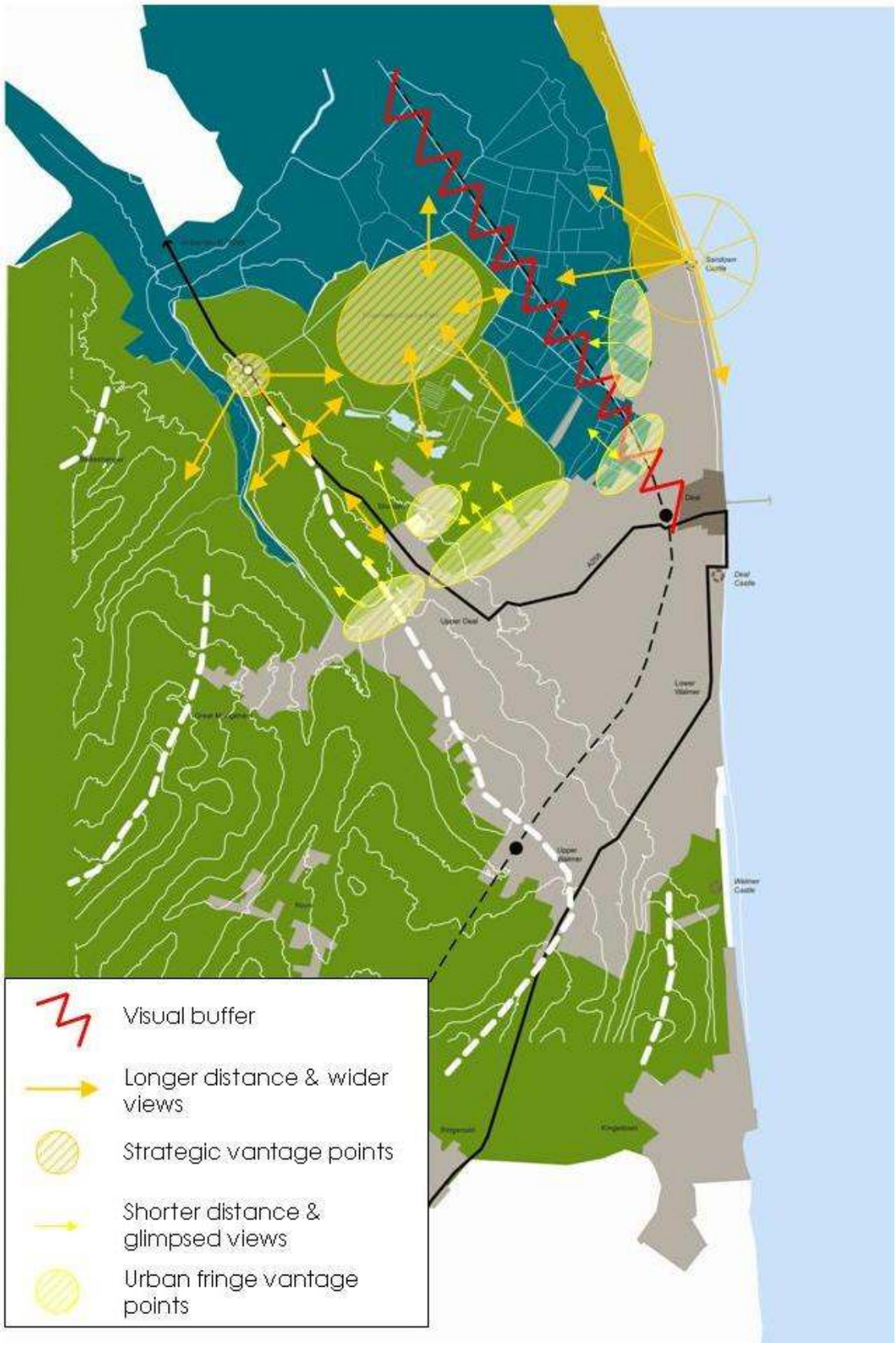
A digital terrain model of Deal, illustrating the town's position on the edge of the North Downs.

Views & vistas

3.14 Views and vistas form a key component of the overall landscape character for Deal. Analysis of existing views and vistas both to and from the edge of North and Middle Deal has been undertaken. With the relatively flat topography of much of North and Middle Deal and the presence of the railway line as a visual buffer on a slightly raised and vegetated embankment, the existing views and vistas do not represent an absolute constraint to future development; rather they form an opportunity to use place-shaping to enhance views and the permeability of the landscape in North and Middle Deal.

3.15 This analysis can be divided between longer distance and wider views and more intimate, shorter distance and glimpsed views.

Figure 12 - Views & vistas



Longer Distance and Wider Views

3.16 There are a number of longer and wider angle views and vistas in the North and Middle Deal area that are important insofar as they help place and connect Deal to its wider surrounding landscape context. There is a lack of longer distance landmark structures or landscape reference points in North and Middle Deal, even from the higher vantage points afforded from Fowlmead Country Park.

3.17 The following are identified as the longer distance and wider views and vistas:

- Sandown Castle – the view north along the coastline and sweeping to the west across the Royal Cinque Ports Golf Course to the existing built edge of North Deal. There are also views to the south along the coastline towards the centre of Deal.
- Northwall Road at and beyond its junction with the Railway line level crossing – this provides views to the west towards Fowlmead Country Park in the distance.
- Southwall – views to the west and to the north across existing farm land from the road and footpath. Views of western and northern built edge of Deal from Southwall looking east and south.
- Sholden New Road and the junction of the A258 (London Road) – views to the north of Sholden New Road and to the east of the A258. Further views from Marsh Lane to the south-east, east and north east towards the existing urban edge of Middle Deal.
- A258 – views south towards the built urban edge of Sholden and gateway/arrival in Deal
- A258 – views from the roundabout junction with Fowlmead Country Park towards the south and south west over the countryside west of Deal.
- Fowlmead Country Park – longer distance and wide views to north, east and south from the eastern and south-eastern boundaries of Fowlmead Country Park which is raised in height above the surrounding landscape.

Built-Edge and Glimpse Views

3.18 In addition to the longer distance and wider views and vistas there are also a number of specific edge and glimpse views of the surrounding countryside from the existing built-edge of Deal. Many of these views afford a short-distance or glimpse out into the surrounding landscape. They provide a sense of context, place and permeability to the

developed urban grain of North and Middle Deal which in other ways turns 'its back' on the surrounding landscape.

3.19 The following edge and glimpse views are identified in particular:

- Westerhout Close – views to the south and west along the existing urban development edge.
- Golf Road – views towards the north western edge of Deal and to the west towards the railway line
- The rear of existing residential areas situated on Courtenay Road, Pavilion Close and Miller Close.
- The rear of existing residential areas situated on Homefield Avenue, Fenton Close and Church Meadows.
- The end of Roman Close off Homefield Avenue.
- The rear of existing residential areas situated on Diana Gardens, Travers Road and Church Lane.
- The rear of existing residential areas situated on Vicarage Lane, Hall Crescent and the Street.

4. Flooding and drainage

Planning Context

Applicable Planning Policy

4.1 Planning Policy Statement 25 (PPS25): Development and Flood Risk was issued by the Department for Communities and Local Government in December 2006 and updated in March 2010. PPS25 deals specifically with development planning and flood risk using a sequential characterisation of risk based on planning zones and the Environment Agency Flood Map.

4.2 PPS25 sets out what needs to be taken into account to assess whether a proposed development is likely to be at risk of flooding or increase flood risk elsewhere.

4.3 The overall objective of the policy is to reduce flood risk through development opportunities. The policy aims to ensure flood risks have been taken into account and appropriate measures put in place to ensure that:

- The development is safe;
- Where possible, the flood risk overall is reduced;
- Increased flood risk does not occur elsewhere; and
- Appropriate mitigation measures are employed to deal with residual flood risks.

4.4 Sequential Test: PPS25 incorporates a risk based approach in the form of the Sequential Test. The Sequential Test is a tool used to determine whether the nature of the development in terms of its vulnerability to flooding can justify the site's location within a flood risk area, provided that there is no alternative flood risk free location and all possible mitigation measures are applied. PPS25 has introduced flexibility in the decision making process with regards to development in flood risk areas through the use of an Exception Test.

4.5 Exception Test: Some development types require the Exception Test to be passed to allow development to proceed in moderate to high-risk areas. The Exception Test considers the wider sustainability benefits of the development and ensures that the development will be

safe in the event of flooding. Details on the Sequential Test and Exception Test are provided in Annex D of PPS25.

Flood Zones

4.6 The Environment Agency has developed a Flood Map that shows the risk of flooding in England and Wales for different return period events. The Environment Agency's Flood Map is an indication of the potential flood risk to a site and the actual risk may differ as the Flood Zones do not take into consideration any flood defences. The Environment Agency flood zones are explained below:

4.7 **Flood Zone 1 Low probability**: This zone comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year (<0.1%).

- Appropriate uses: All uses of land are appropriate in this zone.

4.8 **Flood Zone 2 Medium Probability**: This zone comprises land assessed as having between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% – 0.1%) or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5% – 0.1%) in any year.

- Appropriate uses: The water-compatible, less vulnerable and more vulnerable uses of land and essential infrastructure in Table 2are appropriate in this zone.
- Subject to the Sequential Test being applied, the highly vulnerable uses in Table 2are only appropriate in this zone if the Exception Test is passed.

4.9 **Flood Zone 3 High Probability**: This zone comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.

- Appropriate uses: The water-compatible and less vulnerable uses of land in Table 2are appropriate in this zone.
- The highly vulnerable uses in Table 2 should not be permitted in this zone.

4.10 The more vulnerable and essential infrastructure uses in Table 2 should only be permitted in this zone if the Exception Test is passed. Essential infrastructure permitted in this zone should be designed and constructed to remain operational and safe for users in times of flood.

Table 2 – Extract of Table D.2 of PPS25: Flood Risk Vulnerability Classification

Essential Infrastructure	• Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk. • Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations; and water treatment works that need to remain operational in times of flood. • Wind turbines.
Highly Vulnerable	• Police stations, Ambulance stations and Fire stations and Command Centres and telecommunications installations required to be operational during flooding. • Emergency dispersal points. • Basement dwellings. • Caravans, mobile homes and park homes intended for permanent residential use. • Installations requiring hazardous substances consent. (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as 'Essential Infrastructure').
More Vulnerable	• Hospitals. • Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels. • Buildings used for: dwelling houses; student halls of residence; drinking establishments; nightclubs; and hotels. • Non–residential uses for health services, nurseries and educational establishments. • Landfill and sites used for waste management facilities for hazardous waste. • Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.
Less Vulnerable	• Police, ambulance and fire stations which are not

	required to be operational during flooding. • Buildings used for: shops; financial, professional and other services; restaurants and cafes; hot food takeaways; offices; general industry; storage and distribution; non–residential institutions not included in 'more vulnerable'; and assembly and leisure. • Land and buildings used for agriculture and forestry. • Waste treatment (except landfill and hazardous waste facilities). • Minerals working and processing (except for sand and gravel working). • Water treatment works which do not need to remain operational during times of flood. • Sewage treatment works (if adequate measures to control pollution and manage sewage during flooding events are in place).
Water-compatible Development	• Flood control infrastructure. • Water transmission infrastructure and pumping stations. • Sewage transmission infrastructure and pumping stations. • Sand and gravel workings. • Docks, marinas and wharves. • Navigation facilities. • MOD defence installations. • Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location. • Water-based recreation (excluding sleeping accommodation). • Lifeguard and coastguard stations. • Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms. • Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.

Constraints and opportunities

Fluvial and Tidal Flooding

4.11 The main source of flooding in the Deal area is the sea and to a lesser extent fluvial sources.

4.12 A Strategic Flood Risk Assessment (SFRA) was completed by JBA Consulting in 2007. As stated in the SFRA, sea defences in the Deal area currently consist of the following:

- Embankment along Royal Cinque Ports Golf Links constructed of earth/colliery shale which is re-profiled annually to offer protection up to the 1 in 200 year event. The section of the embankment near Sandown Castle (end of Sandown Road) however only offers protection to the 1 in 1 year tidal event.
- Sea wall south of Deal pier comprising a recurved concrete wall founded on steel sheet piles. Protection along this section is offered up to the 1 in 1 year tidal event.
- Natural shingle ridge and embankment 200m south of Deal pier and extending to Kingsdown. This section requires continual maintenance. The level of protection offered by this length of defence is unconfirmed.

4.13 According to the SFRA the area at greatest existing risk of flooding is North Deal, where the coastal defence structure is at greatest risk of breaching. From the Flood Map (Figure 13) produced in the SFRA, it can be seen that north and north west of Deal lies mostly within Flood Zone 2 and 3, without considering the existing defence. According to the PPS25, wherever possible development should be avoided within these flood zones. PPS25 also states that 'more vulnerable' development is allowed in Flood Zone 2 followed by Sequential Test, whereas 'less vulnerable' and essential infrastructure is allowed in Flood Zone 3.

4.14 To the south and south west, Deal is within Flood Zone 1 where all types of development are suitable.

Figure 13: Flood zone map without considering the existing flood defences (Source: SFRA 2007)

4.15 If, considering all other aspects of planning and following application of the Sequential Test, it is not possible for development to be located in zones of lower probability of flooding then the 'Exception Test' will be applied, consistent with wider sustainability objectives. The Test provides a method of managing flood risk while still allowing necessary development to occur.

4.16 The Exception Test is only appropriate for use when there are large areas in Flood Zones 2 and 3, where the Sequential Test alone cannot deliver acceptable sites, but where some continuing development is necessary for wider sustainable development reasons, taking into account the need to avoid social or economic blight and the need for essential civil infrastructure to remain operational during floods. It may also be appropriate to use it where restrictive national designations such as landscape, heritage and nature conservation designations, e.g. Areas of Outstanding Natural Beauty (AONBs), Sites of Special Scientific Interest (SSSIs) and World Heritage Sites (WHS), prevent the availability of unconstrained sites in lower risk areas.

Flood Risk Based on Numerical Model

Background

4.17 In July 2004 Kirk McClure Morton (KMM) prepared the 'Sandwich Bay Coastal & Tidal Defence Strategy Plan' for the Environment Agency. As part of this study, one dimensional (1D) hydrodynamic modelling was undertaken to estimate water levels in the tidal River Stour for a range of different of fluvial and tidal events.

4.18 The KMM Strategy Plan did not include any form of flood modelling for the coastal frontage.

4.19 Further 1D hydraulic modelling has also been undertaken as part of the development of the Stour Catchment Flood Management Plan in order to assist in identifying a preferred policy for this frontage.

4.20 However, 1D modelling is confined only for use on river systems and immediately adjacent to flood plains. Therefore, to identify actual flood water levels for property for both the tidal river and coastal flooding from the Pegwell Bay to Deal frontage it was considered necessary to use 2-dimensional (2D) hydraulic modelling.

4.21 Therefore, the EA and DDC commissioned Halcrow Group Ltd in 2007/08 to assess the impact for different options by developing a hydrodynamic model to estimate water levels within the Pegwell Bay to Deal Strategy area and at different times within the 100 year strategy period.

4.22 There are several software packages available to calculate free surface water level. Due to the complexity of this study and interactive hydraulic mechanisms, Tuflow was considered to be suitable software to simulate floodplain flooding, linked to a 1D model through ISIS-Tuflow link. Tuflow is a 2-dimensional hydrodynamic model using a shallow water depth equation to calculate water level.

4.23 As part of this Deal Constraints and Opportunities study, the 2D ISIS-Tuflow model was obtained from the EA to assess the level of protection from the existing flood defences. Further assessment was also carried out for the proposed coastal defence management strategies proposed by the EA within the Pegwell Bay to Kingsdown Coastal Strategy (EA, 2008).

Tuflow Description

4.24 TUFLOW is a computational engine that provides two-dimensional (2D) and one-dimensional (1D) solutions of the free-surface flow equations to simulate flood and tidal wave propagation. It is specifically beneficial where the hydrodynamic behaviour in coastal waters, estuaries, rivers, floodplains and urban drainage environments have complex 2D flow patterns that would be awkward to represent using traditional 1D network models.

4.25 A powerful feature of TUFLOW is its 2D/1D dynamic linking, first pioneered in 1990, and subsequently enhanced to the point where it offers unparalleled flexibility and robustness.

Calibration

4.26 The ISIS 1D river model was previously calibrated against gauged data in the preceding Strategy study. Further calibration review for the 2D model was not considered necessary by Halcrow.

4.27 Actual model verification for the Tuflow model could not be carried out due to the lack of any recorded flood propagation data. However, to provide a reasoned verification, a sensitivity analysis of the key parameters in the model was carried out by Halcrow. This was undertaken by adjusting the global assumption of Manning's n (coefficient of roughness). The coefficient of roughness used within the base model was 0.04. This was varied to 0.03 to simulate a smoother surface.

Model Results

4.28 To manage coastal and tidal flood and erosion risk for the next 100 years the Pegwell Bay to Kingsdown Coastal Defence Strategy has considered a number of strategies which have been modelled by Halcrow.

4.29 The 2D ISIS-Tuflow model developed shows that under the Present-Day scenario, with the existing present flood defences, most parts of the town centre, and north and north west of Deal are at risk of tidal flooding from a 1 in 200 year flood event with a breach and overtopping scenario taken into consideration (see Figure 14).

4.30 Due to the climate change factors the risk of flooding will increase significantly in the future unless the standard of flood defences is raised. Figure 15 shows the extent of a 1 in 200 year tidal flooding in the year 2107 if the existing flood defence is maintained in their current form (the Maintain scenario). It can be seen that the extent and magnitude of flooding would increase significantly.

4.31 However, these impacts can be wholly mitigated by increasing the level of protection against tidal flooding, if the defences are raised and strengthened above the current standards of protection (the Sustain scenario) Figure 16 shows the effect of increasing the standard of flood defence for the future year of 2107.

Figure 14: Present Day Scenario - 1 in 200 year flood extent with existing flood defence and overtopping & breach scenario for the year 2007 (Source: Pegwell Bay to Kingsdown Coastal Strategy Model)

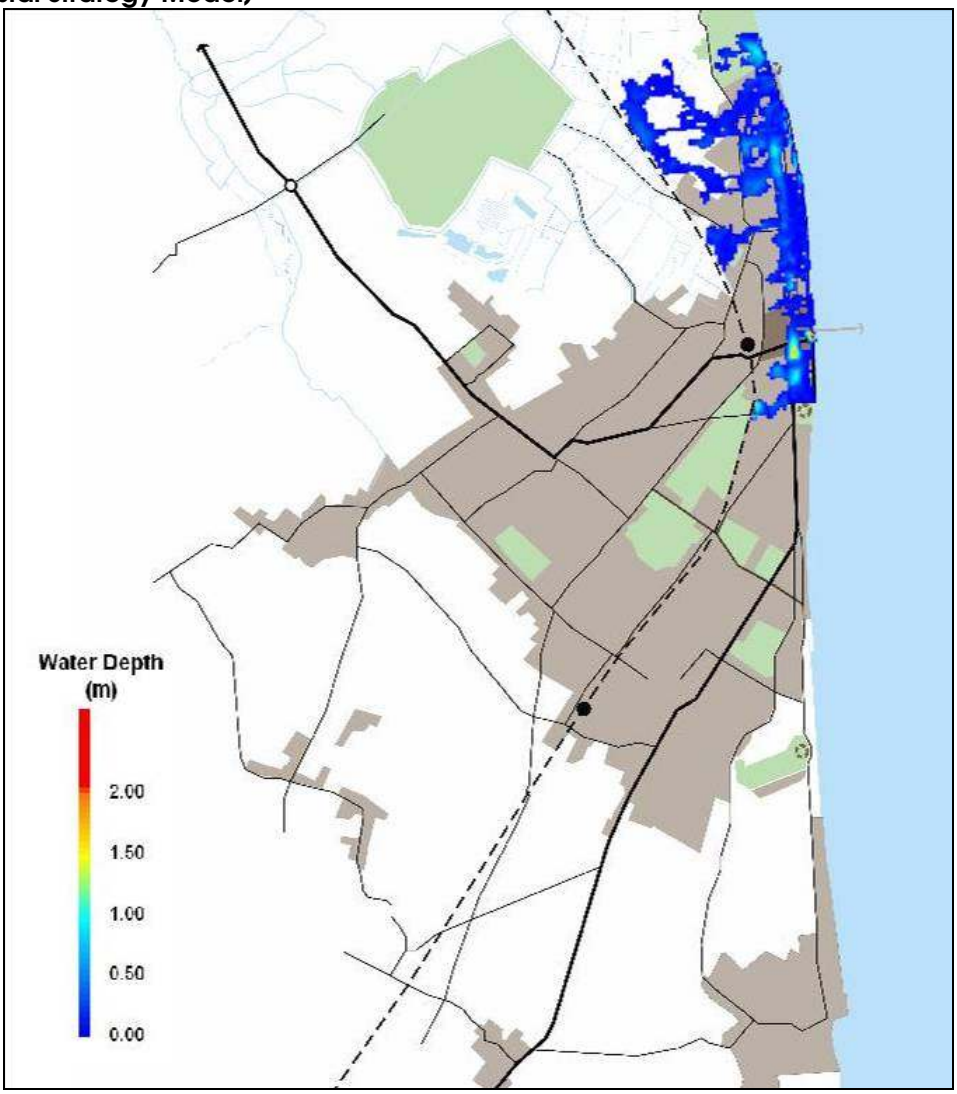


Figure 15: Maintain Scenario - 1 in 200 year flood extent with existing flood defence for the year 2107 (Source: Pegwell Bay to Kingsdown Coastal Strategy Model)

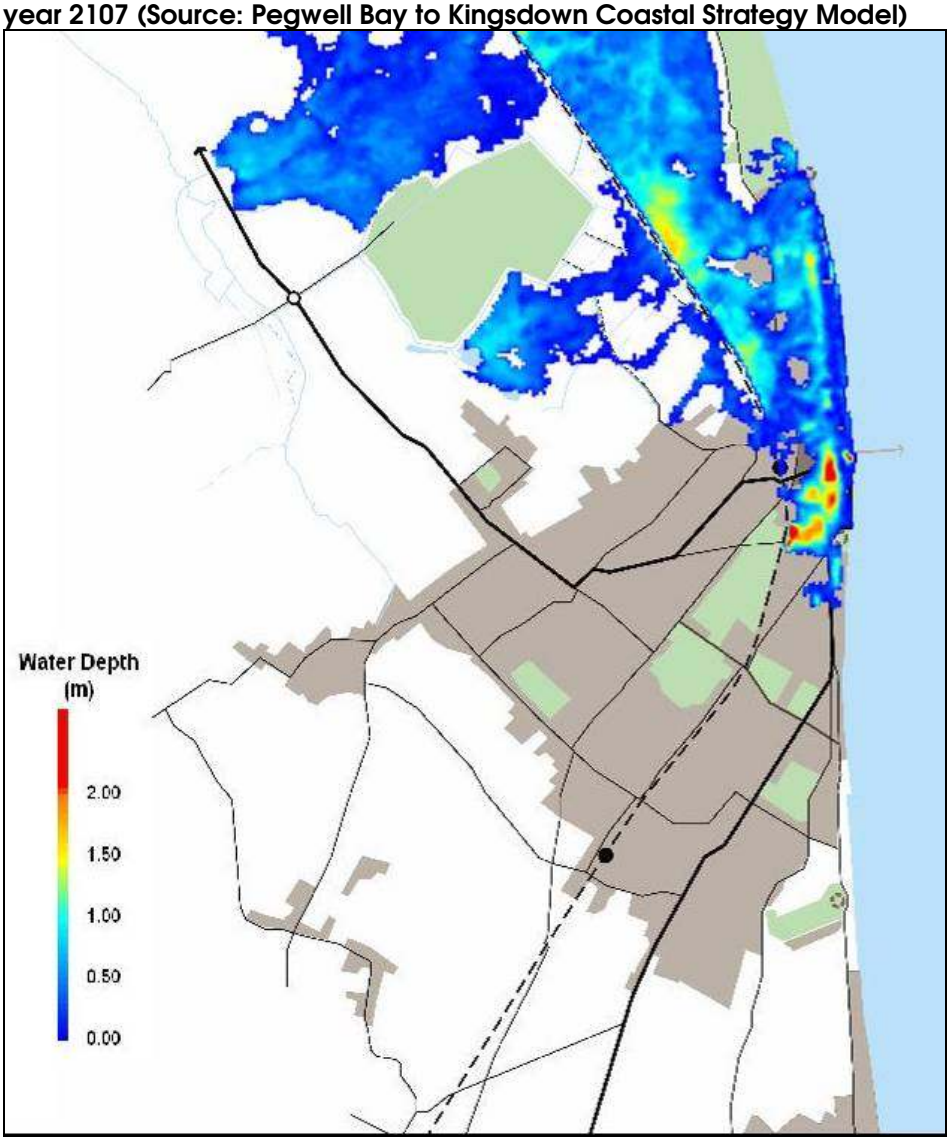
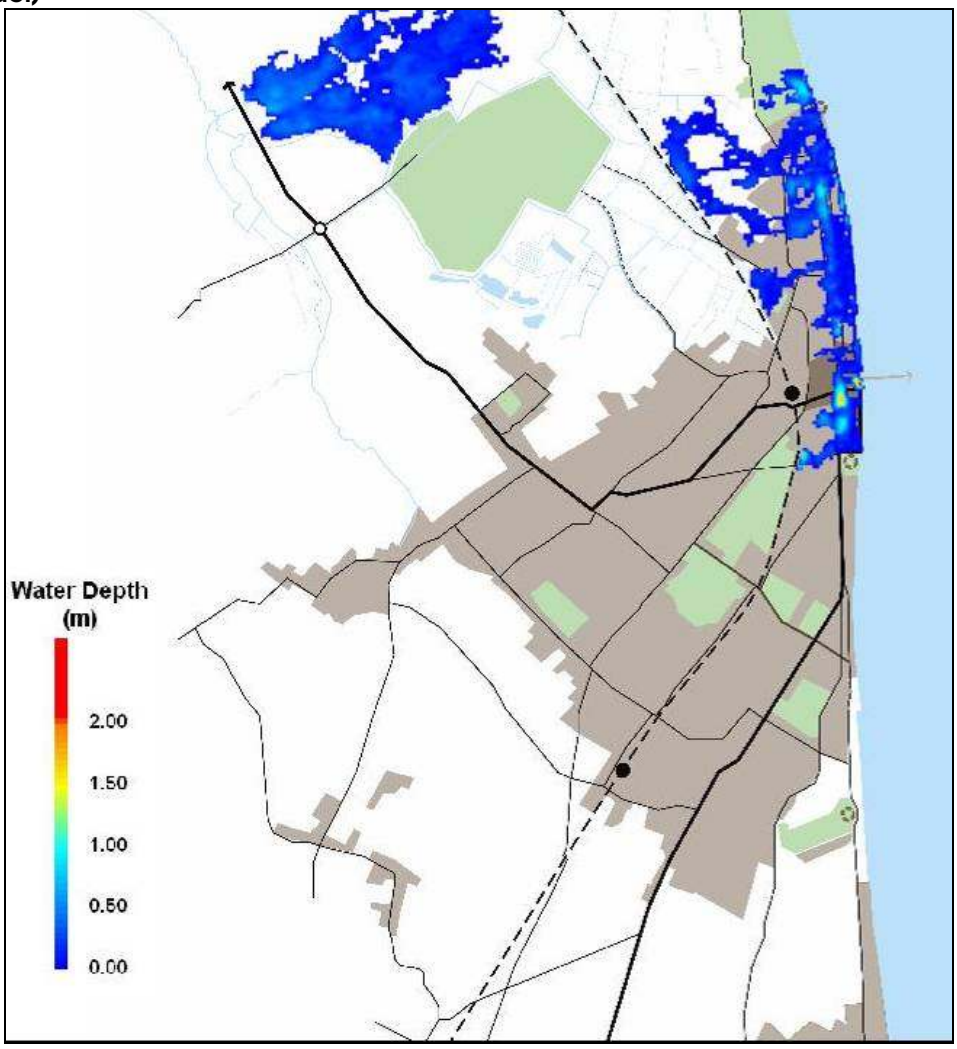


Figure 16: Sustain Scenario - 1 in 200 year flood extent with increased flood defence at current standard for the year 2107 (Source: Pegwell Bay to Kingsdown Coastal Strategy Model)



4.32 As can be seen in Figure 16 even under the "sustain" scenario a new flood risk area is identified to the north of Fowlmead Country Park. This is not linked to works to the flood defences to raise flood protection in line with sea level rises 'diverting' flood waters into other locations. The area is most likely to be created by increased surface and ground water based risk and increased incursion beyond the improved defences (which only stretch 250m north from Sandown Castle).

4.33 Following on from Pegwell Bay to Kingsdown Coastal Defence Strategy, the Environment Agency has continued to develop a flood defence scheme for the town of Deal (the Improved scenario). In line with the Coastal Defence Strategy, the Isle of Grain to South Foreland Shoreline Management Plan Review (EA, 2010) also recommended to maintain

and upgrade defence structures and to implement beach management practices under a scenario of rising sea levels. The proposed coastal defence scheme, if implemented, will reduce the risk of flooding to people, properties, infrastructure and the environment in Deal beyond that identified in Figure 16.

4.34 The Environment Agency flood defence proposals includes:

- Construction of a low wave wall between the Royal Hotel and Deal Castle;
- Increasing the shingle volume on the beach and maintain by annual redistribution; and
- Additional rock to strengthen the beach just north of Sandown Castle.

4.35 The Improved scenario scheme is currently in design development stage and will require additional financial approval to progress to construction. It is expected that the Environment Agency tidal flood defence proposals, if implemented, will further mitigate the impacts of flooding in Deal beyond the level of reduction identified in the Sustain scenario (Figure 16) and removing the tidal flood risk constraint to development.

4.36 The extent of tidal flooding for the Improved scenario will be modelled in the second phase of the Study and its mitigation of potential flood risk impacts will be compared to the Maintain (do nothing) and Sustain (maintain current standard of defence) scenarios.

Table 3 - Summary of Coastal Flood Defence Scenarios and Intervention

Flood Defence Scenario	Level of intervention required	Model Output Figure
Present day (2007)	n/a	Figure 14: 1 in 200 year flood extent with existing flood defence and overtopping & breach scenario for the year 2007 (Source: Pegwell Bay to Kingsdown Coastal Strategy Model).
Maintain (in Pegwell Bay to Kingsdown Coastal Strategy)	No pro-active maintenance, but breaches or failures in the existing defences will be repaired if they occur.	Figure 15: 1 in 200 year flood extent with existing flood defence for the year 2107. Tidal flooding increases.
Sustain (in Pegwell Bay to Kingsdown Coastal Strategy)	The existing defences are raised and strengthened to sustain the current standard of protection.	Figure 16: 1 in 200 year flood extent with increased flood defence at current standards for the year 2107. Significantly reduces area of flood risk in North and Middle Deal below present day and maintain scenarios.
Improve (or 'improve 1' in Pegwell Bay to Kingsdown Coastal Strategy	Beach management to increase the shingle volume of the beach throughout the reach. The existing timber groynes will remain in place until the end of their remaining life. A rock revetment will be provided just north of Sandown Castle to protect the shale embankment. A low wave wall will be constructed in Deal to reduce the risk of waves overtopping onto the road.	Modelling of this scenario will be undertaken by URS/Scott Wilson in Phase 2 of the project.

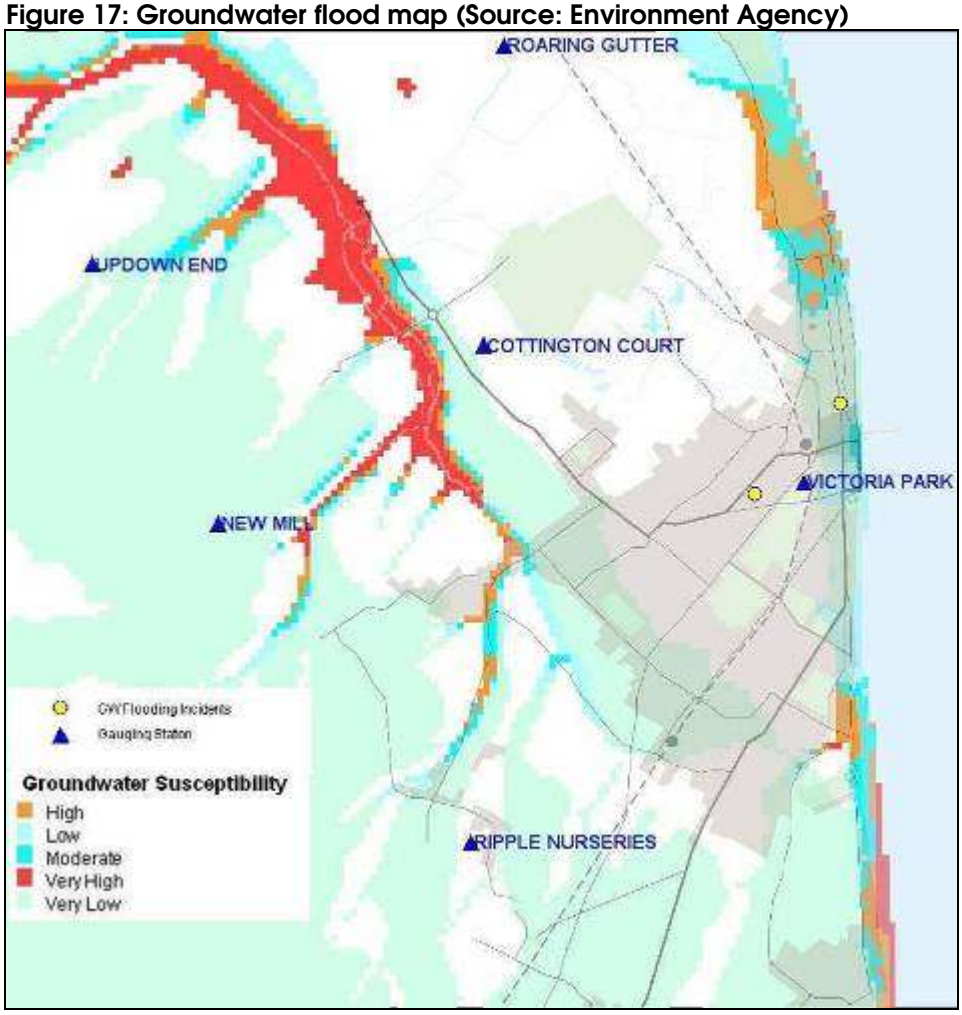
Groundwater flooding & Source Protection Zones

4.37 PPS25 requires an assessment of all sources of flooding, including groundwater, however it does not address the issue of groundwater within its delineation of flood zones and does not advise on what kind of development is acceptable in areas of localised flooding.

4.38 Groundwater flooding was assessed qualitatively by considering the flood history, local geology and topography. The groundwater flood susceptibility map (Figure 17) obtained from the EA shows that the general area has a low to very low risk of groundwater flooding. However, according to the EA record, there are only two incidents of flooding within the town centre (dates unrecorded) but there is no flooding record outside the

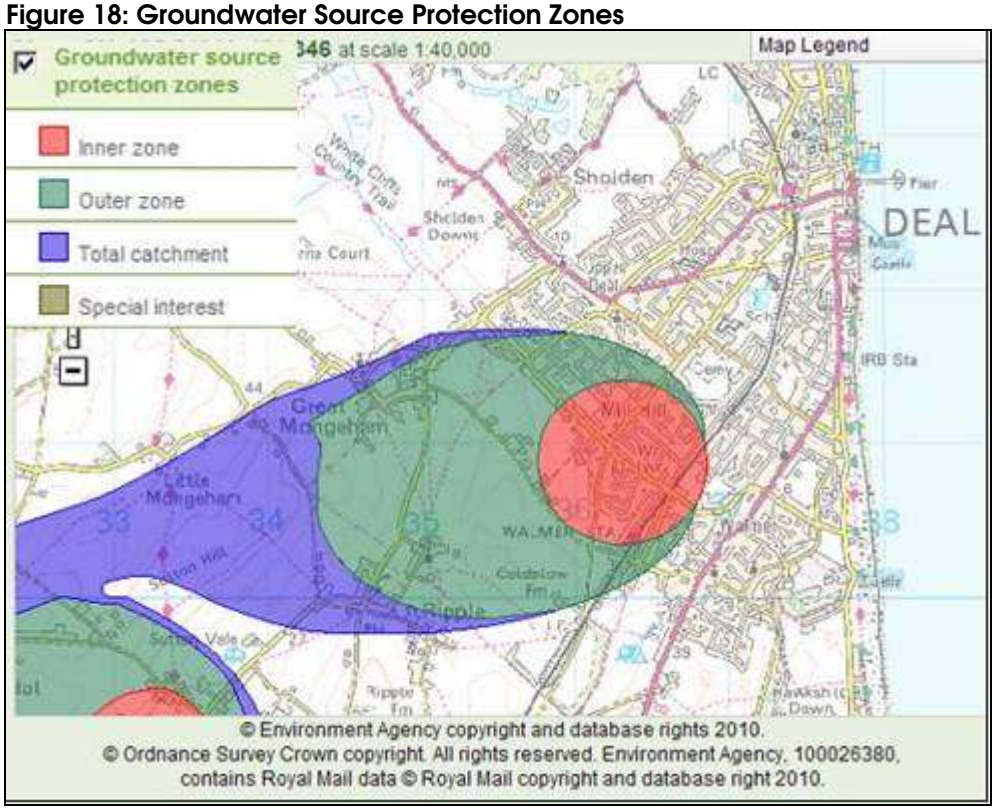
town centre area. The maximum recorded groundwater level at the Cottington Court, north west of Deal, is 2.7m above ordnance datum (AOD) with ground level at 9.3m AOD and the level at Ripple is 12.3m AOD with ground level at 42.3m AOD.

Figure 17: Groundwater flood map (Source: Environment Agency)



4.39 The area was also assessed against the EA's groundwater maps (Figure 18). The map shows that north of Deal is not located near any Groundwater Source Protection Zones (SPZs) but is located within a principal aquifer bedrock designation (the underlying chalk has a high permeability that may provide a water source or river base flow). The EA document 'Groundwater Protection: Policy and Practice (GP3)', states what types of development will be acceptable in different locations from the point of view of protection of groundwater quality. Any site proposed for development should be screened using this document for acceptability.

Figure 18: Groundwater Source Protection Zones



Source: Environment Agency website

Surface Water Flooding & Drainage

4.40 Intense rainfall, often of short duration, that is unable to soak into the ground or enter drainage systems can run quickly off land and result in local flooding. Most of Deal is served by separate surface water and foul water sewers, with some combined sewers to the north of the town maintained by Southern Water.

4.41 The surface water drainage regime of north Deal is complex, incorporates a number of ditches and drainage channels, and relies on pumping stations to lift water to enable it to subsequently gravitate to the sea. The main rivers are maintained by the EA and ditches by the River Stour Internal Drainage Board (IDB).

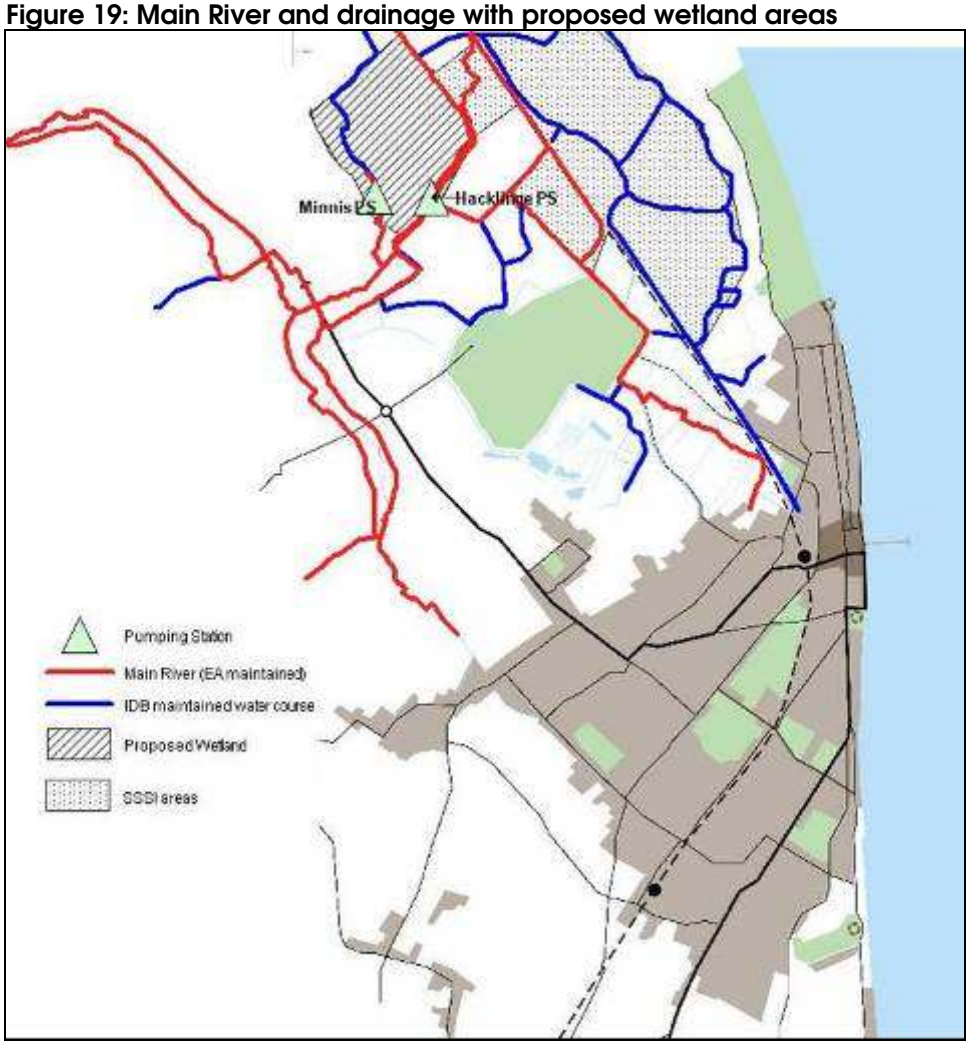
4.42 The main carriers are the North Stream and South Stream, which deliver water to the Hacklinge Pumping Station. According to the Sandwich Bay and Hacklinge Marshes Water Level Management Plan (WLMP) 2006, flow is divided into two initially parallel watercourses, with approximately two thirds currently diverted into the North Stream which

outfalls into the River Stour at Black Sluice, while one third flows into the Delf which outfalls into the River Stour in Sandwich town.

4.43 The Worth Minnis Pumping Station lifts water from the IDB watercourses back into the North Stream. A map of the existing surface drainage network is presented in Figure 19.

4.44 Given the location of the pumping stations in relation to the urban area of Deal the predominant flow of water is north to north-west to the pumping stations and then on towards the sea. One exception is the ditch to the south of Cottington Lakes, which runs east to join the Penfield sewer.

Figure 19: Main River and drainage with proposed wetland areas



4.45 At the Stakeholder Workshop on 10th March 2011, several stakeholders reported surface flooding issues in Deal, especially in the north and north west of Deal. These are supported by incident records held by Kent County Council. It is considered these are caused by

lack of maintenance work or inadequate capacity of the existing Southern Water surface water sewer.

4.46 The Environment Agency's Surface Water Flood Map indicates that some areas north of Deal are at risk of surface water flooding. This creates a significant issue for existing residents and businesses.

4.47 Any future growth within North and Middle Deal will ultimately not be constrained by surface water issues providing consideration is given to new drainage infrastructure during the planning and design stage. Developed areas can increase peak runoff rates and volumes compared with undeveloped (Greenfield) sites and this will require careful management.

4.48 PPS25 requires that developers should be responsible for ensuring that new developments do not increase the flood risk elsewhere. It must be ensured that the new development does not increase flood risk to other sites, either by directing surface water flows towards other developments, or increasing runoff rates into local watercourses, which could increase fluvial flood risk elsewhere.

4.49 This will be especially critical in Deal where there is strong evidence of existing flooding incidents caused by surface water not dispersing through the drainage network. Alternative means of surface water disposal must be explored, using sustainable drainage systems (SuDS) or a dedicated new surface water sewer network to an approved discharge point.

4.50 If discharge is proposed to a surface water sewer owned by Southern Water, a capacity check would be required. It is important that surface water from new development is not discharged to existing foul or combined sewers, as this would increase the risk of the system becoming overloaded during periods of rainfall.

4.51 Where possible long term solutions for North and Middle Deal should seek to go beyond the base conditions identified in PPS25 and contribute to the alleviation of existing issues alongside mitigating new run off. Whilst it is unlikely to be possible to require this through planning conditions the Masterplan should seek to identify where public intervention can work alongside new capacity delivered through development.

4.52 The two current proposed developments at London Road and the Land between Sholden and Deal propose SuDS for the whole development area by means of soakaways, infiltration swales, attenuation ponds, etc. to maintain the existing greenfield runoff rate from the development area. Any proposed development with SuDS will not only lower the risk of surface water flooding but also will provide an overall betterment to the environment than would be the case without them, with enhanced aesthetic value and biodiversity.

4.53 The Sandwich Bay and Hacklinge Marshes WLMP has recommended increasing the water level in the Site of Special Scientific Interest (SSSI) areas (mainly unimproved grassland, wetland and fens) to increase biodiversity and to bring all SSSI areas into a favourable condition, which has been taken forward in the Adopted Core Strategy 2010 and proposed a wetland area to the north of Deal (Figure 19). There is the opportunity to use increased runoff water from new developments in North and Middle Deal to create wetlands by providing runoff via the existing drainage network.

4.54 A number of SuDS mitigation options to manage surface runoff can be considered depending on the development type and site characteristics and these are set out in Table 4. Infiltration SuDS are not considered to be viable for North and Middle Deal given the presence of a high groundwater level and the high leaching potential of the soil, which may introduce a potential contaminant linkage.

Table 4: Potential SuDS Options

SUDS	Comments
Source Control (e.g. green roof and rainwater/greywater harvesting)	Green roofs should be used wherever suitable, water harvesting can be utilised for gardening/irrigation
Swales and Filter Strips	High groundwater table can act as constraints for infiltration. Swales can also provide attenuation and enhance biodiversity
Filter Drains and Soakaways	High groundwater level can act as constraints
Permeable and Porous Pavements	Permeable and porous pavements can reduce and delay surface runoff

Attenuation Basins	Attenuation shall be designed to attenuate surface water runoff before discharging to the public sewer. Storage of the surface water runoff for the 1 in 100 year event can be provided by means of controlled site flooding (i.e. landscaped area, car park, etc).

Opportunities to link flood defences and road infrastructure

4.55 As part of the baseline analysis we have considered the opportunity to deliver flood defence improvements as part of wider infrastructure investments in the highway network.

4.56 Legislatively there is no reason why new roads cannot be an integral part of a flood barrier (or other defence) or vice versa. However any such intervention will need to comply with PPS25 and ensure that development does not alleviate flood risk in one area at the expense of another.

4.57 Coastal flooding forms the primary source of flood risk, therefore the principle defences need to be north-south along the coastline. Whilst this works from a flood prevention perspective any new road would not provide any functional benefit to Deal, therefore co-location would be of no practical benefit.

4.58 New road infrastructure is required east-west. The nature of these links are unlikely to offer increased protection to the whole of Deal, especially as the road bed would need to be solid to provide protection from coastal flooding. With no permeability the links could prevent flood water from dissipating north (as happens currently) and may, in some cases, cause more water to flow towards the town.

4.59 Combining road and flood defences east-west are therefore more likely to increase flood risk in other parts of Deal and would potentially fail to meet the criteria of PPS25. As such, at this point we would not recommend the co-delivery of road and flood defences as a viable solution for Deal.

Conclusion

4.60 Coastal flood risk can be reduced incrementally through maintain, sustain and improve measures, the higher the level of intervention the more land will become available for a greater range of development types.

4.61 Surface and ground water are not considered absolute constraints to development in North/Middle Deal and indeed appropriate deployment of SuDS can be used to enhance wetland areas to the north of the town.

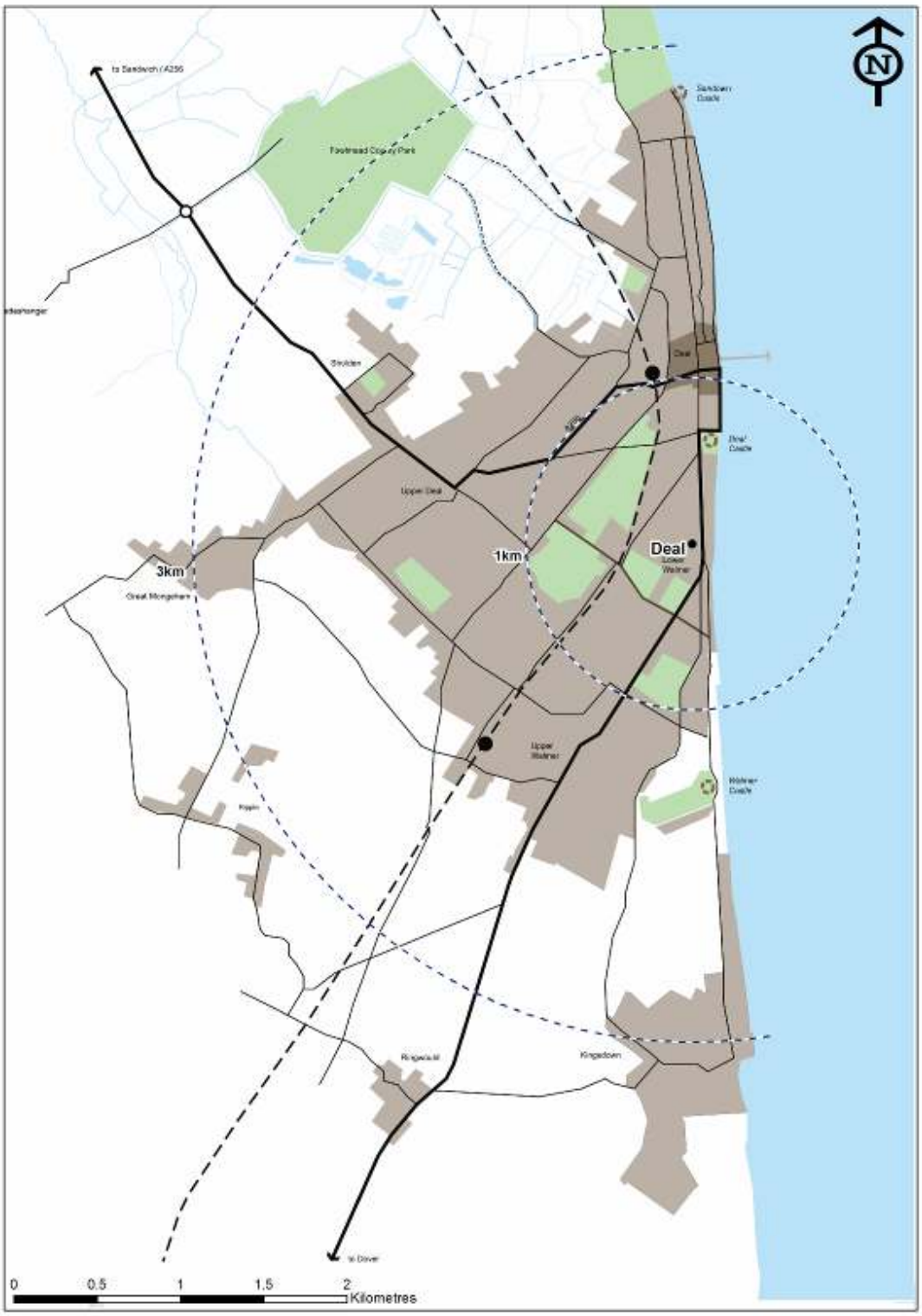
5. Ecology and environment

Introduction

5.1 In this section we assess the constraints from ecology and opportunities, principally from protected and notable nature conservation sites and species.

5.2 The study area for ecology was defined by a 3km radius around the centre of the town to capture data on protected and notable sites and species (Figure 16). This area encompasses a sufficient extent of habitat outside of Deal to enable ecological effects of development options to be assessed.

Figure 20 - Ecology study area



Assessment Methods

5.3 This ecological constraints analysis has been undertaken by describing and evaluating the existing ecological baseline conditions and then assessing the magnitude and significance of impacts resulting from each proposed development option upon these baseline conditions. The assessment discusses the relationship of the proposed development to known ecological interests and assesses the potential impacts on flora and fauna.

5.4 The assessment and evaluation identifies sites, habitats, species and other ecological features that are of national, regional or local ecological value. Key areas and/or species of ecological value are identified and the main factors contributing to their current ecological value are described. The assessment takes account of the main current relevant wildlife legislation and national guidance (e.g. PPS9) as well as non-statutory strategies such as national and local biodiversity action plans (UK BAP and Local BAP respectively), which provide both context to nature conservation aims.

5.5 The methods for evaluation of the nature conservation value of ecological features affected by development (ecological receptors) are adapted from the current Institute of Ecology & Environmental Management (IEEM) guidelines for ecological impact assessment (IEEM 2006).

Legislation and Planning Policy Review

Legislation

5.6 This section reviews the planning policy requirements and legislative context that is relevant to the protection of sites, habitats and species. The major pieces of legislation relating specifically to the protection of wildlife and nature conservation are as follows:

- The Wildlife and Countryside Act 1981 (WCA) (as amended)[1]
- The Countryside and Rights of Way (CRoW) Act 2000 (as amended)[2]

[1] Her Majesty's Stationary Office (HMSO), (1981); 'Wildlife and Countryside Act 1981.'

- Natural Environment and Rural Communities (NERC) Act 2006[3];
- The Conservation of Habitats and Species Regulations 2010[4]; and
- The Ramsar Convention[5]

The Wildlife and Countryside Act 1981 (WCA) (as amended)

5.7 The WCA (as amended) is the major legal instrument for wildlife protection in the UK. The WCA protects the most important habitats as sites of Special Scientific Interest (SSSI) and certain species with Schedules.

The Countryside and Rights of Way (CRoW) Act 2000

5.8 Part III of the CRoW Act deals specifically with wildlife protection and nature conservation. It requires that Government Departments have regard for the conservation of biodiversity, in accordance with the Convention on Biological Diversity in 1992. In addition, it demands that The Secretary of State publishes a list of living organisms and habitat types that are considered to be of principal importance in conserving biodiversity. These species and habitats are listed under Section 74 of the CRoW Act, as amended by Section 41 of the NERC, and form the Priority Species listed within the UK Biodiversity Action Plan (UK BAP)[6]

5.9 The CRoW Act amends the WCA, by strengthening the protection of designated SSSIs as well as increasing the legal protection of threatened species, by also making it an offence to "recklessly" destroy, damage or obstruct access to a sheltering place used by an animal listed in Schedule 5 of the Act or "recklessly" disturb an animal occupying such a structure or place.

Natural Environment and Rural Communities (NERC) Act 2006

5.10 The NERC Act amends the CRoW Act, by further extending the requirement to have regard for biodiversity to all 'public authorities', which includes local authorities and local

[2] HMSO, (2000); 'Countryside and Rights of Way Act 2000.'
[3] HMSO, (2006); 'Natural Environment and Rural Communities Act 2006.'
4 HMSO, (2010); 'The Conservation of Habitats and Species Regulations 2010.'
[5] The Ramsar Convention on Wetlands, (1996 – 2007). Convention on Wetlands (Ramsar, Iran, 1971). Available at: http://www.ramsar.org/
[6] UK Biodiversity Partnership, (1992) UK Biodiversity Action Plan. Available at: http://www.ukbap.org.uk.

planning authorities. It also requires that the Secretary of State consults the relevant National Government Organisation in the publication of the list of living organisms and habitat types deemed to be of principal importance in conserving biodiversity.

The Conservation of Habitats and Species Regulations 2010

5.11 These Regulations are the principal means by which the European Union Directive on the Natural Habitats and Wild Fauna and Flora (92/43/EEC) (EC Habitats Directive)[7] is transposed in England and Wales. The Regulations place a duty on The Secretary of State to compile a list of sites considered to be important for habitats or species listed in Annexes I and II of the EC Habitats Directive. Appropriate sites are identified as Sites of Community Importance (SCIs), which are then designated as Special Areas of Conservation (SAC) and Special Protection Areas (SPA). Any proposed development that may have an adverse effect on an SAC or SPA, collectively known as Natura 2000 sites, should be assessed in relation to the site's conservation objectives.

5.12 The Regulations assign a European level of protection to a variety of native species of plants and animals listed in Annex IV(a) of the EC Habitats Directive, which are known as European Protected Species (EPS). The Regulations make it an offence to deliberately pick, collect, cut, uproot or destroy a wild plant of an EPS. In addition, wild animals, which are listed in Schedule 2 of the Regulations, are subject to the provisions in Regulation 39, which make it an offence to deliberately capture, injure or kill, disturb or destroy the eggs of such an animal or destroy a breeding site or resting place of such an animal.

Ramsar Convention

5.13 The Ramsar Convention or Wetlands Convention was adopted in Ramsar, Iran in February 1971 and was ratified in the UK in 1976. The Convention has three main 'pillars' of activity: the designation of wetlands of international importance as Ramsar sites; the promotion of the wise-use of all wetlands in the territory of each country; and international co-operation with other countries to further the wise-use of wetlands and their resources. In the UK, Ramsar sites are typically designated as SSSIs at first, receiving statutory protection under

[7] Council of Europe, (1992); `Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora.'

the WCA 1981 (as amended). Sites then issued with policy statements under the Ramsar Convention are afforded the same protection at a policy level, in respect of new development, to SPAs and SACs that collectively form the EU Natura 2000 network.

National Planning Policy

Planning Policy Statement (PPS) 9: Biodiversity and Geological Conservation

5.14 Planning Policy Statement 9 (PPS9)[8] details the Government's policies for the conservation of England's natural heritage, which embodies the Government's commitment to sustainable development and the conservation of wildlife. The guidance advocates the protection of statutory designated sites and sites of particular nature conservation importance (e.g. SSSI's). The guidance also expresses the importance of compliance with the relevant nature conservation and wildlife legislation and other key international obligations (e.g. the WCA, CRoW Act and Habitats and Species Regulations).

5.15 PPS9 presents the key principles that regional and local planning bodies should follow when considering biodiversity and geodiversity. PPS9 lays down a number of provisions that Proposed Developments need to consider with regard to designated sites, non-designated sites and species protection. The document also stresses the importance of 'building in beneficial biodiversity' to new developments and protecting networks of natural habitats. PPS9 should be read in conjunction with the Government Circular: Biodiversity and Geological Conservation, ODPM Circular 06/2005[9]

Methods

5.16 Baseline ecological data for the study area was obtained via a desktop review, and gathering information from a variety of sources. These data were used to determine the potential of the study area to support protected and notable species; identify legal and

[8] ODPM, 2005 'Planning Policy Statement 9 (PPS 9) Biodiversity and Geological Conservation.
[9] Office of the Deputy Prime Minister; (2005); 'Government Circular: Biodiversity and Geological Conservation.'

planning policy constraints; identify any gaps in data, requirements for further survey work and outline mitigation options.

Statutory designated sites

5.17 Information on statutory designated sites of nature conservation value, such as Special Protection Areas (SPAs), Special Areas of Conservation (SACs), Sites of Special Scientific Interest (SSSI) and RAMSAR sites within 3km of the Site was obtained using the interactive web-based MAGIC (Multi-Agency Geographic Information for the Countryside[10]). Information on reasons for designation and boundaries of statutory sites was gathered from the Joint Nature Conservation Committee (JNCC) website[11] and Natural England, Nature on the Map website[12].

Non-statutory designated sites

5.18 Data on County Wildlife Sites were provided by Kent and Medway Biological Records Centre (KMBRC)[13]. Nature on the Map was also used to gather data on notable habitats, namely the UK BAP (Biodiversity Action Plan) Habitat Coastal Grazing Marsh.

Protected and notable species

5.19 Information relating to records of protected and notable species within 3km of the study area was obtained using the interactive web-based NBN (National Biodiversity Network) Gateway[14]. The area of search was determined by a central grid reference TR 377 516 with a 3km radius of search being undertaken in order to ensure adequate coverage of the likely zone of influence of the study area.

5.20 KMBRC provided records of protected and notable species. Protected species are those listed on Schedule 2 of the Conservation of Habitats and Species Regulations 2010; Schedule 5 of the WCA; Schedule 12 of the CRoW Act; Annexes II and IV of the EC Habitats Directive; Appendix II of the Bern Convention; and Schedule 5 of the NERC Act

[10] Magic online, (2007). Available at: www.magic.gov.uk

[11] Joint Nature Conservation Committee (JNCC). JNCC website available from http://www.jncc.gov.uk/page-4

[12] Natural England, Nature on the Map website available from http://www.natureonthemap.org.uk/

[13] Kent Medway Biological Records Centre (KMBCR), (2010). Data Search for Deal.

2006. Notable species include those listed in Annex C of Government Circular 06/05; the UK BAP Priority list; and various other Red Data Books and publications of rare, scarce and occasional species.

Phase 1 Habitats

5.21 The Kent Landscape Information System (KLIS) provided online data on Phase 1 habitats from the Kent Habitat Survey 2003[15]. This provides data on vegetation in accordance with the JNCC's Handbook for Phase 1 Habitat Survey[16].

Consultation

5.22 A range of local wildlife groups were consulted to gather information on their specific interests and knowledge. These data were combined with the data received from online sources and relevant biological records centres. All consultees and a summary of data obtained are set out in Table 5 below.

Table 5 - Consultation data for Deal study area

Consultee	Online source/ link	Response
MAGIC online database		Data on statutory designated sites (SPA, SAC, Ramsar, SSSI, National Nature Reserves, Local Nature Reserves, BAP priority habitats)
KMBRC		Data on non-statutory sites, Higher Level Stewardship and protected and notable species
Kent Wildlife Trust (KWT)		Manages Ham Fen Reserve approx 5km north of Deal. Ham Fen is part of the Thanet Coast and Sandwich Bay Ramsar Site (Hacklinge Marshes). The southern tip of Hacklinge Marshes and within 3km of Deal town is data deficient. Specialists within KWT contacted to provide any relevant information on Hacklinge Marshes. No data received to date but that is a reflection of lack of recent data.
Sandwich Bay		SBBO has collected long time series of bird, invertebrate

[14] National Biodiversity Network's Gateway 'NBN Gateway'. Available at http://www.searchnbn.net/.
[15] Kent Landscape Information System (KLIS) on line at http://www.kent.gov.uk/klis/default.asp
[16] JNCC (1993) Handbook for Phase 1 habitat survey: A technique for environmental audit. Joint Nature Conservancy Committee, Peterborough

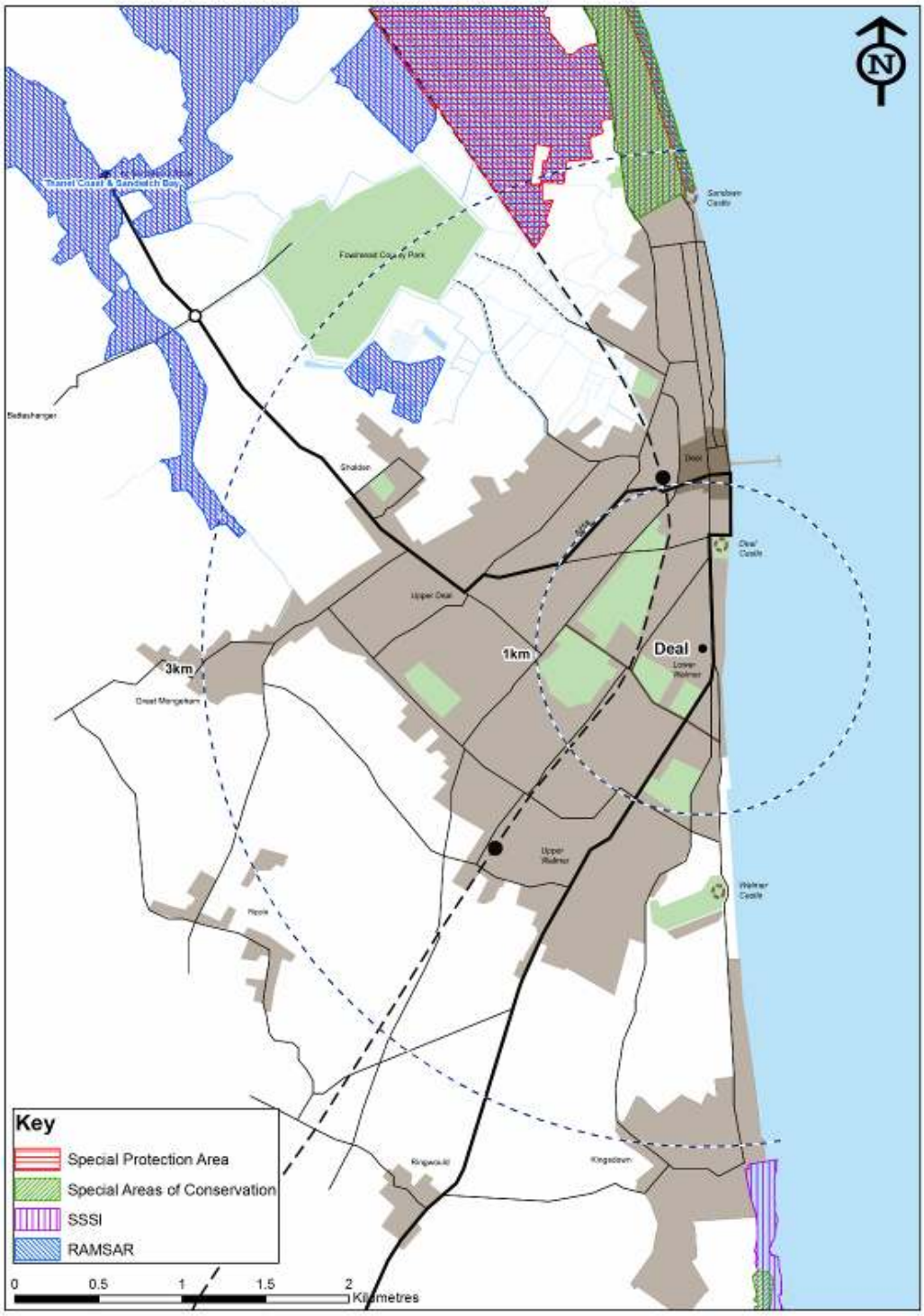
Consultee	Online source/ link	Response
Bird Observatory Trust (SBBO)	___	and some plant data for the area to the north of the study area. Some breeding bird data is on file for areas within study area of coastal grazing marsh immediately to north of Deal. These fields hold breeding lapwing, yellow wagtail and other farmland species. Hold good data for rare invertebrate species including *odonata* and l*epidoptera* for areas to the north of the study area. These species maybe present with grazing marsh habitats to the north of Deal. Considered that arable land to the west of Deal is not of high value for birds; some arable species may be present.
The Lydden Valley Research Group		Historic data on land use gathered from report compiled and available online.
Butterfly Conservation (Kent Branch)		Information sought but not currently provided to date on details on invertebrates south of Deal.
Environment Agency SE Region		Information may be available on aquatic ecology ditch surveys within and around Hacklinge Marshes. No data received to date. Catchment management plan summary for study area available online.
Kent Landscape Information System (KLIS)		Online data on Phase 1 Habitat Survey (2003) relevant to study area
RSPB		Proposals for new Lydden Valley reserve which is to the north of the study area (and associated campaign for funds).

Baseline

Statutorily Designated Sites

5.23 Each is described below and identified in relation to the study area in Figure 17 and details of citations are provided in Appendix A.

Figure 21 - Statutory Designated Sites



5.24 Sandwich Bay SAC occupies much of the Dover District coastline from the north-east tip (north of Great Stonar) to Deal but only the southern tip of site is within the study area and abuts the northern edge of Deal town.

5.25 Thanet Coast & Sandwich Bay SPA includes inter-tidal areas and inland areas of coastal grazing marsh both important for wintering waterbirds. The southern tips of both habitats are found within the northern edge of the study area.

5.26 Thanet Coast & Sandwich Bay Ramsar Site encompasses coastal grazing marsh areas to the north of Deal. In relation to the study it comprises of three sections; the small tip of grazing marsh is also designated as SPA; the discrete island of grazing marsh adjacent to Fowlmead Country Park and the southern tip of Hacklinge Marshes.

5.27 Natural England have undertaken work to enhance the setting and well being of the designated sites by creating new grazing marsh and sustaining farmland birds. All habitats which assist in supporting the designated sites should be considered as part of the options for North and Middle Deal.

Reasons for Designation

5.28 The interest features for Statutory Designated Sites are summarised in Table 5 (full details in Appendix A).

Table 6 - European designated site interest features

Site	Interest Features
Sandwich Bay SAC	• Shifting dunes - The embryonic shifting dunes at Sandwich Bay are representative of this habitat type in southeast England. The seaward edge of the north of this site displays a good sequence of embryonic shifting dune communities and there is a clear zonation within the dune habitat, with strandline species on the seaward edge and sand-binding grasses inland. • Shifting dunes along the shoreline with Marram Ammophila Arenaria - occurs along the seaward edge of the northern half of this extensive dune system. It is representative of shifting dune vegetation in southeast England, a region where the habitat type is very restricted in its distribution. Although the area of this habitat type is small by comparison with other listed sites, the shifting dune vegetation contains a good range of

Site	Interest Features
	characteristic foredune species including sea bindweed Calystegia soldanella, sea spurge Euphorbia paralias and sea-holly Eryngium maritimum. • Dune grassland – Sandwich Bay is a largely inactive dune system with a particularly extensive representation of fixed dune grassland, the only large area of this habitat in the extreme south-east of England. The vegetation is extremely species-rich and the site has been selected because it includes a number of rare and scarce species, such as fragrant evening-primrose Oenothera stricta, bedstraw broomrape Orobanche caryophyllacea and sand catchfly Silene conica, as well as the UK's largest population of lizard orchid Himantoglossum hircinum. • Dunes with creeping willow - The small area of dunes with Salix repens ssp. argentea (creeping willow) found at Sandwich Bay is of interest as it is the only example found in the dry south-east of England and is representative of this habitat type in a near-continental climate. • Humid dune slacks.

Site	Interest Features
Thanet Coast & Sandwich Bay SPA	Populations of European importance of the following migratory species: • Turnstone (wintering) - feed on sandy beaches and rocky shores particularly in areas of loose stones or seaweeds. They may continue to forage at high tide on areas of washed up weed at the tideline. Roosting within the SPA occurs from Swalecliffe to Pegwell Bay mainly on areas of sand and shingle but also on man made structures such as the sea wall. Additionally, some birds roost on fields at the top of the cliffs and other areas of open space landward of the boundary of the SPA. • Golden Plover (wintering) - winter on land around Sandwich Bay. In recent years has taken to roosting in large numbers on the intertidal mudflats of the bay. Their main foraging habitat is on arable fields and grazing marsh located inland of the dunes of Sandwich Bay. Mudflats and sandflats in Pegwell Bay and Sandwich Bay provide roosting grounds for golden plover. • Little Tern (breeding) - formerly nested at Shell Ness in Sandwich Bay in small, single-species colonies on areas of shingle and sand. Numbers of little terns decreased dramatically largely as a result of increased disturbance such that none are recorded breeding in 2010. Steps have been taken to keep recreational users away from Shell Ness in order to reduce disturbance.
Thanet Coast & Sandwich Bay Ramsar Site	Supports 15 British Red Data Book wetland invertebrates, primarily at Hacklinge Marshes. Species occurring at levels of international importance: • Turnstone (wintering)
Sandwich Bay to Hacklinge Marshes SSSI	Encompasses all SAC, SPA and Ramsar sites described above and designated for habitats and species assemblages.

SSSI Condition Assessment

5.29 During the most recent condition assessment (completed in July 2009), Natural England judged 61% of Sandwich Bay to Hacklinge Marshes SSSI to be in favourable condition. Parts of the site were unfavourable, largely through issues related to inappropriate grazing, choking of waterways and some levels of eutrophication.

Access

5.30 The SAC is semi-closed access; the majority of the site is a golf course which permits members only. The SPA and RAMSAR is semi-closed also, the site is predominantly agricultural fields and ditches. The only access is by limited Public Rights of Way.

Statutorily Protected Sites adjacent to the study area

5.31 Dover to Kingsdown Cliffs SAC/SSSI is located just outside the southern boundary of the study area and this long narrow site covers a large stretch of the south east Dover coast between the towns of Dover and Kingsdown. It is designated for its calcareous grassland - dry grasslands and scrublands on chalk or limestone including important orchid sites - and vegetated sea cliffs.

SSSI Condition Assessment

5.32 During the most recent condition assessment process undertaken by Natural England (which finished in June 2009), 54% of Dover to Kingsdown Cliffs SSSI was judged to be in favourable condition. Most of the unfavourable areas were designated so because of inadequate or inappropriate grazing.

Access

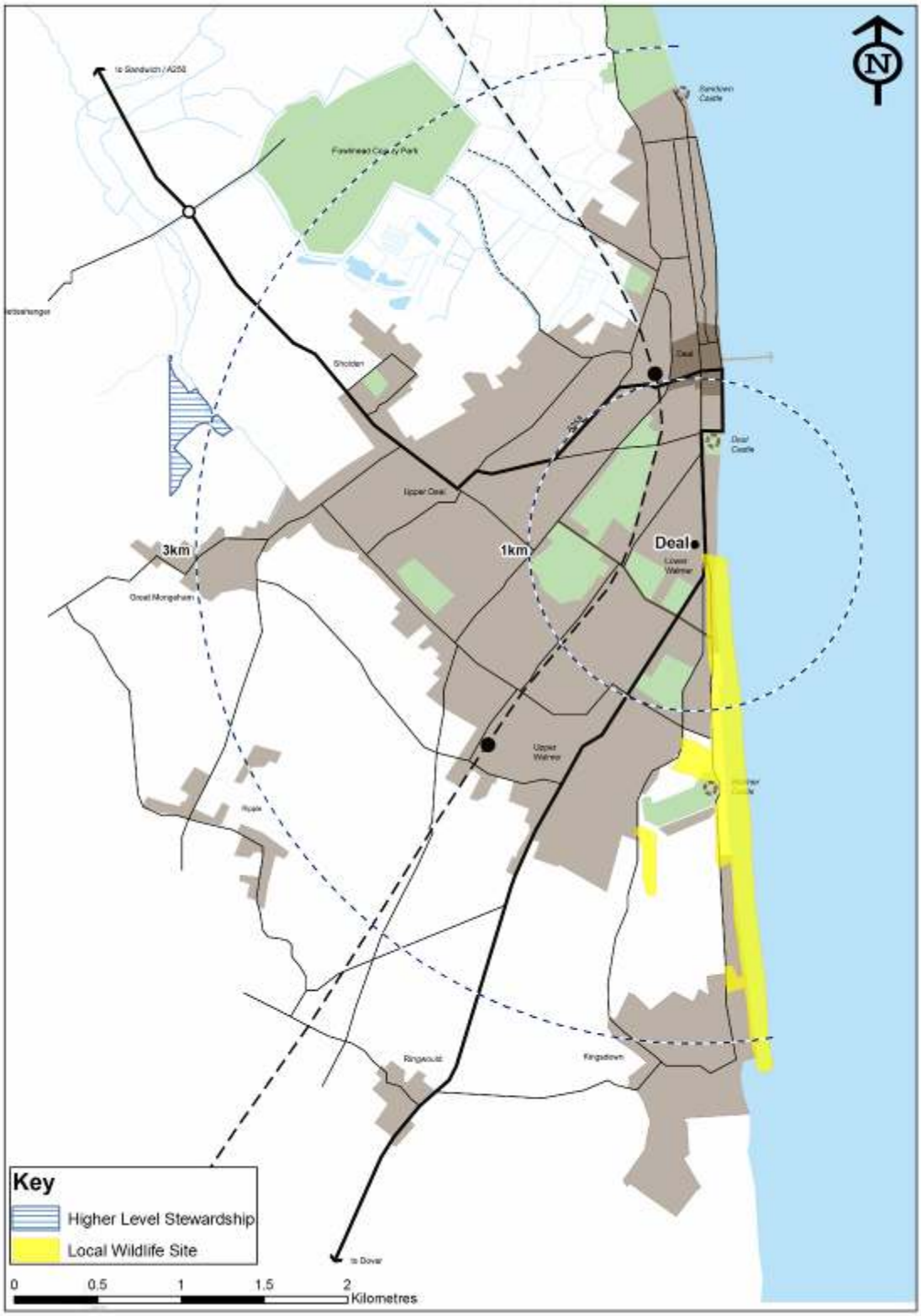
5.33 Part of the Dover to Kingsdown Cliffs SAC is owned by the National Trust constituting their 'White Cliffs of Dover' estate. The estate as a whole attracts more than 220,000 visitors per year (latest data provided by The National Trust reports that the site attracted 241,174 visitors in the year from March 2009 – February 2010, as well as 70,214 vehicles) Anecdotal information supplied by Dover District Council identifies that approximately 33% of visitors (mainly local) come to the site to watch the ships, approximately 33% come to see the White Cliffs (principally tourists) and approximately 33% (both tourists and locals) come to walk along the cliffs . This last portion (amounting to approximately 80,000 people per year or 219 per day) will be the main contributor to recreational erosion in the SAC.

5.34 Access is well-managed (although there are occasional incidents of damage due to fire and the most recent Natural England condition assessment identifies that the area to the east of the visitor centre is very species poor mesotrophic grassland, due potentially to management difficulties associated with localised high visitor pressure) despite the high number of visitors the estate as a whole receives. The vegetated sea cliffs are generally dangerous to approach or physically inaccessible and are therefore inherently protected from recreational pressure. The cliff-top grasslands are crossed by numerous footpaths which are used by recreational walkers.

Non Statutory Sites and Habitats

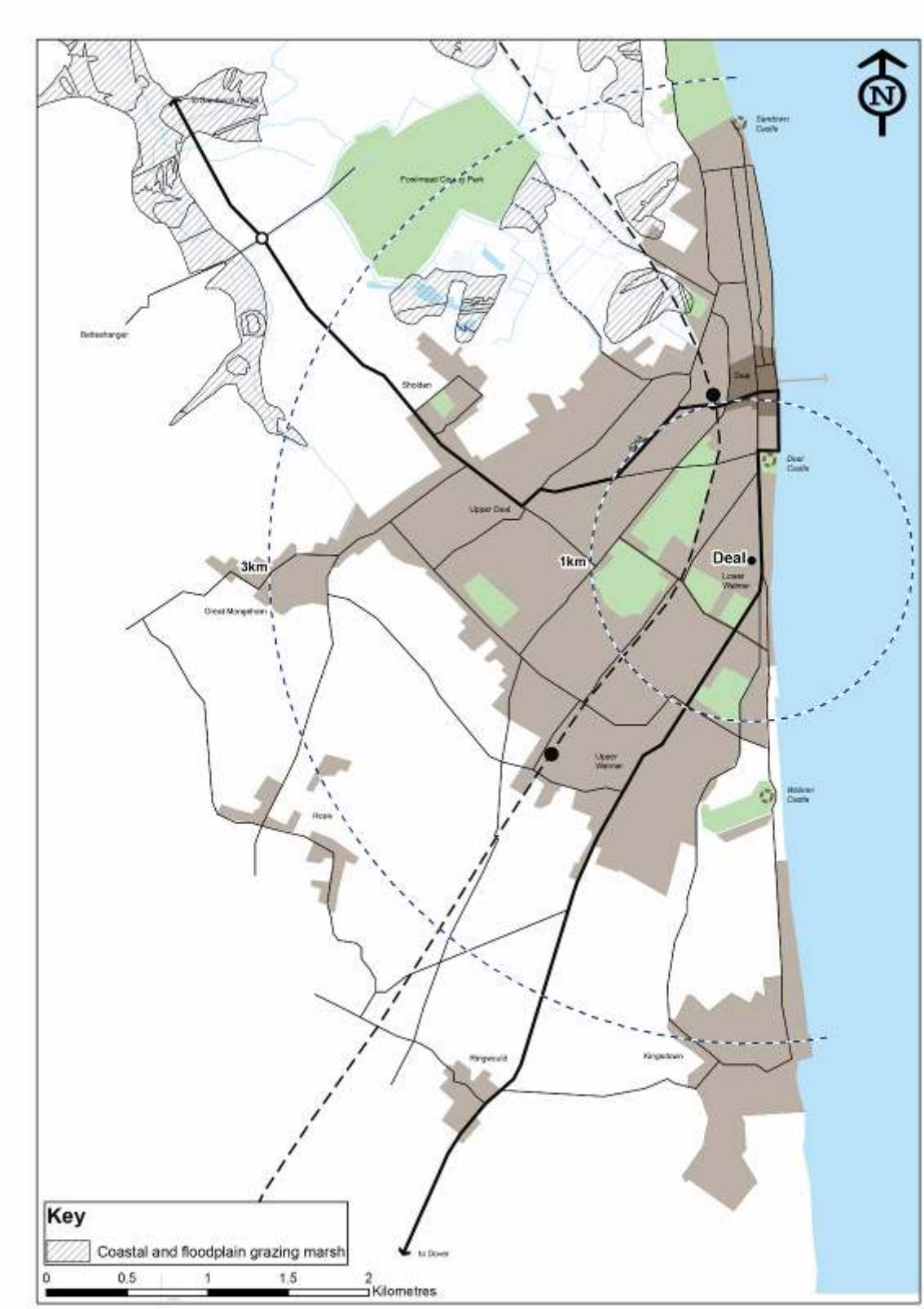
5.35 Information on the distribution of non statutory designated sites and areas of Higher Level Stewardship under the DEFRA scheme was provided by KMBRC and shown in Figure 18. This shows that the two areas are designated as part of one Local Wildlife Site - Kingsdown and Walmer Beach Local Wildlife Site. These are areas of locally important calcareous grassland and coastal habitats to the south of Deal.

Figure 22 - Non-statutory designated sites



5.36 UKBAP Habitat Coastal Grazing Marsh habitat was downloaded from MAGIC online database and shown in Figure 19. This identify areas to the north of Deal that are identified as patches of coastal grazing marshes but the boundaries suggest these are indicative and not following field boundaries. These therefore require field surveys to confirm the extent of this habitat type.

Figure 23 - UKBAP habitat coastal grazing marsh

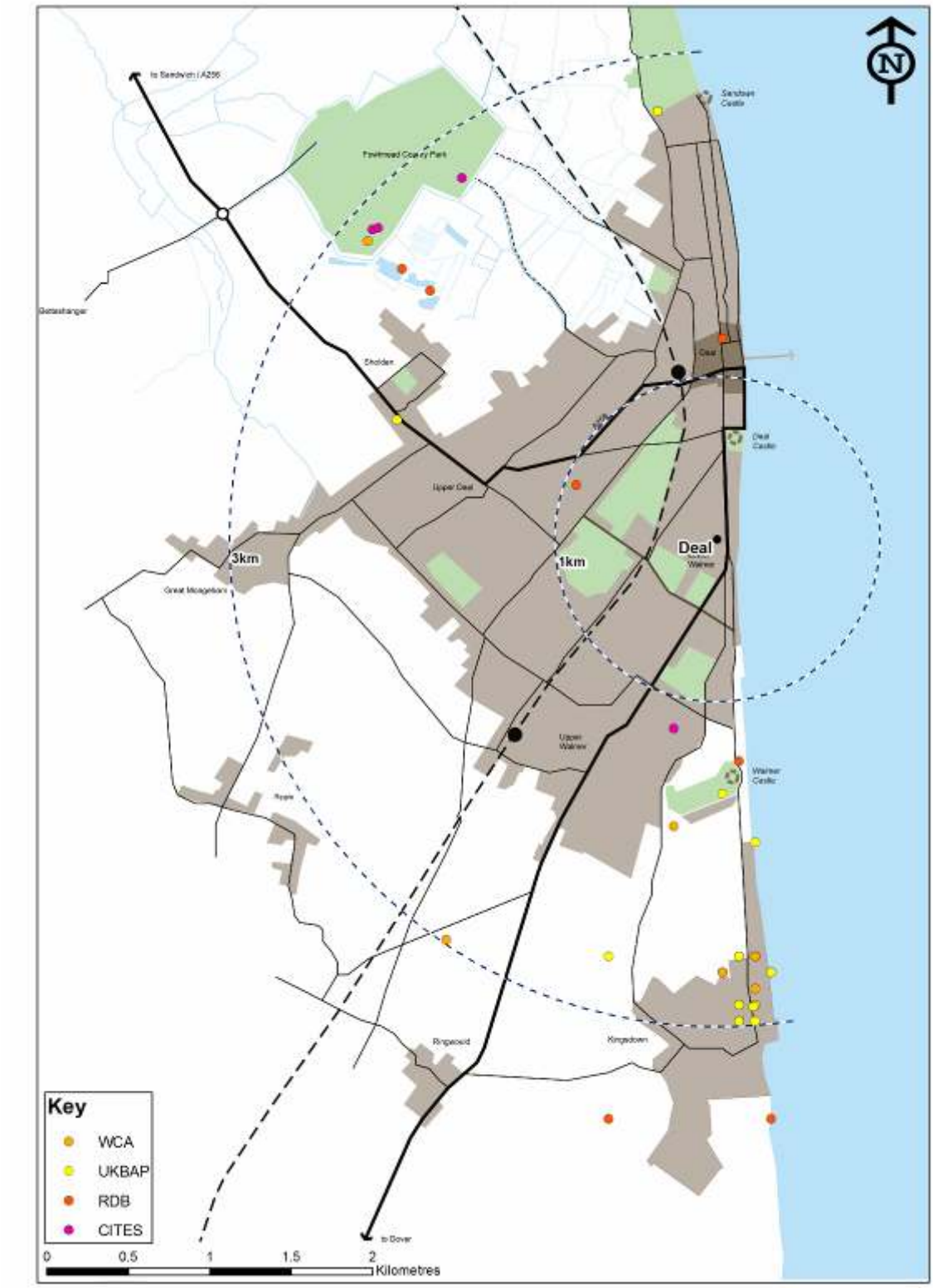


5.37 Phase 1 habitat data (Kent Habitat Survey 2003) was reviewed on the KLIS. The data showed that the habitats within the study area were principally arable but with small areas of semi-improved grassland (principally grazing marsh). There was a lack of congruence with the data set for grazing marsh shown in Figure 4 and field surveys are required to re-confirm the extent of habitat types and the quality of the associated ditch habitats and other boundary features.

Protected and Notable Species

5.38 Information gathered from KMBRC on the notable and protected species records in the study area are shown in Figure 20 and listed in Appendix B. The data show some clear patterns of species richness especially to the south of Deal within chalk habitats. Otherwise the data suggest that the areas to the west and north of Deal are **predominantly species-poor and present few constraints** within habitats that may be identified for development.

Figure 24 - Protected and notable species



Initial consideration of possible mitigation measures

5.39 At this stage a selection of possible mitigation and enhancement measures may be proposed. These will be reviewed further as the project progresses.

5.40 We identify impacts on ecological features that are either direct or indirect and deal with them separately. Both direct and indirect impacts may have potential impacts on European Protected Sites and these would cross reference to the Habitat Regulations Appraisal process.

Direct impacts

5.41 These relate to the direct loss or degradation of habitats or local disturbance of species by development in areas where such features are present. A good example of this would be development on areas of grazing marsh along parts of the northern boundary of Deal. The approach would be to look for measures on or adjacent to the development sites.

5.42 Ways to mitigate direct impacts include:

- Creation of (wetland) habitat areas linked to SuDS measures outlined in Section 3;
- Translocation of species features;
- Enhancement of drainage ditches and/or other habitat features;
- Prevention of pollution via water courses (including of the adjacent Ramsar wetland) through suitable design and management;
- Avoidance of vehicular access through sensitive features; and
- Design and management of Public Rights of Way and hence minimising local disturbance impacts.

Indirect impacts

5.43 These relate to the effects on European Protected Sites (SPA, SAC and Ramsar sites) caused by the actions or outcomes of a development, where this is spatially remote (i.e. greater than 1km from the development boundary). An example of this is where a

development creates a greater amount of visitor pressure and disturbance to a habitat or species.

5.44 Mitigation measures include:

- Limiting recreational disturbance (especially from dog walkers and beach/watersport activities) on or adjacent to sensitive European Protected Sites either through legal enforcement measures or voluntary agreements;
- Limiting or managing nitrogen deposition on sensitive European Protected Sites, arising from emissions of nitrogen oxides principally from vehicles;
- Both the above can be achieved by seeking financial contributions from developers for wardening and species and habitat management programmes at sensitive European Protected Sites.

5.45 All of these potential mitigation options remain valid as they all have the potential to be of value in mitigating adverse impacts to ecology in North and Middle Deal. Therefore Phase 2 work will investigate these in more detail.

6. Other environmental considerations

Air Quality

Background

6.1 Local air quality is a combination of background air quality, which is representative of the general levels of pollution in the area away from busy roads and industrial activity (in parks and quiet residential areas, for example), and added emissions from local emission sources.

6.2 Air quality objectives (maximum target levels of pollutants) are set out in the Air Quality Regulations (2000 and 2007) and Air Quality Standards Regulations (2007). Where the objectives are likely to be exceeded, the Local Planning Authority must designate an Air Quality Management Area (AQMA) and establish an Action Plan for the region, which outlines measures to achieve the objectives.

Site Specific Constraints

6.3 None of Deal is designated as Air Quality Management Areas (AQMAs). Therefore, no formal constraints are found within the study area. The closest AQMAs are in Dover (Dover Docks, A20 and high Street/Ladywell) which are affected by Sulphur Dioxide and Nitrogen Dioxide (see http://aqma.defra.gov.uk/maps.php?la_id=81).

6.4 However, localised emissions can occur along busy roads, adjacent to certain sources (such as incinerators), and at places where dust levels are high (such as demolition and construction sites).

Opportunities

6.5 There are many opportunities for mitigating the impacts to air quality additional development around Deal could cause. For example:

- Developments will incorporate cycle parking;
- Non-car modes of travel will be encouraged;

- New buildings will be required to comply with stringent building regulations and achieve adequate ratings against BREEAM and Code for Sustainable Homes assessments;
- Demolition and construction activities will follow good practice measures to minimise emissions.

Contaminated Land

Background

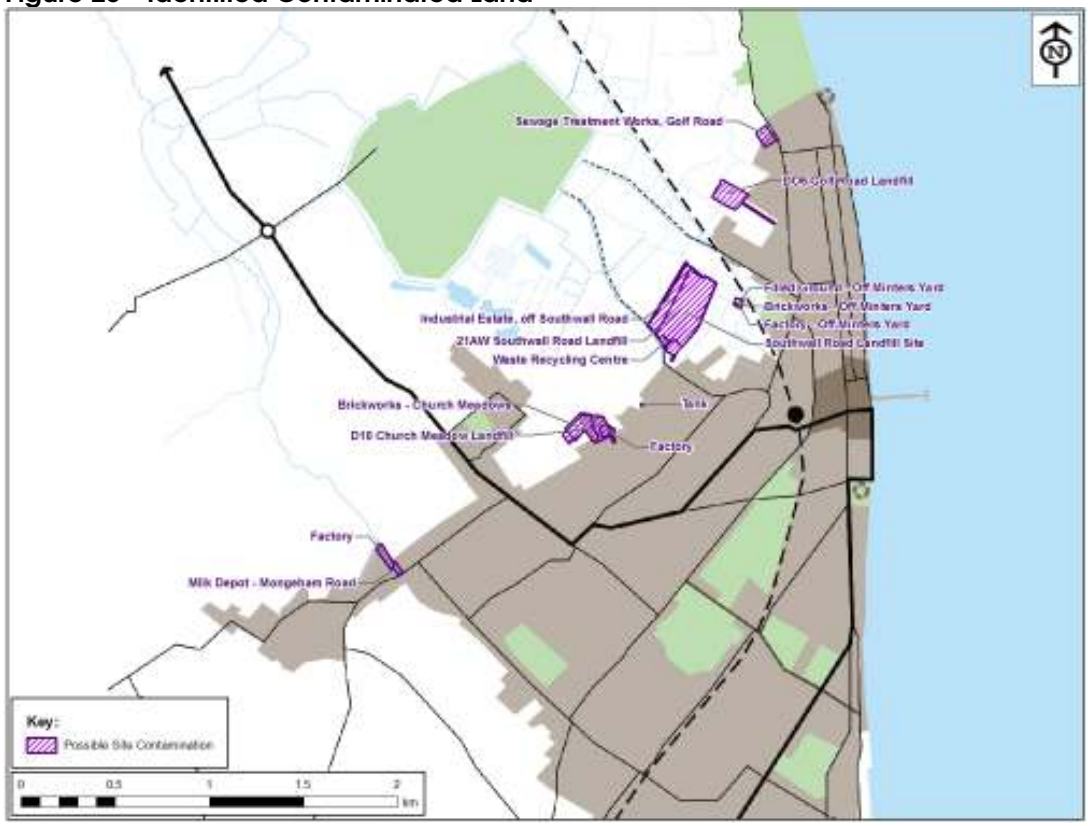
6.6 Land is considered to be 'contaminated' if it causes (or has a significant possibility of causing) significant harm, or pollution of Controlled Waters. Part IIA of the Environmental Protection Act (EPA) 1990, as introduced by Section 57 of the Environment Act 1995, provides the legislative framework within which contaminated land can be identified.

6.7 Once a site is determined to be contaminated land, remediation is required to render significant pollutant linkages insignificant.

6.8 Deal does not have a particularly industrial heritage and no significant areas of contamination are identified. However, there is a history of coal mining at Betteshanger to the north of Deal, and there are other smaller scale contaminated sites shown within North and Middle Deal in Figure 25.

6.9 At this point, contaminated land is not considered to form a significant constraint to development in North and Middle Deal. As specific development options are identified the effect and mitigations necessary will be identified in Phase 2.

Figure 25 - Identified Contaminated Land



Opportunities

6.10 Identification of contaminated land may be considered both a constraint (mainly for financial reasons), but also an opportunity. The remediation of contaminated land has the benefits of removing an unwanted legacy in the local area, protecting human health and water quality.

Ground stability & mining legacy

Background

6.11 PPG14 – Development on Unstable Land provides guidance in relation to development in areas where land is unstable or is potentially unstable in particular it considers the issues facing development in areas which have been subject to historic or ongoing mining activities.

6.12 PPG14 is not intended to provide a barrier to development in areas where land is considered suitable, however it does highlight the appropriate considerations which need to be addressed in order to enable land to be successfully and safely developed.

6.13 In response to PPG14 the Coal Authority have categorised land which may be affected by coal mining activities. Those areas which are potentially most seriously affected by mining activity and therefore suffer ground stability issues are designated as "Coal Mining Referral Areas" whilst areas which are less directly affected and therefore ground stability is likely be unaffected are classed as "Standing Advice" areas.

Extent of Constraints

6.14 Until 1989 the area to the north of Deal accommodated the head of the Betteshanger coal mine, which at the time of sinking was the largest mine in Kent. By the time it closed the mine had two shafts (both in excess of 2,000ft) but was never developed to its full potential.

6.15 The legacy of the mining activity means the majority of Deal lies within a "Coal Mining Standing Advice" area, there are also two small "Coal Mining Referral Areas" located at the mineshaft heads.

6.16 The geographic extent of the "Standing Advice" and "Referral" areas within Deal are shown in Figure 26 below.

Figure 26 – Ground stability and mining legacy

6.17 As shown all of North and Middle Deal is covered by the "Standing Advice" area, a designation which does not preclude development and requires no additional up front feasibility testing from development proposals.

6.18 The designation as a "Standing Advice" area indicates that North and Middle Deal lie within a coal mining area but "does not have legacy issues that are a risk to the surface" (Coal Authority, 2010). As such development is permissible but a Standing Advice Informative Note will be included with any decision notice.

6.19 The informative requires developers to record any coal mining features discovered during development and report these to the Coal Authority. Any work which directly affects or disturbs mine workings or coal seams will then need prior written permission from the Coal Authority.

6.20 The two small "Referral Areas" at the mineshaft heads lie within the Betteshanger Business Park. Development sites in these areas would need to complete a Coal Mining Risk Assessment to ascertain the level of impact and, potentially, seek permission from the Coal Authority to commence development.

6.21 "Referral Areas" do not represent an absolute barrier to development, but planning permissions are likely to be conditioned to ensure appropriate mitigation measures are put in place to avoid future problems.

Opportunities

6.22 Issues related to ground stability do not limit the opportunity to deliver development within and around North and Middle Deal. Only a small area at Betteshanger has the potential to be constrained by ground conditions, although this area has already achieved planning permission for a business park so is unlikely to present issues for this Study.

Heritage Assets

Background

6.23 PPS5 - Planning for the Historic Environment provides the national policy framework for development which affects (or may affect) the historic environment, this includes designations such as conservation areas and listed buildings.

6.24 The aim of PPS5 is to ensure that the historic environment and assets are suitably conserved and able to be enjoyed in the future, the stated objectives for PPS5 are:

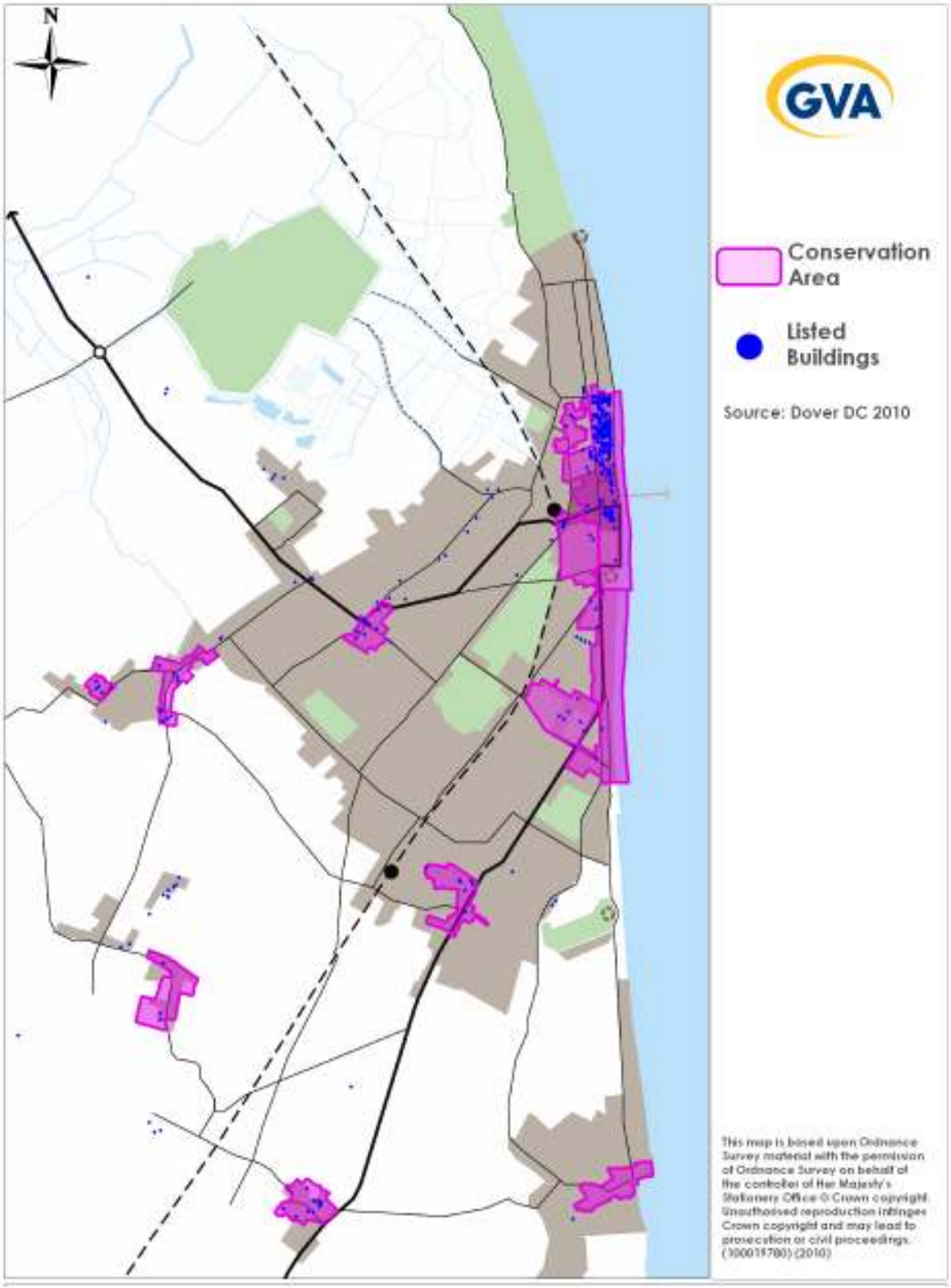
- to deliver sustainable development by ensuring that policies and decisions concerning the historic environment:
  - recognise that heritage assets are a non-renewable resource
  - take account of the wider social, cultural, economic and environmental benefits of heritage conservation; and
  - recognise that intelligently managed change may sometimes be necessary if heritage assets are to be maintained for the long term.
- to conserve England's heritage assets in a manner appropriate to their significance by ensuring that:
  - decisions are based on the nature, extent and level of that significance, investigated to a degree proportionate to the importance of the heritage asset
  - wherever possible, heritage assets are put to an appropriate and viable use that is consistent with their conservation
  - the positive contribution of such heritage assets to local character and sense of place is recognised and valued; and
  - consideration of the historic environment is integrated into planning policies, promoting place-shaping.
- to contribute to our knowledge and understanding of our past by ensuring that opportunities are taken to capture evidence from the historic environment and to make this publicly available, particularly where a heritage asset is to be lost.

Extent of Constraints

6.25 Deal's setting and historic pattern of growth have developed a distinct character for the town, particularly in North and Middle Deal which are defined for their tight grain urban structure and range of built heritage assets.

6.26 Clusters of buildings form defining character areas across the town and are designated as Conservation Areas. Within these, and further a field, there are a number of listed buildings, including former barracks, castles and residential properties. The location and extent of the Conservation Areas and Listed Buildings are shown in Figure 27.

Figure 27 - Conservation areas and listed buildings



6.27 The majority of Listed Buildings lie within the existing urban area of North and Middle Deal (principally to the north of the town centre) and therefore future growth close to these would need to consider their impact on the setting of specific buildings or groups of buildings. Outside of this area there are a number of 'isolated' listed buildings in Middle Deal and Sholden which would need to be taken into account should growth directly affect them.

6.28 The location of Listed Buildings at the A258-Mongeham Road junction are likely to impact on the ability to make significant improves to this junction or the ability to provide new access points to areas north of Church Lane and east of Sholden itself.

6.29 The location and extent of Conservation Areas within Deal have the potential to constrain the scale and nature development in certain locations. The opportunities within the Conservation Areas close to (and covering) the town centre for new development are limited given the tight urban form and existing density of development. Their impact, therefore, on the ability of Deal to accommodate development is likely to be minimal. However, the conservation areas located at the A258-Manor Road and at Mongeham Road-Northbourne Road could have wider influences on future growth opportunities.

6.30 The A258-Manor Road in particular is a key junction and access point within the town and, at peak times, experiences some of the more acute congestion issues within Deal. The presence of the Listed Buildings and Conservation Area limits the ability to make significant improvements to the junction to reduce congestion. In the long term (if current capacity can is fully utilised) the need to protect the Listed Buildings may mean sufficient improvements cannot be introduced to reduce congestion. This could limit future growth opportunities unless alternative routes are introduced which relieve pressure on this key junction.

6.31 Whilst the Mongeham Road-Norhtbourne Road junction does not have the same strategic importance the Conservation Area could limit growth opportunities in the future insofar as junction improvements or new access route options may be limited.

Opportunities

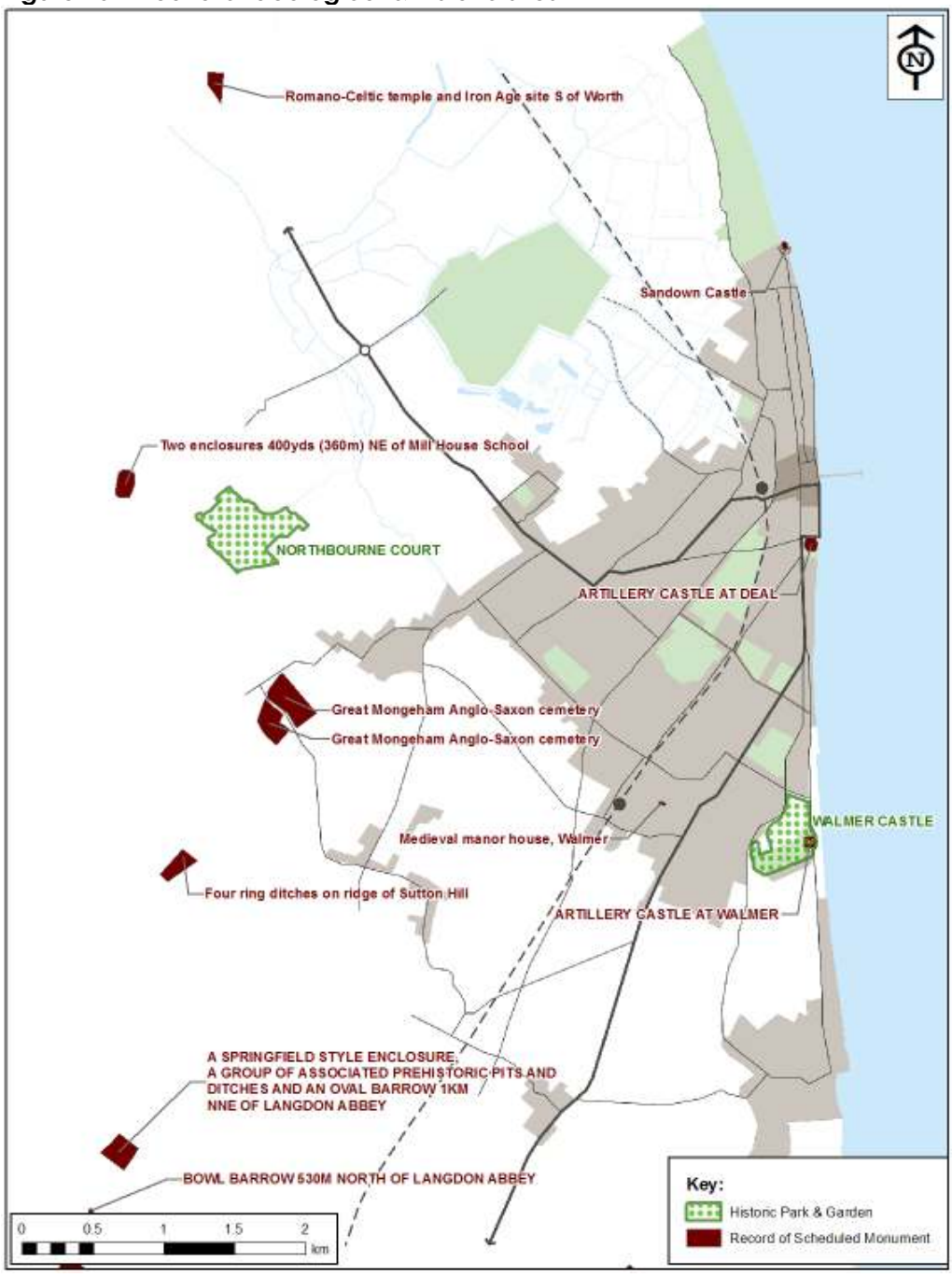
6.32 Conservation Areas may not solely be a constraint on improvements to key junctions, indeed improvement works may present an opportunity to enhance the setting of listed buildings and the character of Conservation Areas.

Archaeology

Background

6.33 Deal and its surrounding area is historically rich, and as such, it has a number of known archaeological and historic sites, some designated as Scheduled Monuments and Historic Parks and Gardens, as shown in Figure 28.

Figure 28 - Deal archaeological & historic sites



6.34 Planning Policy Statement 5: Planning for the Historic Environment (2010) sets out the overarching planning policy to ensure the adequate protection of archaeology and historic heritage. Therefore, physical constraints to development from local archaeology arise from the need to avoid damage to the known archaeological site (and settings), and to take due care to prevent damage to (as yet) undiscovered archaeology.

Extent of Constraints

6.35 The principal constraint to development in North and Middle Deal is the footprint of the known archaeological resource itself. Therefore, constraints will result from the presence of a Scheduled Monument and Historic Park and Garden within any potential development area. There are no such designated sites in North and Middle Deal.

6.36 However, further to the direct development within a known designated site, PPS5 also requires that damage to both an archaeological site's setting and an (as yet) undiscovered site is avoided. The extent of these constraints is unknown at this stage, although development will only occur following site specific investigations in conjunction with English Heritage and the Archaeological Officer of DDC.

Opportunities

6.37 One of the Sustainability Objectives in the LDF Core Strategy is to protect, enhance and make accessible for enjoyment the (countryside) and historic environment.

6.38 Development that is sensitive to the historic environment will not only protect known sites, but may allow for an improvement to its setting. Also, the discovery of previously unidentified archaeology will also add to the local knowledge and understanding of the area's history.

Conclusion

6.39 Taken together none of the other environmental considerations provide absolute constraints on development within Deal. However, if development is targeted in certain locations localised mitigation may be required; this is most likely to be required at a site or development specific level.

6.40 By considering the town holistically there are significant opportunities to improve on the current other environmental issues which affect the town. For example new development could remediate and bring back into productive use brownfield land or improve the setting of and access to heritage assets.

6.41 Any intervention in Conservation Areas will need to be carefully considered to ensure it enhances the character of the area, this will be a particularly important consideration for the planning of any junction improvements.

7. Transport and movement

Introduction

7.1 This Chapter provides our baseline review of current transport issues and constraints for Deal and the surrounding local area. The information gathered has been designed to build up a comprehensive picture of access and movement within the town across all modes of Transport.

Baseline Transport Information

7.2 In support of this baseline transport review, various sources of existing information have been utilised such as:

- The Dover Transport Study;
- The Transport Assessment (TA) and Travel Plan (TP) prepared in March 2007 by Bettridge Turner & Partners on behalf of Wilson Quinn Developments in support of the Minter's Yard development planning application;
- The TA and TP prepared in November 2010 by the Project Centre on behalf of Ward Homes in support of the Land at Sholden Residential Development planning application; and
- The TA and TP prepared in October 2010 by Argent Consulting Engineers on behalf of Hillreed Homes Limited in support of the planning application for the Land at Court Lodge Residential Development.

7.3 Following a review of the quality and quantity of various existing traffic data sources, MVA commissioned the collection of additional primary survey data in February 2011 in order to provide a more comprehensive understanding of the up to date travel patterns in and around the town. This package of new traffic data included:

- Vehicle Automatic Traffic Counts;
- Vehicle Speed Surveys;
- Manual Classified Junction Counts;
- Vehicle queue length surveys; and

- Origin / Destination (OD) Number Plate Matching Surveys.

7.4 In developing this comprehensive set of additional information, consultation was carried out with representatives of Kent Highway Services and the Highways Agency, both of whom confirmed they were satisfied that the proposed surveys would provide a good basis for understanding the existing traffic conditions within Deal and the surrounding area.

7.5 These traffic surveys are used to provide data for the Transport Assessment Model (TAM), a tool specifically designed by MVA Consultancy to assist in predicting the future travel patterns and transport impact from the various development site options to be proposed for Deal. This report describes later how the first stage of the TAM development process, namely the forecasting of development trips has been used to provide an initial assessment on the transport impact from various development sites.

7.6 To complement both existing traffic information and the package of new traffic surveys, MVA has also carried out general observations on traffic, public transport, pedestrian and cycle movements at different times of the day, in particular during peak periods when traffic flows are known to be highest and any conflicts are likely to be most pronounced. In addition, the Deal Constraints & Opportunities Strategy – Phase 1 Stakeholder Workshop on the 11th March 2011 provided a further insight into the key transport issues for the town.

Existing Highway Traffic Conditions

Overview

7.7 Like most towns in the UK, Deal experiences problems with traffic congestion most notably during peak periods. On a daily basis local residents contribute to, and get caught up in traffic queues as they attempt to make their journeys to and from work or school. Most congestion is linked to the level of out-commuting which is significant; in-commuting and through traffic are much lesser issues. Congestion in Deal also tends to be focussed around a series of bottleneck junctions for example; London Road/ Manor Road or West Street/Queens Street.

7.8 A unique feature of the highway network in Deal is the fact that most of the development in the town is accessed off the A258 which provides the main route into and out of town. Much of the congestion arises as a result of traffic trying to filter through the local network of generally narrow residential streets to gain access to the A258. In many places the road layout is highly constrained by the frontage development or roadside parking. This means that a typical peak period car journey in Deal is characterised by a series of minor-

modest delays at pinch points and other network constraints which cumulatively can lead to lengthened journey times between the built-up area and the outskirts of the town.

7.9 If compared to some of the busier towns in the country, delays in Deal cannot be classified as severe but nevertheless as traffic has grown the reliability of journey times from one part of town to another has steadily deteriorated. As such there is very limited capacity to cater for additional development related traffic, beyond that envisaged within the Core Strategy, without tipping the balance and either creating unacceptable queues and delays or triggering the need for a comprehensive package of local traffic management measures and more significant transport improvements.

The Local Highway Network

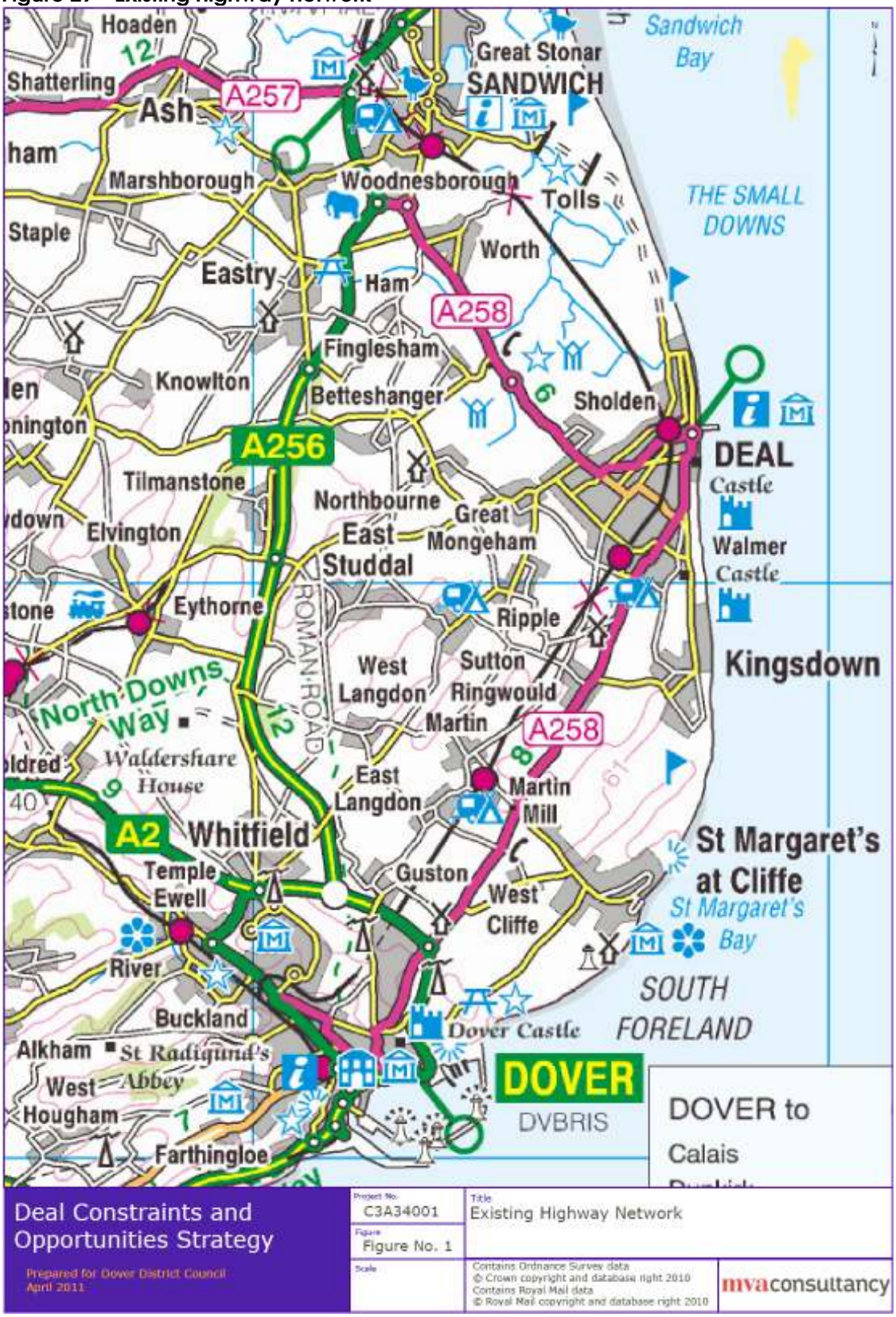
7.10 The A258 acts as the only primary road access for Deal and connects the town with Dover in the South and Sandwich to the North. It is single carriageway road that has seen a number of improvements in recent years focused on localised traffic management and safety. The road from the south enters the Deal urban area at Walmer and continues to the town centre before routing westwards through the urban area to Sholden. It then passes through countryside to connect with the A256 to the south of Sandwich.

7.11 The B2056 Manor Road acts as a secondary route within Deal and provides a diversion for traffic on the A258 wishing to by-pass the town centre. Deal is also served with a network of local roads serving a mixture of local land uses such as residential, retail and leisure. This tight network of local roads presents particular local traffic problems with congestion hotspots at some of the limited access points on to the A258.

7.12 The A256 is the primary north/south route to the west of Deal. The road, which is largely dual carriageway, provides a high speed road connection between Dover with Sandwich and the wider North Kent region.

7.13 Figure 29 shows details of the existing highway network which serves Deal and the wider area.

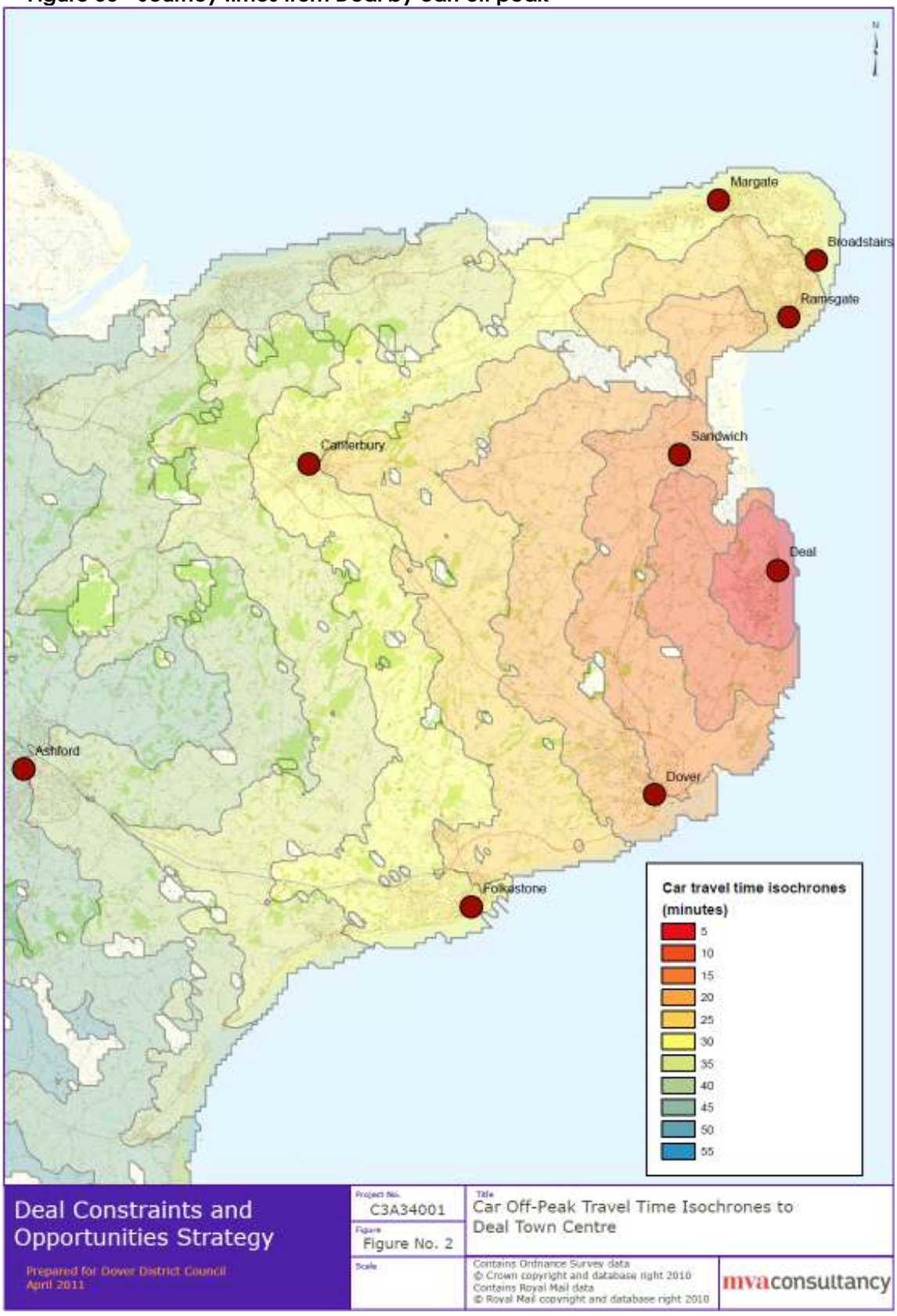
Figure 29 - Existing highway network



7.14 ACCESSION analysis has been carried out to provide an understanding of the current accessibility by car between Deal and surrounding towns and cities within Kent. This

analysis, which is shown in Figure 30, indicates that journey times between Deal and Sandwich and Dover are around 15 and 20 minutes respectively. Further a field, it takes around 30 minutes to travel from Deal to Folkestone and Canterbury, with up to 45 minutes to Ashford. It should be noted that these travel times are based on journeys carried out during off peak times of the day and it is considered likely that such times will be longer during peak periods.

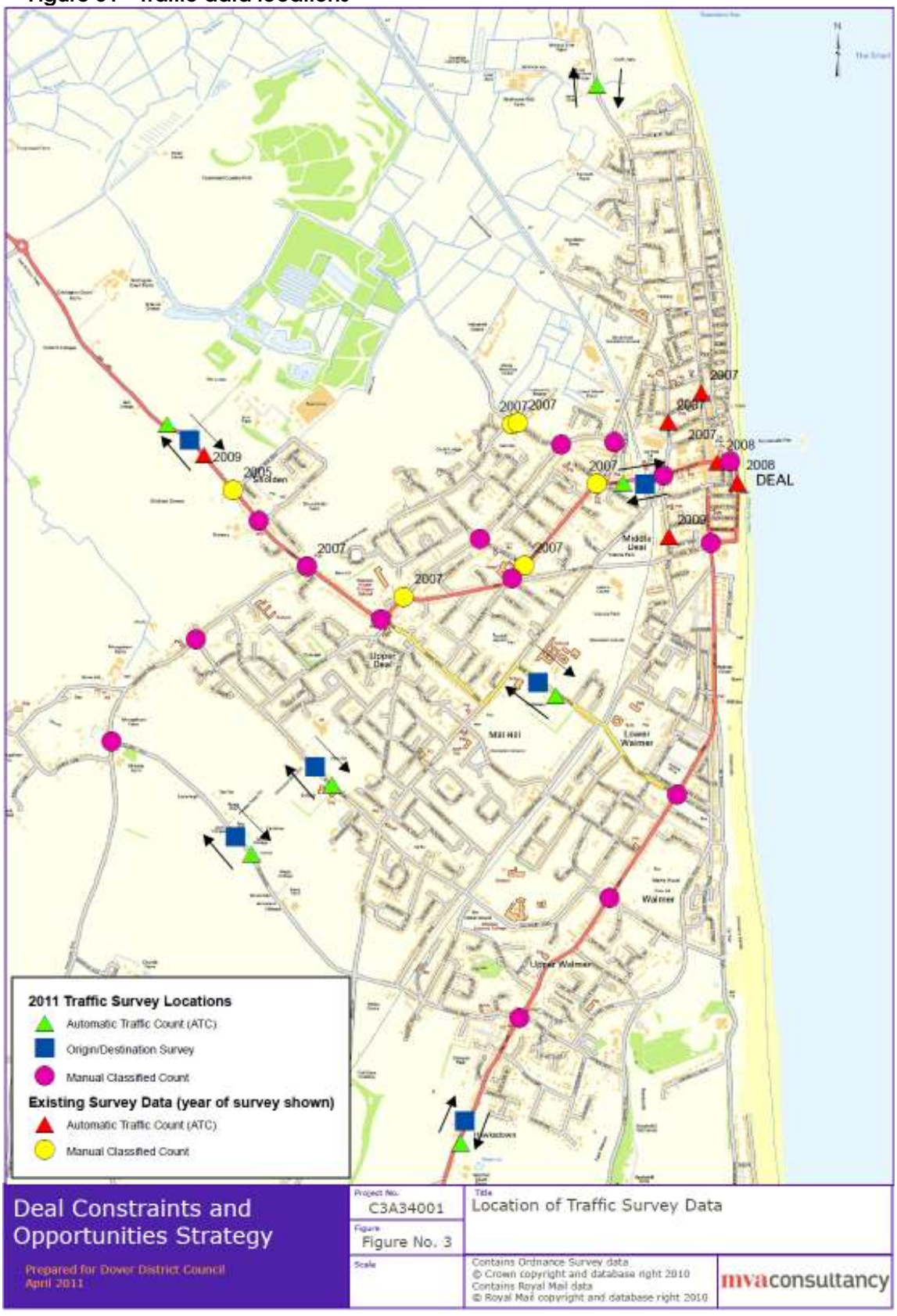
Figure 30 - Journey times from Deal by car: off peak



7.15 As highlighted above, various new traffic surveys were carried out within Deal and the following sections present analysis of these surveys together with data from other existing sources providing an insight into the current traffic conditions for Deal.

7.16 Figure 31 shows the location of both new and existing traffic data. Visual observations were carried out at the two primary school locations (Sholden and Hornbeam) taking place at pick up and drop off times.

Figure 31 - Traffic data locations



2011 Traffic Surveys (Automatic Traffic Counts)

7.17 7 Automatic Traffic Counts (ATCs) were carried out during a two week period from 8th to 21st February 2011 on key roads within Deal as highlighted in Figure 31. A review of this data indicated minimal daily variations in traffic flow between the individual weekdays and between the different Saturdays and Sundays. Furthermore, existing ATC data collected over a 7 day period in July 2009 for the TA prepared for the Land at Sholden development indicates very similar traffic levels during the weekday peak periods compared to the February 2011 data.

7.18 This minimal difference between July and February data is consistent with discussions at the Phase 1 Deal Study Stakeholder Workshop where it was highlighted that Deal does not experience significant increases in tourist traffic during the summer months. It is therefore considered that the February ATC data provides a good representation of typical traffic flows within Deal.

7.19 Figure 32 shows a summary of this ATC data with average weekday traffic flows during the 0800 to 0900 morning and 1700 to 1800 evening peak periods. It should be noted that due to a fault with the survey equipment, traffic data was not collected for a four day period at the ATC site on the A258 near Walmer. However, the available data at this site provides a good understanding of traffic levels and our analysis takes into account this gap in data.

Figure 32 - ATC summary count data

7.20 Analysis of the ATC data showing the average weekday daily traffic flow profiles for each site location is included within Appendix C of this note. These daily profiles highlight that on the A258 at both Sholden and Walmer, 2-way traffic levels during the morning peak hour (0800-0900) and evening peak hour (1700-1800) are very similar. Furthermore the analysis indicates that traffic levels are relatively high on the A258 during the afternoon 1500-1600 period.

7.21 As expected, peak traffic levels at the weekend are significantly less on the A258 at Sholden and Walmer compared to a typical weekday. The time of the peak period is also different with the highest level of traffic at the weekend being 1200 to 1300. The average weekend daily flow profiles for the sites on the A258 are included with Appendix C of this note.

7.22 Further analysis of the ATC data has concluded that during the weekday AM peak hour period (0800 to 0900) there is a higher level of outbound commuting from Deal compared to inbound movements. On the A258 London Road near to Sholden, approximately 65% of vehicles are travelling outbound compared to 35% inbound during the morning peak period. For the A258 south of Walmer the same 65%/35% split for outbound and inbound traffic respectively is experienced during the morning period. A reverse pattern emerges for the evening peak with around 65% of vehicles travelling into the town and surrounding area with 35% travelling outbound. This analysis highlights that Deal experiences significant levels of out commuting in the morning peak to key employment areas such as Dover and Sandwich with high levels of inbound commuting home in the evening.

7.23 The ATC sites on Ellens Road, St Richard's Road, B2056 Hamilton Road, and A258 Queen Street also form a partial east-west screenline across the town and surrounding area. Analysis of these sites indicates that local traffic movements eastbound and westbound are evenly spread in both the weekday morning and evening peak periods.

2011 Traffic Surveys (Traffic Speeds)

7.24 Traffic speed surveys were carried out during a two week period from 8th to 21st February 2001 at the same locations as the ATC sites as shown in Figure 33.

7.25 Figure 33 shows a summary of this vehicle speed data with 24 hour average daily 85th percentile speeds along key roads within the local network. This analysis indicates that overall vehicle speeds within Deal are reasonably consistent with local highway layout and conditions. Furthermore, it is also evident from the speed data that existing highway

links are operating within capacity and any vehicle delays experienced are from over capacity and / or operational issues at junctions. It is however acknowledged that the efficient movement of traffic through the tight network of streets in and around Deal is highly sensitive to minor incidents such as slow moving vehicles, irregular parking or pedestrian/cyclist activity.

Figure 33 - Vehicle speed data

2011 Traffic Surveys (Manual Classified Junction Counts)

7.26 14 manual classified counts were carried out on the 15th February 2011 during the morning peak (0730 to 0930) and evening peak (1630 to 1830) periods at key junctions in Deal as highlighted in Figure 31. Vehicles were classified into Cars/LGV/taxi, HGVs, Bus and Coaches, Motor Cycles and Pedal Cycles.

7.27 Analysis of the MCC data reveals a similar traffic pattern identified from the ATC data, i.e. significant levels of outbound commuting to Dover and Sandwich during the morning peak and return journeys to Deal during the evening peak. At specific locations the MCC data also highlights that there is:

- A relatively high level of traffic on Orchard Road, a local residential street which experiences 430 two way trips during the morning peak period. This level of traffic reflects the limited access points available to local residents on to the strategic highway network.
- A relatively high right turn movement at the London Road (East) approach to its junction with Manor Road, particularly during the morning peak period. Such high vehicle movements are likely to cause significant delays for traffic from the Manor Road approach.

7.28 A significant level of traffic accessing the A258 via Mongeham Road, particularly during the morning peak period. This traffic level on Mongeham Road reflects the limited access points on to the A258.

7.29 Further details of this MCC data together with junction traffic flow data extracted from existing sources is included within Appendix C.

2011 Traffic Surveys (Vehicle Queue Lengths)

7.30 Queue length surveys were carried out on the 15th February 2011 at the same locations as the MCC sites as shown in Figure 31. Vehicle queue lengths (in metres) at each junction approach were observed at 15 minute intervals during the morning period 0730 to 0930 and evening period 1630 to 1830. This information provides a typical snap shot of vehicle delays currently experienced on the local highway network and identifies any existing traffic congestion hotspots. Figure 34 provides a summary of traffic queues with the maximum queue length observed during the survey. The surveys indicate that during the morning peak the key junction congestion hotspots include:

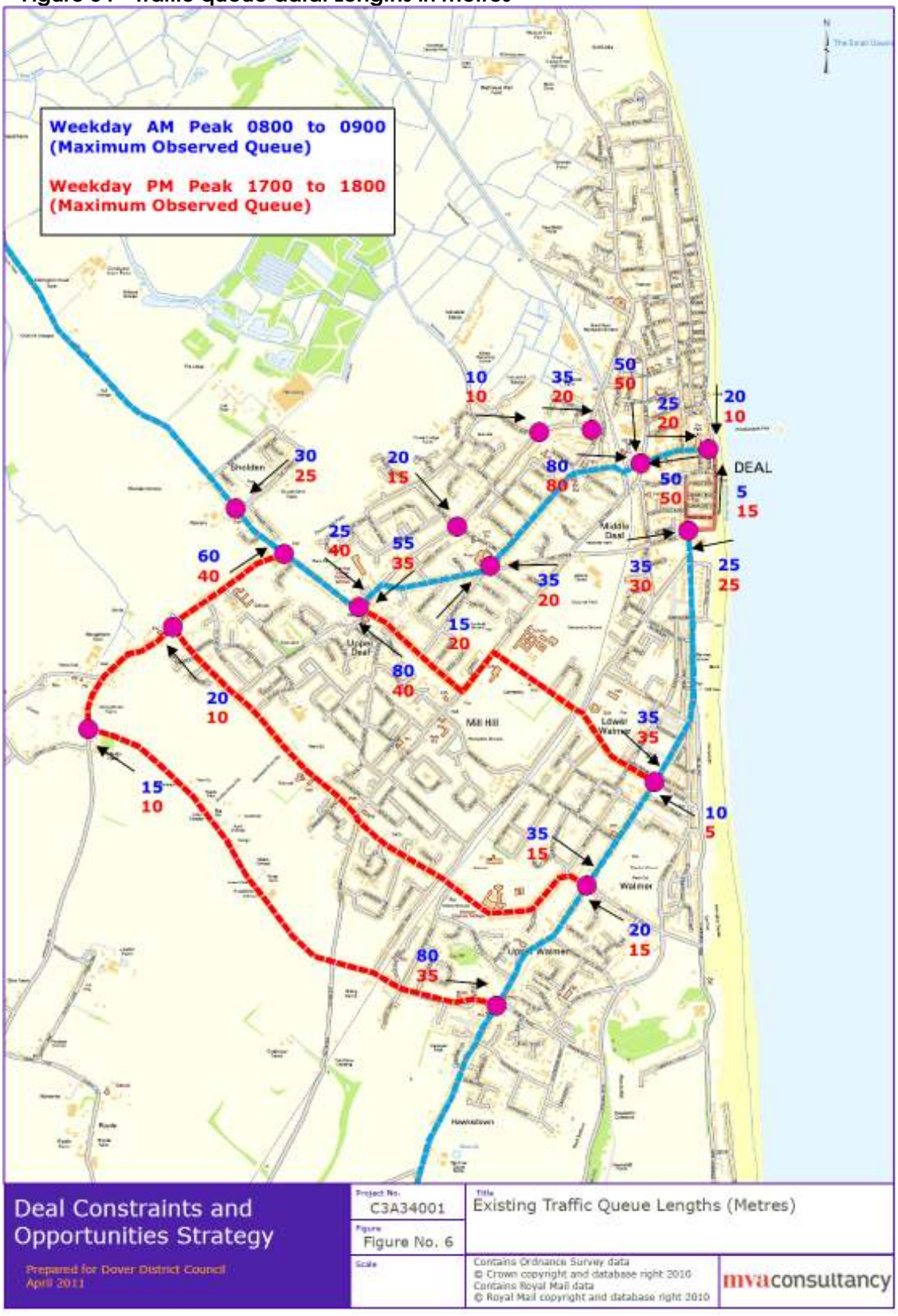
- the A258 London Road / B2056 Manor Road junction (around 5, 10 and 14 vehicle queue at the London Road (North), London road (East) and Manor Road approaches respectively).
- Mongeham Road's approach to A258 London Road (around 10 vehicle queue) ;
- Station Road's approach to A258 Dover Road (around 14 vehicle queue); and
- the A258 Queen Street / West Street junction (around 9 vehicle queue at the West Street and Queen Street (East) approaches and 14 vehicle queue for Queen Street (West) approach.

7.31 For the evening period the main areas of congestion occurred at:

- the London Road / Manor Road junction (around 7, 6 and 7 vehicle queue for the London Road (North), London Road (East) and Manor Road approaches respectively);
- Mongeham Road's approach to London Road (around 7 vehicle queue); and
- the Queen Street / West Street junction (around 9 vehicle queue at the West Street and Queen Street (East) approaches and 14 vehicle queue for Queen Street (West) approach).

7.32 It should be noted that the number of vehicles within each queue as described above is based on each vehicle representing a 6 metre queue.

Figure 34 - Traffic queue data: Lengths in metres



7.33 Further details of this vehicle queue length data are included within Appendix C.

2011 Traffic Surveys (Origin / Destination (OD) Number Plate Matching Surveys)

7.34 To provide further understanding of the current traffic patterns through Deal and surrounding local area, a series of OD surveys were carried out on the 15th February 2011 during the weekday morning peak (0730 to 0930) and evening peak (1630 to 1830) periods.

7.35 An automatic number plate matching system was used to record vehicle data passing each site. This data was then analysed to determine vehicle movements through the network of OD sites. Sites 1 and 2 (A258 London Road and Dover Road) are referred to as 'external' and captured vehicles travelling into and out of Deal along the A258. Sites 3 to 10 (Ellens Road, St Richard's Road, Hamilton Road and on the A258 London Road just west of the town centre) form a series of 'internal' OD sites which were then used to identify specific vehicle movements through the town and surrounding area.

7.36 Figures 29 and 30 show the location of these OD survey sites and a summary of weekday morning and evening peak traffic flow movements extracted from the survey data. Analysis of this data highlights that:

- At least 95% of vehicles passing the external OD sites on the A258 during both peak periods were recorded within the data analysis. This sample rate should therefore provide high confidence that the OD data provides an accurate snap shot of main traffic movements through Deal.
- For the morning period, 45% of the vehicles travelling southbound on the A258 at Sholden were also identified at one of the internal OD sites, with the majority of these observed either on the A258 Queen Street or B2056 Hamilton Road. During this same period, 19% of vehicle travelling northbound on the A258 South of Walmer were also observed at one of the internal OD sites, with a fairly even spread across A258 Queen Street, B2056 Hamilton Road and St Richard's Street.
- A very similar pattern emerges for the evening period with 40% of vehicles travelling southbound on the A258 at Sholden also being observed at the one of internal OD sites, with the majority of these at either Queen Street or Hamilton Road. During this same period, 21% of northbound vehicles on the A258 south of Walmer were also

observed at one of the internal OD sites, with a fairly even spread across Queen Street, Hamilton Road and St Richard's Street.

- A relatively small proportion of vehicles were observed travelling through Deal via both external sites on the A258. For the morning period this proportion constituted 6.5% and 8.2% of vehicles travelling northbound and southbound respectively. While vehicle proportions during the evening period were 2.1% northbound and 2.7% southbound. This indicates that few drivers use the A258 as a through route and it is considered that the vast majority of drivers on longer distance journeys use the A256, the primary north/south route to the West of Deal, which links the A2 (Dover) and A299 (North Kent).
- Of the small proportion of vehicles observed at both external and internal OD sites, it is highlighted that very few of these are using either Ellens Road or St Richard's Road for either direction or peak period. A higher proportion of vehicles are using either the B2056 Hamilton Road or A258 Queen Street.

Figure 35 - Morning peak period OD analysis

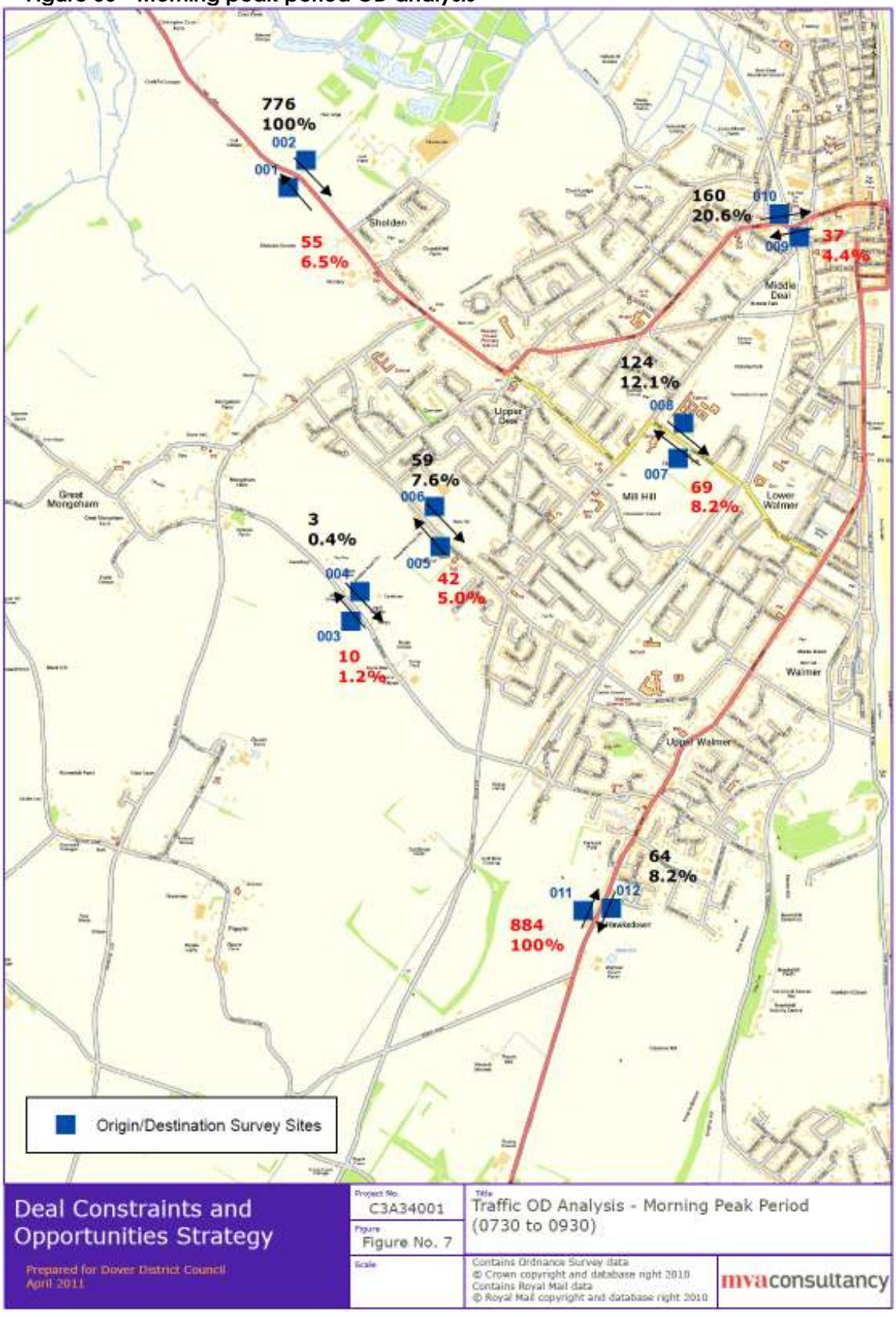
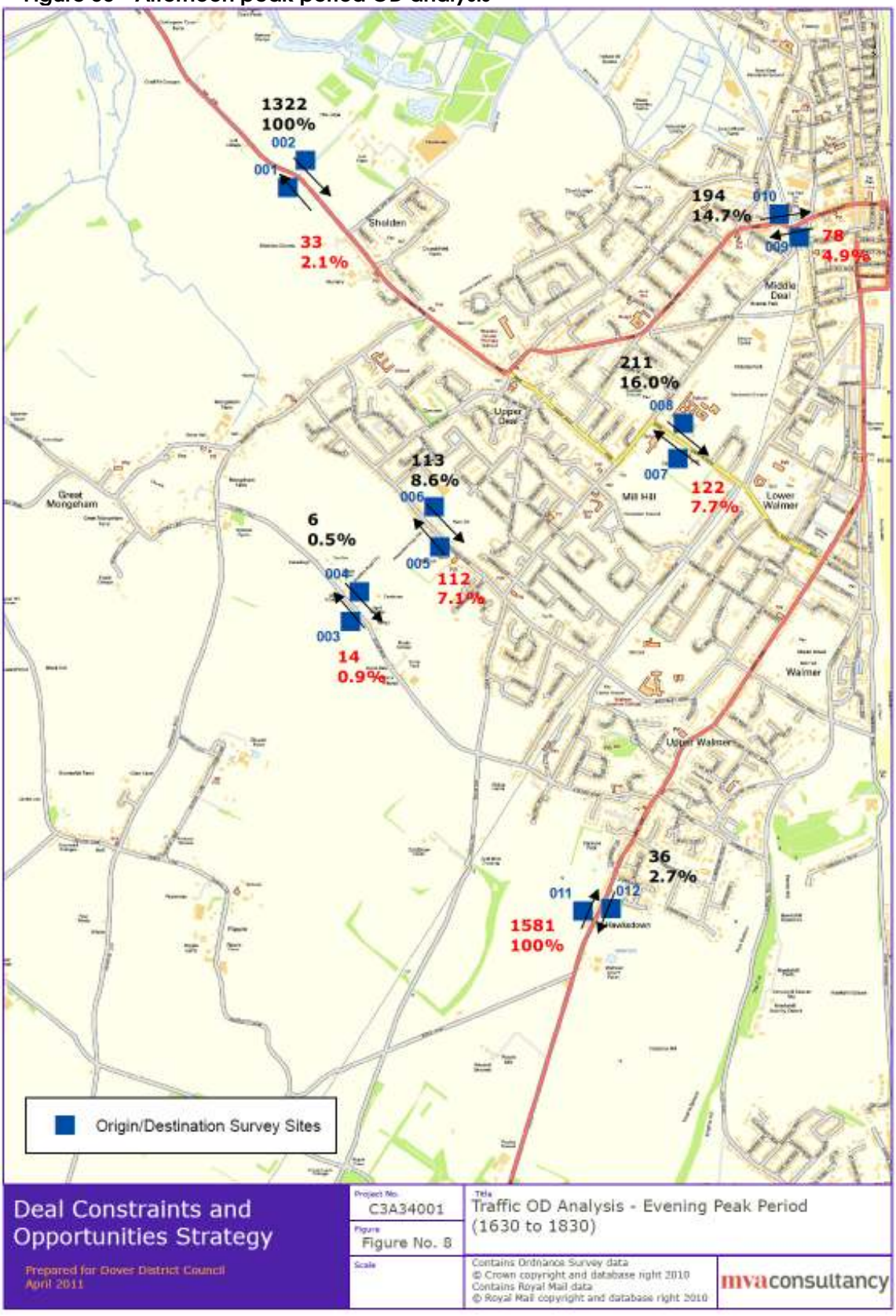


Figure 36 - Afternoon peak period OD analysis

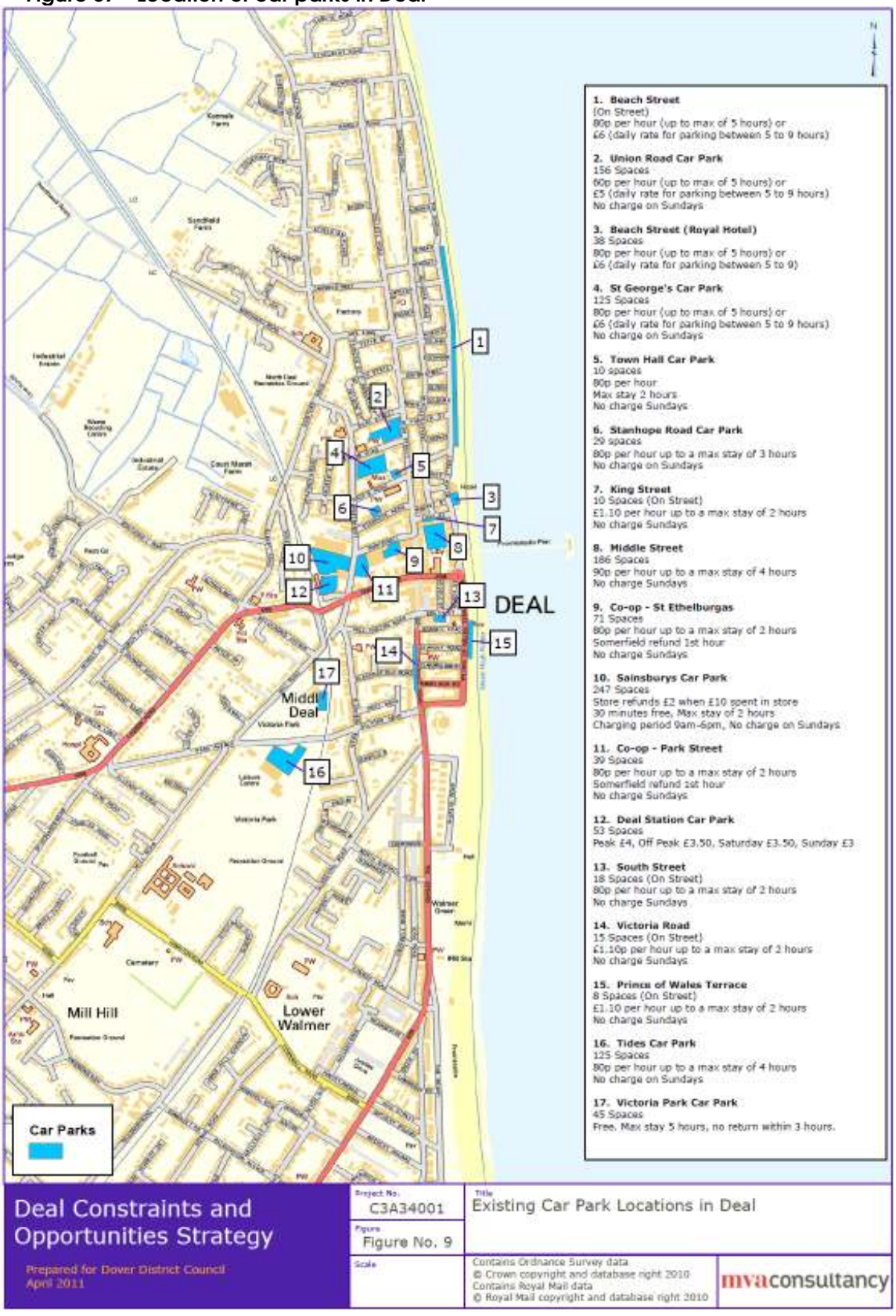


7.37 The conclusions from the OD data analysis suggest that the majority of traffic travelling into Deal distributes itself across the internal highway network adding stress to the local roads, although there is less of a problem with through traffic rat running.

Car Parking

7.38 Figure 37 shows the location of existing on and off street car parks together with details of their parking supply and charging regime. Parking provision for Deal is mainly concentrated within a relatively tight area close to the town centre and along the coast at Beach Street and The Marina. The total parking supply within the town is approximately 1300 spaces with the majority (around 800) intended for shorter stays, i.e. parking is only allowed up to a maximum of between 2 and 5 hours depending on the specific car park. The remaining 500 spaces are available to drivers to park their vehicles for the longer periods (all day or up to 9 hours).

Figure 37 - Location of car parks in Deal



7.39 Discussions during the Phase 1 Stakeholders Workshop suggested that Deal currently experiences high levels of parking demand and it's often difficult to find a parking space within the town during peak periods.

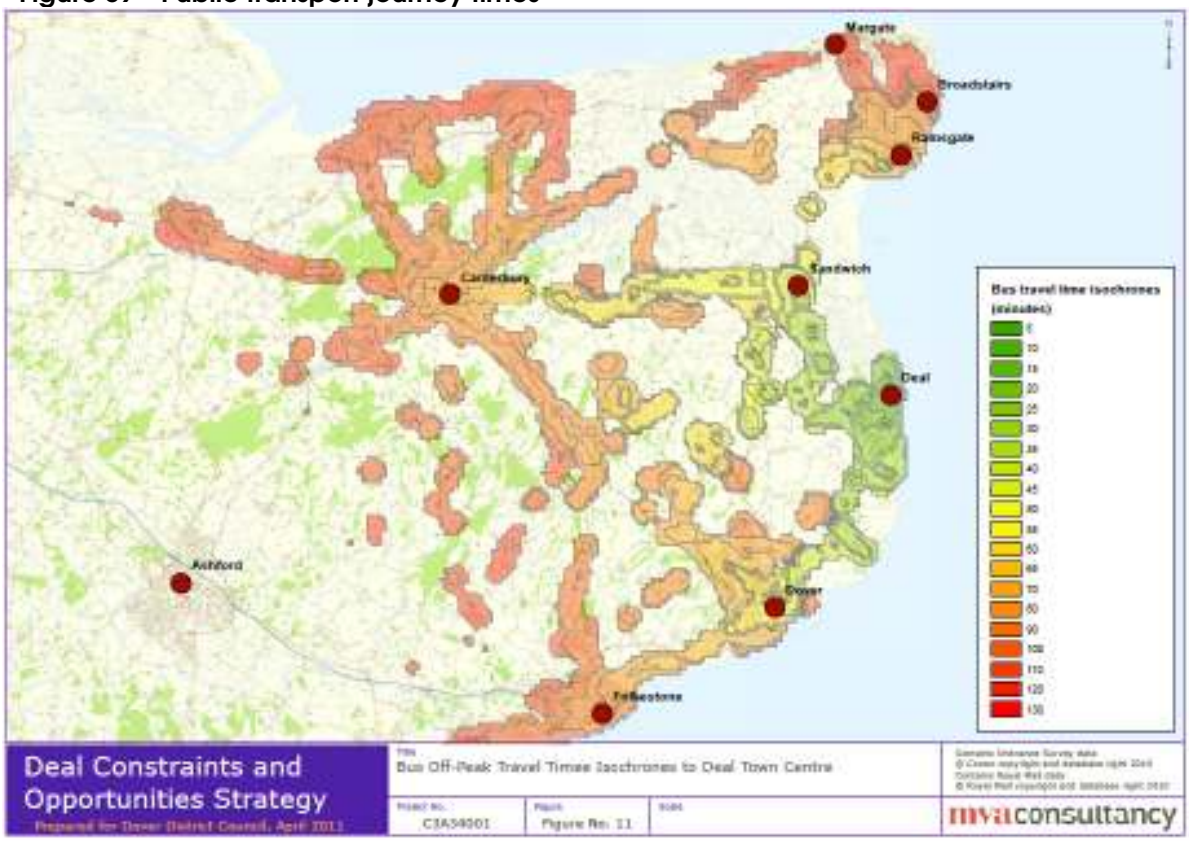
Public Transport Services

7.40 Figure 38 shows the current bus services provided within the town and surrounding area. These services provide links with the town's centre to its outskirts as well as routes to neighbouring areas such as Dover, Sandwich and Canterbury. The services run on a commercial basis and currently operated hourly, except for the half hourly 15/15A service between Deal and Canterbury. Discussions with the bus operator Stagecoach at the Phase 1 Stakeholders Workshop indicated that a new bus route serving a new development site within Deal is unlikely to be commercial viable.

Figure 38 – Existing public transport bus services

7.41 ACCESSION analysis has been undertaken to provide an understanding of the current accessibility by Bus between Deal Town Centre and other key locations within North and East Kent during off peak periods. These journey times allow for an average walking time to the bus stop, average waiting times, bus frequencies and bus transfer times. The analysis, which is shown in Figure 39, indicates that it takes approximately 45 minutes to travel between Deal and Sandwich and a similar journey time between Deal and Dover. Other areas such as Folkestone, Canterbury and Ramsgate take around 90 minutes, 80 minutes and 60 minutes to travel to and from Deal respectively.

Figure 39 - Public transport journey times



7.42 All bus services within Deal terminate in the town centre at South Street. Given its town centre location, the bus terminus shares existing road space with a taxi rank located the other side of the road and other vehicles travelling though or stopping close to the shops for pick up and/or drop off.

7.43 Discussions at the Stakeholders Workshop suggested that the quality of bus services available to the local community within the town and surrounding area is mixed. Bus frequencies on most routes are only hourly, the location of certain bus stops in and around the town centre are poor, the terminus in South Street lacks bus passenger focus and there is limited bus accessibility to employment areas such as Dover and Whitfield.

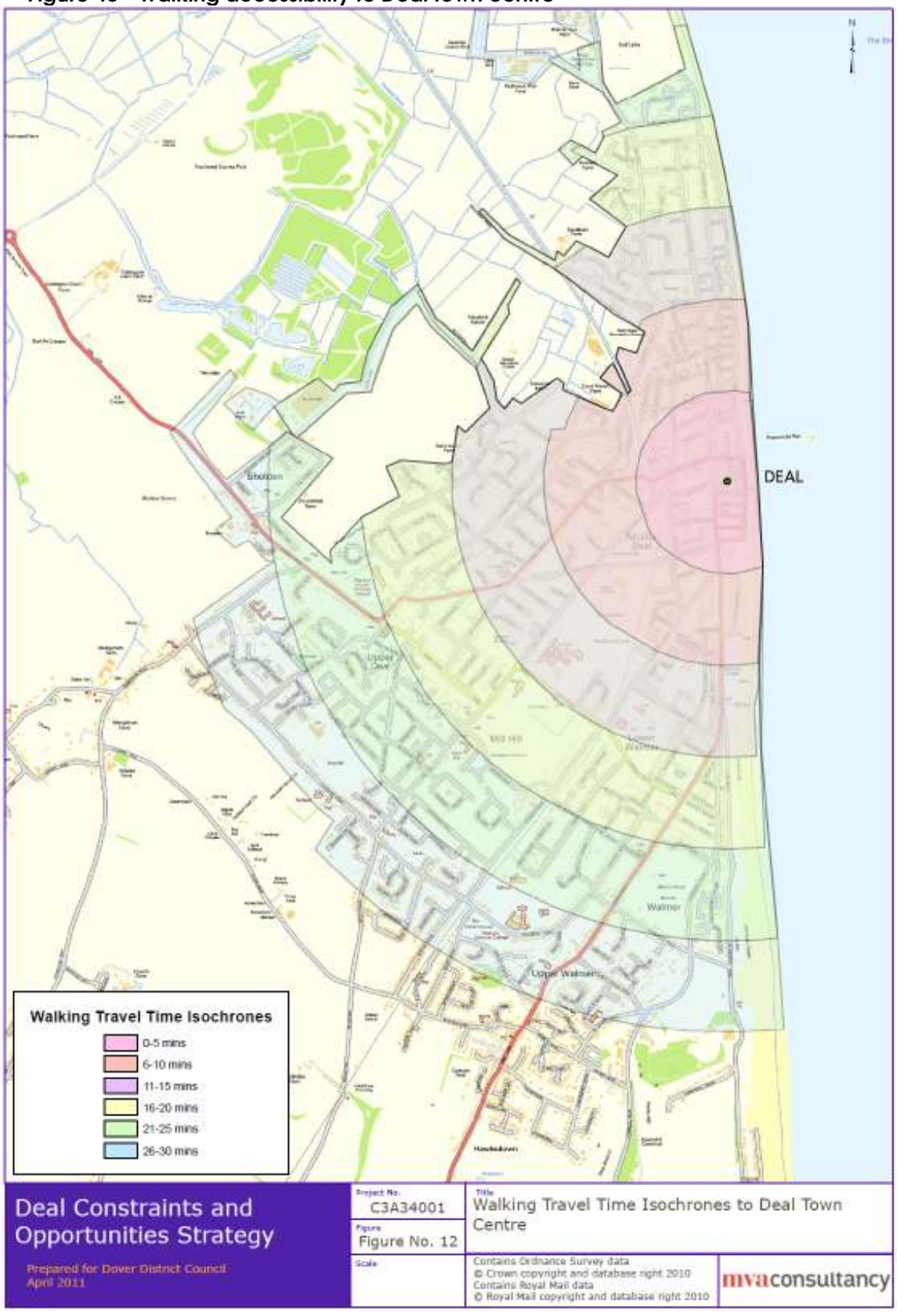
7.44 The bus operator has however indicated that in recent years there has been some growth in the number of passengers carried on most bus services in the Deal area. The most viable services tend to be the inter urban routes and there are emerging plans for a new service connecting Deal to Whitfield and Canterbury.

7.45 Figure 38 also shows the current rail services provided for Deal. There are two rail stations, namely Deal and Walmer which provide up to four train services per hour between London Charing Cross, Tonbridge, Ashford International, Dover and Ramsgate. High Speed 1 services are also available via changing at Dover mainline station.

Walking and Cycling

7.46 Figure 40 highlights the current walking accessibility to Deal Town Centre from the surrounding local area. This analysis indicates that Middle Deal is just over 5 minutes walk, Upper Deal and Walmer up to 25 minutes and Sholden and Upper Walmer within 30 minutes walk. It should be noted that these journey times are based on an average walk speed of 4.8 km per hour in accordance with the Department for Transport Guidance. However, it is also acknowledged that given Deal's current age demographic some local people are likely to have a slightly slower walking speed.

Figure 40 - Walking accessibility to Deal town centre

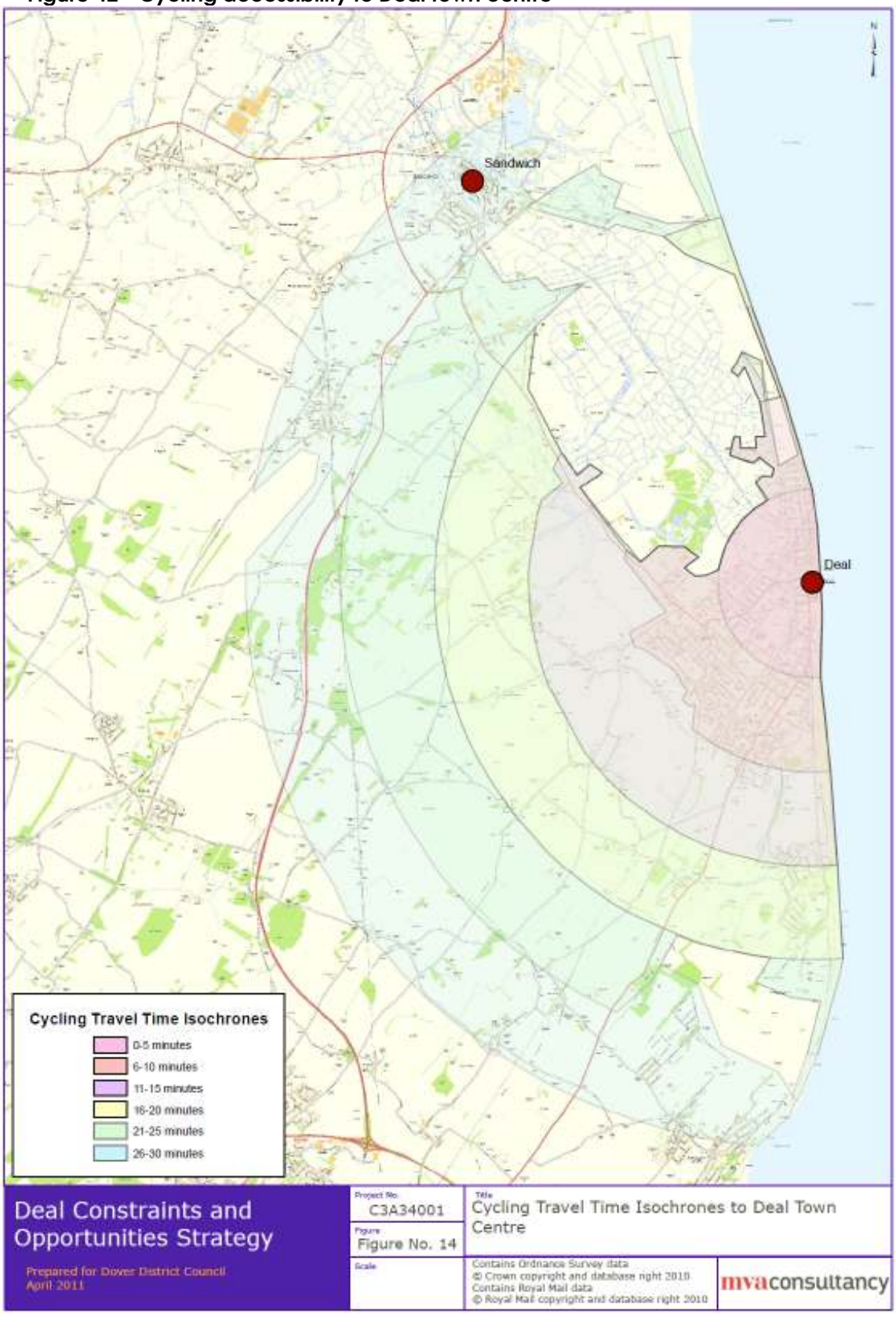


7.47 Figure 41 shows details of existing cycle routes and cycle parking within the town and surrounding area. Deal has one long distance cycle route (National Cycle Route 1) which runs along the costal footpath and Beach Street. Other local routes include along the A258 London Road between Sholden and Bridge Hill, between Upper Walmer and Middle Deal and between Sholden and the town centre via Church Lane.

Figure 41 - Existing cycling routes and parking

7.48 Figure 14 shows current cycling accessibility to Deal Town Centre from the surrounding local area. This analysis indicates that the majority of the Deal's urban area is within 10 minutes cycle ride from the town centre, while other areas such as Great Mongeham and southern areas of Walmer are around 10 to 15 minutes journey time.

Figure 42 - Cycling accessibility to Deal town centre



7.49 It is considered that while some of the cycle routes are of good quality, particularly along the Coast and Telegraph Road, cyclists within the town suffer from a fragmented network and lack of cycling facilities at some locations.

7.50 This is also the case particularly in North and Middle Deal where there are some existing routes, but a relatively under-developed local cycle infrastructure.

CYCLING IN DEAL

7.51 Deal is ideally suited to develop cycling as a compact and fairly flat town, with a vibrant local centre, attractive coast and adjacent countryside, and relatively low levels of traffic compared to other parts of Kent.

7.52 The local Cycle Forum has observed that the three off-road cycle routes are particularly effective in encouraging use by everyday cyclists of all age groups:

- Along the seafront (NCR1),
- From Telegraph Rd to Victoria Park,
- From Southwall Rd to Fowlmead Country Park.

7.53 Counts by Kent Highways indicate an increase in cycling in Deal to around 8% of local journeys. 2001 Census indicated about 3-4% cycle to work.

7.54 The present network of paths and signed routes is fragmented, particularly in the town centre and by the limited number of safe crossing places on the busy A256.

7.55 There is scope for encouraging considerably more leisure cycling and cycling to school and work by developing the next stages of the local Cycling strategy:

- A cross route linking Deal station with North Deal, Victoria Park and the town centre/seafront;
- Off-road cycle routes from new housing areas (Middle Deal and Sholden) to the town centre and station;
- Off-road leisure routes from Deal to Sandwich via Fowlmead.

7.56 This would link existing and proposed employment areas and secondary schools with main residential areas.

7.57 The local Cycle Forum is pressing for a town-wide 20mph limit to encourage cycling and pedestrians through safer streets.

7.58 Pfizers as a major local employer encouraged cycling to work via NCR1 and linking local routes. In future, the fragmentation of employment on the Discovery Park site will require more intervention to encourage new employers to work together to promote modal shift.

Baseline Transport Conclusions

7.59 Finally this review of baseline transport conditions within Deal has been used to build a transport SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis, which summaries the current and possible future situation for the town and associated transport risk. This transport SWOT analysis is set out in Table 7 - Transport SWOT Analysis.

Table 7 - Transport SWOT Analysis

Strengths	Weaknesses
• Given its relative size and population, Deal has good rail accessibility with two local rail stations at Deal and Walmer, although there is a lack of direct high speed services. • Deal has good car accessibility particularly during off peak periods of the day to neighbouring towns and cities such as Dover, Sandwich, Folkestone, Canterbury and North East Kent region. • Deal has a good coverage of bus routes with most residents within walking distance of the existing bus network. • Surrounding areas such as North and Middle Deal, Mill Hill, Sholden and Walmer are all within reasonable cycling distance of the town centre.	• Drivers currently experience traffic congestion hotspots during peak times at local access points to the A258 (A258 London Road / B2056 Manor Road, Mongeham Road's approach to London Road, Station Road approach to A258 Dover Road and A258 Queen Street / West Street). • Heavy car based work commuting from Deal puts pressure on the capacity of some highway movements and junctions. • Bus service frequencies are generally poor with the majority of routes providing only an hourly service. • The bus hub with the town centre (located along South Street) has deteriorated in recent years with conflicts with other uses such as taxi operations. • Local cycle routes are fragmented with routes not forming a continuous network within the town as a whole, North and Middle Deal, and the surrounding area.
Opportunities	**Threats**
• Potential for construction of new access	• Increase in traffic on the A258 and local

roads to service new developments in North and Middle Deal and to bypass local congestion hotspots such as London Road-Manor Road. • Limited improvements to some existing junctions could provide relief to congestion. • Local improvements to cycle routes and facilities to encourage more cycling, particularly between the town centre and surrounding areas.	network as a result of new developments in North and Middle Deal, within the wider growth context of Deal as a whole. • Potential future vehicle rat-running on local roads such as St Richard's Road and Ellens Road to avoid traffic congestion hotspots. • Given the local constraints (including Conservation Areas) it would be difficult to provide additional future capacity at some of these congested hotspots (particularly at the London Road / Manor Road junction). • Demand for town centre car parking is likely to increase with additional development in North and Middle Deal.

Potential strategic mitigation options

7.60 The above SWOT analysis provides the grounds for formulating appropriate responses to address the identified constraints. These options range from localised junction improvements through to the provision of new strategic road links.

7.61 Given many of the key junctions are constrained by the tight urban form of Deal or, in the case of the key Manor Road-A258 junction, lie within a Conservation Area the range of options for junction enhancements are relatively limited.

7.62 The provision of new strategic routes however does present a range of options for the scale and location of new infrastructure. These options have been informed both by Dover District Council and our own understanding of the constraints facing Deal.

7.63 Within Appendix E we undertake a strategic review of each potential option, highlighting the opportunities its presents, how it addresses the identified constraints, and any other disadvantages.

7.64 The outcome of this analysis indicates that significant 'by-passing' of Deal is unlikely to address constraints (which are primarily driven by 'internal' movements not through traffic) and therefore be of limited benefit to reducing existing congestion.

7.65 Similarly, providing new links to the A256 is also likely to be of limited benefit, again not tackling the cause of congestion and duplicating connections which already exist, thus providing marginal benefits in transport terms at a relatively high cost.

7.66 The most beneficial interventions will be those which are closely allied to improving movement close to Deal, and in particular North Deal. Routes which enable residents to access North/Middle Deal without negotiating the town centre are likely to improve conditions on the existing network.

7.67 In particular routes which provide alternative routes to access North and Middle Deal to the east and west of the A258 has the potential to relieve pressure on junctions further along the A258 within Deal, such as the London Road-Manor Road junction. This will principally be a result of residents in this part of Deal having alternative opportunities for exiting and accessing the area from the north.

7.68 These routes would principally link the A258 to Southwall and potentially beyond the rail line to Golf Road. This would relieve pressure in the narrower streets of North Deal and also, potentially, improve access to the Golf Course.

7.69 It is this level of intervention, alongside upgrades to the existing network and junctions, which forms the basis of our mitigation recommendations and provide the foundation for more detailed testing in this and later Phases of the project.

8. Future change

8.1 The previous chapters have considered the challenges facing Deal based on the current population level and urban area. It also identifies where existing conditions may be affected should the town grow in the future and, therefore, where additional mitigation may be required beyond the interventions to tackle existing issues.

8.2 As highlighted in chapter two and the Core Strategy, it is expected that Deal will grow and change in the future, both in terms of the physical and demographic size of the town. There will also be a change to the 'threats' and constraints it faces.

8.3 It is therefore important to understand how these changes are likely to occur and the impacts they may have on Deal. As Figure 43 shows, it is possible to consider the future in two ways.

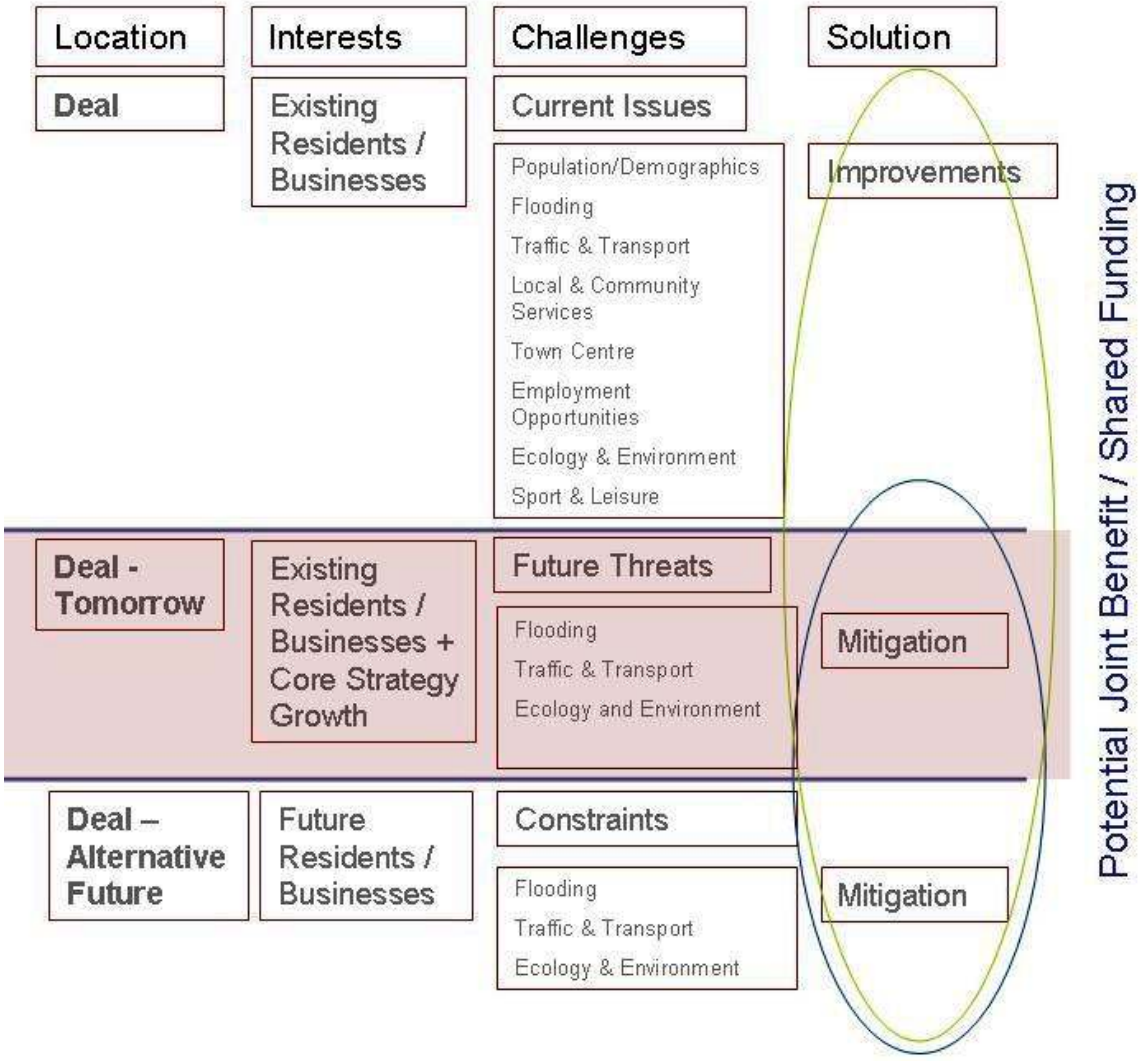
Deal Tomorrow

8.4 The Adopted Core Strategy identifies the parameters of growth within Deal between 2006 and 2026. It recognises the need to accommodate 1,600 new homes alongside increased retail and commercial floorspace provision.

8.5 The level of growth identified within the Core Strategy is expected to be delivered within the current infrastructure framework and environmental conditions. It is likely that the level of growth will take up much of the remaining capacity within Deal, but is not targeted specifically at addressing any of the key issues, future risks or threats to the town.

8.6 Addressing these future threats will require mitigation intervention over and above that identified within the Core Strategy, both to meet physical infrastructure needs and address demographic shifts and their impact on local services and economy.

Figure 43 – Deal Tomorrow



Population and Demographics

8.7 The allocation of 1,600 new homes within Deal has been *"geared around meeting local rather than strategic need"* (DDC Adopted Core Strategy, 2010, Pg. 39) suggesting that any future development will be focussed on delivering housing for existing residents rather than in-migration.

8.8 To understand the need for new housing based on indigenous housing growth KCC prepared a 'zero net migration' demographic model[17]. The model outputs estimate that by 2031 the Deal population will have decreased by 600 people, or 1.8%, from the 2006 level. However, over the same period the number of dwellings is expected to rise by some 1,300 units, or 9.3%.

8.9 This housing requirement is driven by two factors. Firstly the average household size has been falling within Dover and Kent in line with national trends. This creates significantly more single person households than has historically been the case, mainly as a result of less co-habiting by young people, increased divorce rates and greater longevity and independent living into old age.

8.10 Deal is expected to experience a higher shift towards an aged population than Dover District more widely. The KCC demographic forecast predicts that by 2031 44% of the population will be over 60, with 13% of the total population over 80.

8.11 This shift will have implications for the town. A larger proportion of older age groups will generate a different type of housing need over the long term, with a likely requirement for supported housing to be provided. Also with a lower 'turnover' of market housing there are likely to be shortages of supply within the wider market because older aged people remain in their own homes. With a potential increase in 'downsizing' activity this may drive a greater need for new housing, particularly smaller units, and create further competition for first time buyers.

8.12 An aging population may also have ramifications beyond housing need; particularly as the working age population could contract significantly having implications for the ability of local businesses to source labour locally. With decreased economic activity the viability and vitality of the town centre may also suffer from a reduction in the available disposable income residents have to spend in local shops. Additional housing is required to meet the needs of a greater number of households, while also ensuring a more sustainable demographic balance accommodating working age households.

[17] Demographic Forecasts: Dover District Council April 2010, Kent County Council

Flooding

8.13 It is expected that sea levels will rise over the plan period; this will reduce the effectiveness of the current flood defences and increase the geographic area of Deal susceptible to flooding as well as increasing the severity of any incident in areas of existing risk.

8.14 The analysis of flood risk in 2017 shows that maintaining the coastal defences in their current condition will provide less protection to Deal over time, increasing the risk of flooding and exacerbating the current reported issues of cost and availability of insurance. This increased risk will be driven by the effects of climate change and rising sea levels, therefore reducing the effectiveness of the current level of protection.

8.15 Therefore to maintain the current standard of protection for the town at today's level will require investment to strengthen the existing defences, particularly the shale embankment to the north of Sandown Castle. This level of investment will not provide an improvement or increased standard of protection over current conditions for existing residents. Flood risks faced by residents would be stabilised rather than reduced.

8.16 Only significant improvements to the current defences will be sufficient to fundamentally increase the standard of protection and reduce the level and extent of flood risk or remove parts of Deal from flood risk altogether. The Environment Agency has undertaken an initial consultation on an improvement scheme which would include:

- Construction of a low wave wall between the Royal Hotel and Deal Castle;
- Increasing the shingle volume on the beach and maintain by annual redistribution; and
- Additional rock to strengthen the beach just north of Sandown Castle.

8.17 The development of the improvements is at an early stage, as yet no detailed specification or costing has been completed. Neither the EA nor other government sources have committed funding to deliver the improvement scheme. However, based on our understanding of the new EA approach to funding, discussion with the EA indicates that schemes without some form of development contribution to the scheme costs will not score so highly in their assessment. As such it is unlikely that a scheme requiring 100% funding from the EA would be approved.

Traffic and Transport

8.18 Even with a stationary or modest fall in the population of Deal it is likely that traffic levels will continue to rise in the future in line with continuing trends in car ownership and a lack of any significant improvements to the public transport network. Similarly the closure of Pfizer may alter the trip destinations of residents for work, creating or alleviating congestion in certain locations (although this may be offset if the Betteshanger Business Park is delivered).

8.19 The Highway Authorities have not identified any significant investments or improvements that will be made within Deal in the future to the highway network, the current level of infrastructure will remain the same with no new roads to be built.

8.20 There are likely to be a series of minor investments to improve the management and safety of the A258 alongside minor, localised improvements to certain junctions – particularly where growth will be located.

8.21 These small-scale interventions are unlikely to make significant improvements to the current issues felt by residents, although the junction modifications may improve the flow at key junctions.

Local and Community Services

8.22 Changes to the demographic profile of the town are likely to alter the demand for and provision of services within Deal. Not only will the need for supported housing increase it is likely that pressure on other services aimed at older people will increase.

8.23 Conversely services aimed at younger people may experience a fall in demand which could put at risk service provision within the town. Significant falls in younger age groups may lead to further consolidation of the primary education offer within Deal, increasing the distance between school locations and existing communities.

Town Centre

8.24 The Core Strategy identifies a total retail growth potential of 18,300sqm over the Plan Period within the Deal/Sandwich trade area. This total floorspace is net of any planning

permissions granted prior to adoption of the Core Strategy and equates to 2,300sqm of convenience retail space and 16,000sqm of comparison goods space.

8.25 The Retail Need Assessment was prepared by KCC in 2007 and updated in 2008. Growth forecasts therefore do not take into account the impact of the recession and potentially over-estimate need within the plan period.

8.26 The 2008 Update used a long term growth rate for comparison goods retail expenditure of 4.4% based upon Mapinfo forecasts at the time. This rate has subsequently been revised downwards by both Mapinfo (who in 2010 forecast a short term rate of 0.3%, returning to 4.4% in 2013) and Experian (who forecast a short term rate of 1.2% to 2012, rising to 2.9% by 2018). These revised growth rates have been deployed locally by both KCC as part of LDF evidence bases in Thanet and Canterbury and to support private planning applications in Thanet.

8.27 It would therefore be prudent to consider the floorspace requirements identified within the Core Strategy to represent a 'top end' estimate which may not be fully realised until after the end of the current plan period.

8.28 The ability to accommodate additional retail floorspace within Deal is constrained in terms of both available developable land and the character of the built environment not enabling significant redevelopment to accommodate new retailers. The Core Strategy recognises these constraints and identifies the potential for out of centre locations to be tested in the Middle/North Deal area should town centre and edge of centre locations not be able to accommodate the forecast level of growth.

Employment Opportunities

8.29 The Core Strategy identifies a need for 11,500sqm of B class floorspace to be allocated within Deal over and above the existing 24,000sqm contained within unimplemented planning permissions; future floorspace should predominantly be within the B1 Use Class, with some limited B2 and B8 opportunities.

8.30 The nature of space required within Deal very much reflects the scale of activity and the existing market dynamics with potential for smaller light industrial (B1c) and small floorplate office (B1a) being the particular focus. This type of provision is important to support the

growth of indigenous small and start up enterprises in Deal which have underpinned the employment base within the town.

8.31 However, the delivery of the identified sites is still challenged by their location and subsequent access issues. In particular any extension to Minter's Yard will be tempered by the constrained residential route used to access the site.

8.32 Tourism is a key element of the economic and employment base within Deal already but potential exists to grow the sector. The current focus is mainly on day visitors, short breaks and sporting trips (principally golf and fishing) however more can be made of these and new opportunities such as cycling trips and exploiting the potential for major golf events and associated visitors.

8.33 The Royal Cinque Ports Golf Club (located to the immediate north of Deal) is a considerable attractor of visitors to Deal and the surrounding area. The course is used for Open Qualifiers and has aspirations to be included on the rota for significant national and international competitions. This is turn would increase visitor interest and trips to Deal.

8.34 At present there are some considerable barriers to the Golf Course achieving its aspirations. Visitor trips tend to be car based and therefore are required to access the Course through the urban area of North Deal; this has negative impacts on the existing residential communities. Furthermore this access route is not suitable for the significant levels of traffic which an international standard tournament is likely to generate, both in terms of servicing the tournament (which may require large vehicles) and the volume of spectator traffic.

8.35 A second consideration for improving the standing of the Golf Course is its ability to accommodate visitors. Anecdotal evidence suggests a lack of good quality visitor accommodation at or close to the Course is considered a significant barrier to maximising the Course's potential. Development of a hotel in the area is currently restricted as it lies within Flood Zone 3, which prevents 'more vulnerable' uses being delivered without upgrades to the existing flood defences.

8.36 It is clear therefore that for the range of visitor economy opportunities to be maximised specific interventions and developments will be required, ranging from new high quality visitor accommodation through to improved parking for coaches.

Ecology and Environment

8.37 The NATURA 2000 sites close to Deal are likely to continue to face recreational and urbanisation pressures, particularly where minor urban extensions are identified which bring the urban area closer to designated sites. There is also a significant risk that continued abstraction and deterioration of water quality will worsen the condition of the RAMSAR site in particular.

8.38 Mitigation and attenuation measures will be required to prevent any new development from adversely affecting areas of sensitive ecology, in particular providing alternative open spaces to alleviate recreational pressure.

8.39 Surface water run off will also need to be controlled, through the use of SuDs and other sustainable means, to ensure water quality is maintained within the area.

Sport and Leisure

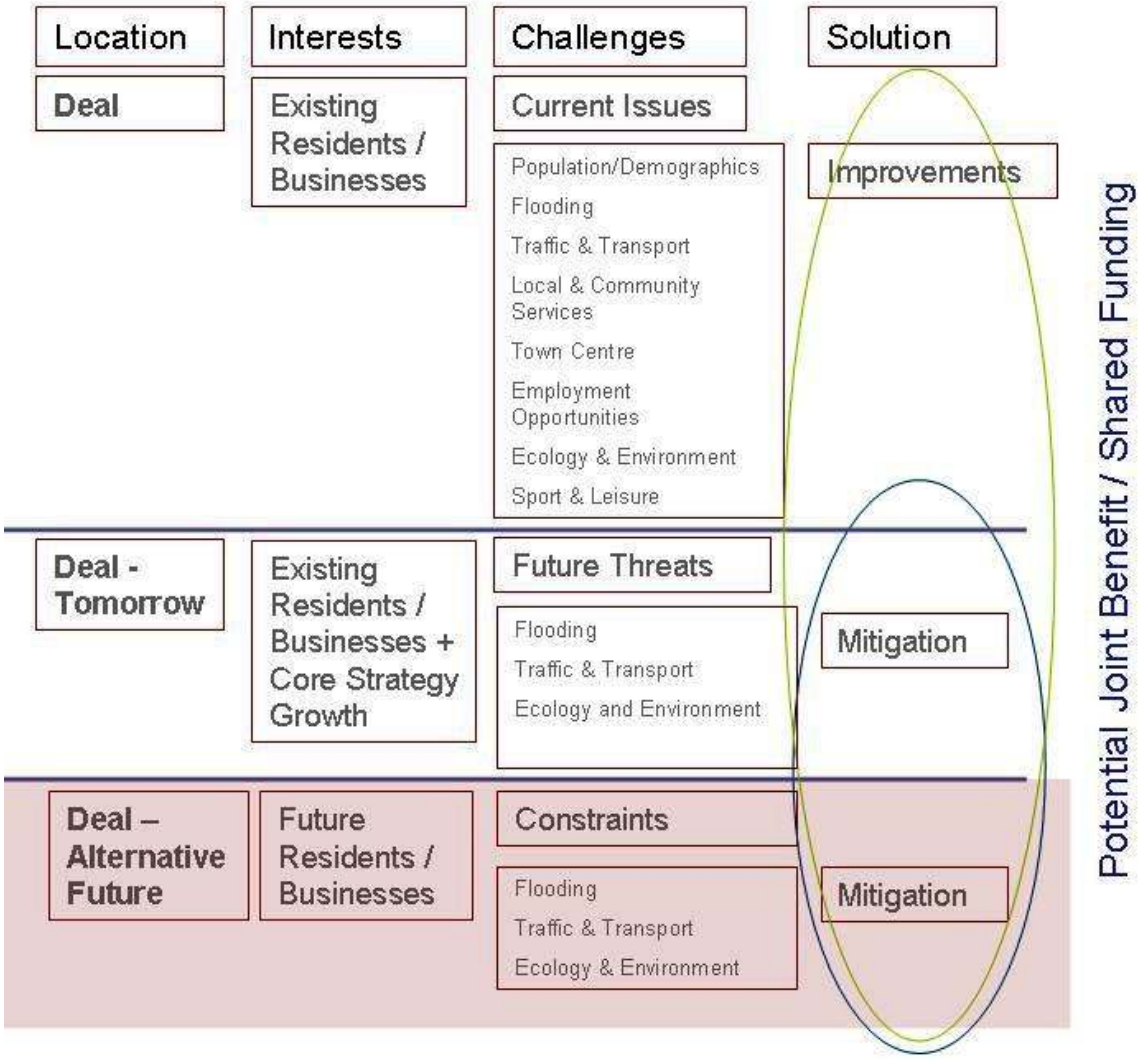
8.40 The Core Strategy, based on Sports England Sports Facility Modelling has not identified a requirement for new facilities to be delivered within Deal over the Plan Period. It does however recognise that some additional services will be required, primarily as an extension to existing activities and facilities.

8.41 This expansion of services may require some new or enhanced facilities to be provided at existing locations, such as the development of the new tennis facility at Tides Leisure centre. Further upgrading of informal leisure spaces (such as those planned under the North Deal Playing Fields Initiative) are also likely.

Alternative Future

8.42 It is clear that even without significant physical growth beyond the Core Strategy there are a range of challenges and threats which will increasingly impact on Deal over time. These are highlighted in the diagram below.

Figure 44 - Deal - Alternative Future



8.43 At this stage the baseline does not indicate any fundamental barriers to future growth beyond the Core Strategy level. However, a planned, coordinated and managed approach will be required to ensure this further growth addresses existing issues, mitigates future threats and mitigates constraints on further expansion. The scale of intervention needed to address some current issues and future threats will create capacity for further growth by alleviating infrastructure and environmental constraints on development around North Deal.

8.44 It is therefore important understand what the future constraints are in order to identify mitigation measures which can be put in place in order to ensure that there is a net benefit to existing communities. The Council will seek to ensure conditions are improved sufficiently to provide a net benefit to the town.

Population and Demographics

8.45 To understand the potential impacts of growth which responds to migration a second KCC demographic forecast has been developed in line with the over-arching spatial strategy for the District set out within the Core Strategy; this considers the impact of migration within the District. This forecast indicates an 11% (or 1,512 unit) increase in dwelling stock within the town but only a 1.4% increase in population size.

8.46 Similar to the zero migration forecast considered above Deal will witness a significant shift in the demographic profile of the population over the period to 2031, with 41% of the total population being aged 60 or above.

8.47 However it also forecasts small increases in the population younger than 10 years old and much smaller decreases in the 10-19 cohort. Larger increases in the 20 to 35 year old cohort will also help to retain a more balanced demographic structure

Flooding

8.48 As noted above reducing the level and extent of flood risk across Deal will require significant upgrading of the existing defences. The EA has begun to develop an improvement scheme in line with the scenario identified within the Shoreline Management Plan, however details are yet to be finalised and funding identified.

8.49 Alongside reducing flood risk for existing residents the delivery of an improved coastal defence is likely to create a number of development opportunities to the north of Deal where the extent of the flood risk area or the severity of risk is reduced. The scale and nature of the development opportunity would be dependent upon nature of the scheme and the effect this has on the flood risk zone.

8.50 It is unlikely that the public sector would fully be able to fully fund such a scheme given current spending limitations. Therefore it may be that the creation of new development capacity provides an opportunity to utilise developer contributions to match fund the scheme.

8.51 By releasing land for additional development some level of contribution can be captured and a scheme which benefits the existing communities by alleviating their flood risk can be delivered.

Traffic and Transport

8.52 The ability to alleviate existing peak hour congestion issues is limited through improvements to the existing network alone, especially in North/Middle Deal where the narrow street pattern and prevalence of listed buildings restrict the ability to reconfigure junctions.

8.53 The provision of new highway infrastructure in the correct locations could provide alternative routes in and out of the town for residents, reducing pressure on the existing network and junctions and improving circulation and access for the whole town. A range of initial strategic opportunities have been considered:

8.54 Given the nature of existing congestion, which is primarily driven by internal movements and residents entering/leaving the town connections which provide for through traffic will be of limited benefit to residents.

8.55 Interventions which focus on improving access to/from North and Middle Deal will provide greater benefits, providing residents with routes to avoid congested junctions (particularly when heading north) and potentially improving access for employment and leisure provision in the area, including the golf course.

Local and Community Services

8.56 There are limited planned improvements to local community services within North and Middle Deal and, like most other forms of development, the historic grain of the town in these areas limit the ability to locate new facilities within the existing urban area.

8.57 Therefore, beyond the development of a community hub at Cannon Street there is limited scope for further facilities which benefit the community to be delivered within the communities which need them. In order to provide new faciltiies that are accessible to existing residents it is necessary to investigate opportunities for locating these where they can benefit communities.

8.58 Alleviating areas from flood risk and providing improved access will create new opportunities for development of these facilities in locations which can be beneficial to existing residents and any new development.

Town Centre

8.59 In the long term there remains limited opportunities for new development within the town centre without significantly impacting its character. However, by increasing accessibility through improved public transport interchange, for example, it will be possible to increase usage and therefore maintain the existing service provision.

8.60 The more balanced demographic projection, with an increased proportion of residents who are economically active, will also help support the retail and leisure offer of the town centre through higher levels of retail spend than may be made by more elderly residents.

Employment Opportunities

8.61 In the long term it will be important to realise the commercial opportunities within Deal, and the opportunity to retain skills locally.

8.62 Given the closure of the majority of Pfizer's activity at Sandwich maximising the potential of alternative employment sites and sectors will be vital to ensure the long term health of the town. This should include the delivery of the Betteshanger Business Park but also existing and new business locations within the town alongside improvements to elements of the visitor economy.

8.63 The potential to deliver new road infrastructure to the north of Deal could provide significant benefits for existing employment locations. Depending on route alignments and extent they have the opportunity to provide new access routes to areas along Southwall Road, improving access for larger vehicles and reducing pressure on the existing network.

8.64 Improved access could have a significant benefit for the Golf Club, reducing access constraints which prevent the hosting of major tournaments and enabling it to fulfil its economic potential as a major driver of the visitor economy.

Ecology and Environment

8.65 Carefully managed future growth would need to be delivered in a manner which does not harm the existing designated sites. It can also provide the opportunity to enhance

their condition and provide additional open space to reduce recreational pressure on the NATURA 2000 sites and enhance biodiversity.

8.66 For example, the surface water drainage of new developments could be utilised to create new wetland areas close to Fowlmead Country Park. Not only would this create a new wetland habitat but also prevent surface water run off contributing further to already stretched drainage capacity.

Sport and Leisure

8.67 It is recognised that the Core Strategy does not propose any new facilities to meet needs generated by the housing growth already planned. It is therefore likely that any further growth will require some level of sport and leisure provision to be delivered within the development opportunities created.

8.68 Improvement to the Golf Course access could also help to realise its full potential, enabling it to attract larger tournaments and increasing its attactiveness to new members.

Delivery and Investment

8.69 Improving the infrastructure provision within Deal to a level which delivers improvements to the town and mitigates future threats and removes constraints on expansion beyond the Core Strategy levels will require significant levels of financial investment. The improvements required cannot be made by small scale intervention but require new, or substantially improved, infrastructure to be put in place. It is therefore likely that project specific capital funding will be required beyond committed management and maintenance revenue budgets.

8.70 Central public sector funding for significant infrastructure is becoming increasingly limited with very few sources of grant funding available which would fully fund an entire project. There is limited and declining resources within local authority and agency budgets. One exception is the recently launched Coastal Communities Fund (CCF) which seeks to redistribute 50% of the Crown Estate's revenue to coastal communities to support their economic development.

8.71 However, the CCF pot is likely to be limited (circa £18mn in its first year – 2012), with a number of communities already registering their interest in bidding for funds, this is likely to

mean individual grants will be modest. Given its level and stated aims it is unlikely the CCF could fully fund new infrastructure for Deal, however it may offer an opportunity for match funds to other sources.

8.72 Similarly the Envrionment Agency has altered the manner in which it assess proposals for new flood defences, scoring more positively schemes which benefit from contributions from business and the community to part fund new infrastructure. Future EA grant levels will be determined on a formula which takes into account three key issues, balancing the level of investment required against the 'benefit' of increased protection:

- The value of benefits for householders as a result of flood or coastal erosion risks being managed, especially in deprived areas and where risks are significant.
- The value of other benefits achieved, such as the benefits to businesses, agricultural productivity and protection for national and local infrastructure, across the whole-life of the scheme.
- The environmental benefits of the scheme, needed to maintain healthy ecosystems as well as offset any habitats lost when defences are built to protect people and property.

8.73 Based on these criteria it is likely Deal may have a strong case for receiving funding. It is the intention that the availability of alternative funding will be viewed positively and could enable the scheme to gain greater priority.

8.74 With decreasing opportunities for public funding the ability to source contributions from the private sector will become increasingly important for delivering infrastructure improvements. Traditionally developer contributions have provided a source of private funds to deliver new infrastructure, either through direct contribution or via a planning agreement (Section 106). Given the delivery of infrastructure improvements will create new development opportunities as well as alleviating current issues and future threats there is potential to capture contributions within Deal, where the two are directly linked.

8.75 The scope for using Section 106 payments is however limited, needing to demonstrate that the intervention funded is directly linked to the development itself rather than solving wider community issues. Whilst it has been possible to 'pool' contributions from developments in one area the scope for this is now limited.

8.76 Given the scale of the investment needed (even as match funding) it is unlikely that the modest scale of development opportunities that may be created could provide funding on their own. In seeking developer contributions through Section 106 or any other mechanism it will be important to ensure levels are set to achieve improvements but not threaten the viability of development.

8.77 DDC are committed to introducing a Community Infrastructure Levy (CIL) charging schedule across the District. It would be possible to include the larger, strategic infrastructure requirements within the CIL project list enabling contributions from development across the District to assist in funding their implementation.

8.78 Detailed viability testing of mitigation requirements and funding will be undertaken at a later stage of the project. At this stage, given development contributions can be considered as essential to deliver infrastructure, it is important to identify the 'tipping point' between mitigation measures and development, i.e. the point at which net benefit is created within Deal but sufficient development capacity is created to ensure infrastructure is deliverable.

9. Summary and conclusion

9.1 Interventions are required to successfully address existing issues and future challenges faced by the residents of Deal. Our analysis of the baseline conditions in Deal has not found a technical or planning basis to limit growth at current levels or at Core Strategy levels.

9.2 By improving current conditions and reduce future threats, opportunities for further housing and economic growth beyond the Core Strategy levels could be realised with further detailed investigation. Ultimately new development can be accommodated, but measures and interventions that provide a net benefit to residents of Deal as a whole will need to be made. At the same time, addressing current issues and reducing future challenges is likely to require the scale of investment associated with future potential growth.

9.3 Drawing together the range of constraints considered within Part One it is possible to categorise the severity of each and therefore identify the level of mitigation intervention required to enable future growth in North and Middle Deal. This baseline is consistent with that used for the SA and HRA and the issues and mitigations identified are in alignment.

9.4 The identified levels of mitigation are intended, firstly, to address the current constraints and improve conditions for existing residents. However, given the scale of intervention required to address some of the issues, each strategic mitigation is likely to create new opportunities which can be realised without reversing the positive benefits of intervention.

9.5 Table 8 below draws together the findings of the Baseline and sets out whether constraints:

- are considered to be so significant they are not able to be mitigated;
- are significant but can be mitigated with strategic, large scale intervention principally involving new infrastructure provision;
- are less severe and can therefore be mitigated with more modest, local scale interventions or upgrades; or
- do not exist and therefore do not require specific mitigation measures

Table 8 - Summary of constraint severity

Domain	Factor	Mitigation not Required	Localised Mitigation	Strategic Mitigation	Non-Mitigable
Transport	Highway			●	
	Public transport services		●		
	Cycling and pedestrian			●	
Landscape	Topography		●		
	Landscape character		●		
	Views & vista		●		
Flooding & drainage	Tidal			●	
	Groundwater		●		
Ecology	Statutory designation – European			●	
	Statutory designation – National			●	

Domain	Factor	Mitigation not Required	Localised Mitigation	Strategic Mitigation	Non-Mitigable
	Non-Statutory				
	Species				
Other environmental	Air quality				
	Contaminated land				
	Archaeology				
	Ground Stability				
	Heritage Assets				

9.6 As shown in the table above, the baseline has not identified any absolute constraints that cannot be mitigated in North and Middle Deal. Whilst flood and transport constraints are more acute compared to the other factors, the baseline indicates that a strategic level of intervention can overcome these to reduce their impact and create opportunities which benefit existing communities.

9.7 What is clear from Table 8 is that some significant interventions will be required to tackle the greatest constraints. It is unlikely that these can be delivered solely from the public purse or from contributions from small, isolated developments. Therefore a more holistic view of the link between mitigation and new opportunities needs to be taken to enable appropriate levels of intervention to be realised.

9.8 In order to understand this relationship Part Two of this report considers a range of mitigation and opportunity scenarios, testing the balance between the varying levels of mitigation that could be put in place and the opportunities these create.

9.9 From these scenarios an approach can be developed which enables mitigations to be put in place for the benefit of existing residents but also creates opportunities for growth which can contribute to infrastructure delivery and can come forward without worsening the existing situation.

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PART TWO – MITIGATION & OPPORTUNITY SCENARIOS

10. Identifying & assessing mitigation & opportunity scenarios

Introduction

10.1 The previous sections have established the baseline issues, challenges and constraints facing Deal today and in the future, with a particular focus on the North and Middle Deal area. It highlights the current issues, future challenges and potential constraints alongside an initial analysis of the potential interventions and mitigations required to overcome these and improve conditions within the town for existing and potential future residents.

10.2 What is clear from the baseline is that previous piecemeal development has not provided wider or net benefits to the communities of Deal and has exacerbated rather than addressed a range of strategic challenges. It is also clear that existing development commitments are unlikely to deliver significant improvements to existing conditions.

10.3 Tackling and improving current issues and future challenges by increasing infrastructure capacity and alleviating environmental conditions, would provide the potential to create new development opportunities. In some cases it will be important to link the funding of mitigation to future development in the absence of full public sector funds, where these two issues are clearly linked. By taking a more holistic view of potential interventions, and opportunities for growth they would create, it will be possible to develop a strategy that alleviates current issues and addresses future challenges.

10.4 It is the purpose of this section to establish the inter-relationship between the range of issues, challenges and constraining factors in order to identify, at a strategic level, the interventions required to mitigate constraints and define any future opportunities for growth. It will identify the range within which the 'tipping point' between mitigation intervention and new development lies, providing a basis for more detailed viability testing in future stages.

10.5 This analysis focuses solely on North and Middle Deal. Whilst there are outstanding constraints and potential opportunities within the rest of Deal and Walmer, the District Council is considering these through the Site Allocations DPD process. The Council,

therefore, is most keen to understand the additional issues facing North/Middle Deal in the long term and has focussed this Study on that particular area.

10.6 Similarly, as recognised in Part One, it is the North and Middle Deal area which is most constrained physically and would benefit most from intervention, both in terms of the mitigation benefits and the opportunity created to provide much needed community and employment infrastructure alongside housing for forecast population growth and evident affordable housing needs.

Scenarios for mitigation and opportunity

10.7 Following the establishment of the baseline we now focus on investigating in more detail the relationship between the constraints and opportunities in North and Middle Deal. A set of potential scenarios have been set up to address this, these are considered in turn.

10.8 Each scenario has been developed with the over-riding rationale that it creates a 'net improvement' for existing residents. The process has therefore been to:

- Establish appropriate mitigation measures to tackle existing constraints;
- Identify any new opportunities for growth mitigation creates; and
- Ensure the realisation of these opportunities will not cause the improved situation for residents to worsen.

10.9 This approach is also consistent with, and informed by, the Sustainability and Habitat Regulations Assessments (SA/HRA) processes, enabling consistency across the whole suite of documents in terms of how growth is considered. It also provides a suitable feedback loop to enable the outcomes of the SA/HRA to be built into further iterations of scenarios and their testing through Phase 2 of the Study.

10.10 We have developed four broad scenarios to test the required mitigations and potential opportunities. Each represents a different scale of intervention and therefore identifies a different scale of opportunity. Different types and scales of mitigation are required within each but are aimed at improving current conditions prior to progressing with new opportunities.

10.11 The precise mix of uses appropriate will be defined once a suitable range of interventions scales have been identified. As the Study moves through more detailed phases in later

stages the mix of uses, potential development sites and achievable development densities will be considered.

10.12 Based on our understanding of future constraints and their potential alleviation we have identified a broad geographic area covered by each scenario providing a different scale of opportunity for each. The potential coverage of each is set out below:

- Scenario 1 = Total area: 60ha, Core Opportunity: 15ha
- Scenario 2 = Total area: 90ha, Core Opportunity 25ha
- Scenario 3 = Total area: 120ha, Core Opportunity 40ha
- Scenario 4 = Total area: 200ha, Core Opportunity 50ha

10.13 The transport analysis and mitigations set out in this section summarise the outputs of more detailed modelling and based on an initial run of the bespoke TAM model based on the analysis of the four scenarios. These locations cover the full extent of the growth scenarios outlined below and relevant recommendations are explored under each scenario. The model outputs are contained in full within Appendix E. The Appendix also contains a review of the strategic route options considered, these have been informed by DDC and our own investigation.

Scenario 1 – Minimum opportunity and mitigation

Description

10.14 Scenario 1 encompasses land to the west of the rail line and stretches eastwards to Sholden and the A258. The area offers a series of Greenfield areas close to or abutting the north western boundary of Deal which at present are used as farmland, principally Sholden Farm and Churchfield Farm.

10.15 The area is bisected north to south by Southwall and a series of footpaths which link Deal to Fowlmead Country Park, Marsh Lane runs east-west providing the northern boundary of the areas, connecting the A258 to Southwall and beyond to Northwall Road. The area also encompasses the employment areas at Minter's Yard and Southwall Industrial Estate.

10.16 There is a significantly different character within the area to the north east of Southwall when compared to south west. The north east has a more urban fringe feel, particularly with the presence of significant residential, employment floorspace and waste facilities along Southwall itself. The open space is more 'hidden' behind these developed areas and therefore less obvious from the major roads. The south west of Southwall on the other hand has a more open aspect, particularly when viewed from Sholden and the A258.

10.17 It is worth noting that one of the Core Strategy's broad areas for urban expansion is located within the area; the site is subject to a current planning application which is still subject to determination.

10.18 The Scenario identifies a range of mitigation interventions which will be required to alleviate existing constraints and realise any further opportunities.

10.19 The total area of search is approximately 60 hectares has been assessed. The core area would be approximately 15 hectares.

10.20 Identified new route requirements are purely indicative of the direction and extent of the new access required. More detailed alignments will be considered in later phases of the project.

Opportunity

10.21 Scenario 1 provides the opportunity to create a clearly defined and attractive edge to town overlooking Lydden Valley and to improve the relationship of North Deal/Sholden to Fowlmead Country Park. This includes the potential to introduce new or enhanced green connections (particularly along Southwall) to increase patronage of the Park.

10.22 The Scenario focuses growth on a large area of land which is of relatively lower ecological or amenity value than areas further north and east and would enable growth to come forward for a mix of uses which could be integrated into the existing neighbourhood structure of Deal.

10.23 This proximity to the existing community and Deal town centre would enable growth here to contribute to the improvement of the town and help support the economic development and regeneration of key neighbourhoods.

Constraints

Transport

10.24 Development within the area identified is likely to generate moderate levels of new car trips. The existing residential highway network (Church Lane, Orchard Avenue, Southwall Road etc) is not suitable for accommodating significant increases in traffic levels and therefore even moderate increases are likely to cause some form of congestion, particularly at the A258 London Road / Manor Road junction.

10.25 Proximity to the town centre (with much of the area within a 20 minute walk time) should enable most residents to access the town centre without the need to use a private car. However, current provision may be inadequate and therefore improvements to the network will be necessary to encourage use.

10.26 Current public transport provision does not serve the area. Improvements to the public transport accessibility to the town centre will be required.

Flooding and drainage

10.27 The eastern part of the site is located in Flood Zone 3 at present. Therefore, this part of the development area should only be considered for 'less vulnerable' development such as employment, utilities or community facilities.

10.28 There are anecdotal reports about localised surface water flooding in the southern and western part of the development area during rainfall events. Therefore, extra care will be needed for the surface water management for any potential development within this area.

10.29 The low risk area of the site is developable with low intervention. A moderate to high level of intervention will be required for any development in the flood risk area. If the EA's flood defences are built as planned then the risk of flooding would then be reduced in this area.

10.30 Rising sea levels and the impact of climate change are likely to increase the potential extent and severity of flood risk across North Deal, although its impact will be limited on the area considered in this scenario.

Ecology

10.31 The area borders an area of Ramsar wetland that is designated for invertebrates associated with ditch and grazing marsh habitats. Indirect effects from human disturbance are perhaps of less concern than the area to the east of the rail line. The area itself contains patches of coastal grazing marsh (BAP priority habitat) that are of potential value for birds, possibly invertebrate and plant species. Baseline surveys of the coastal grazing marsh habitats are required to confirm the extent and value of these habitats in relation to the matrix of habitats of lesser ecological value. Some potential development areas adjacent to Deal are less constrained than for the areas further north and east and mitigation of habitat and species impacts are considered achievable.

Other environmental issues

10.32 Development in the area identified within Development Scenario 1 will need to be influenced by, and take into account, the following environmental factors:

- Filled ground, brickworks and factory, off Minters Lane;
- Southwall Road Landfill site;

- Industrial Estate off Southwall Road;
- 21 Southwall Road Landfill;
- Church Meadow Landfill;
- Waste Recycling Centre;
- Brickworks, Church Meadows.

Design

10.33 The relationship between business activities and residential development will need to be carefully considered to ensure both are able to exist without causing conflict.

10.34 Other urban design constraints which need to considered include:

- Noise from railway line and its impact on development north of Southwall.
- The relationship between development and open space.
- Limited site access to area south of Southwall.
- Potential isolation issues if appropriate links to Middle Deal cannot be established.
- Current planning application for part of the area may limit long term opportunity to create integrated communities.
- Over-development may affect the setting of Listed Buildings at Sholden and encroach on the village's character.

Mitigation interventions

10.35 The following range of interventions to mitigate constraints associated with this scenario have been identified:

Essential strategic interventions

- Transport
  - Improvements to the A258-London Road-Manor Road junction. It is expected improvements here are likely to be modest given the nature of development around the junction and the designation as a Conservation Area. However, it is expected some improvements can be made which go some way to alleviating

congestion issues and potentially improve the setting of the Listed Buildings. It is unlikely this will fully address issues at this 'hotspot'.

- Other transport pinch points will not be addressed or improved.

Flooding

- Maintain current coastal flood defences. This would restrict growth opportunities in the east of the area to 'less vulnerable' and 'water compatible uses' (as defined in Table 2). The west of the area would provide opportunities to accommodate development in any risk category.

- Ecology
  - Provision of compensatory habitats within and immediately bordering any development.
- Design
  - Deployment of appropriate SUDS within new developments.

Further 'site specific' interventions

- Transport
  - Minor junction and signal improvements within wider network at congestion hotspots.
  - Enhancements to walking/cycling routes to encourage modal shift.
  - Introduce increased frequencies, extensions of existing routes or new bespoke bus services.
  - Provision of 'green links' between the existing urban area, growth locations and Fowlmead Country Park.
- Flooding
  - Incorporate water saving technologies to minimise water usage, in particular rainwater/greywater harvesting.
  - Preventing 'more vulnerable' uses locating at eastern extremity of area.
- Ecology
  - Incorporate green spaces into development to create new green links and enhance green network.

- Design
    - Development would need to reflect the scale of existing neighbourhoods and respect key view aspects between the town and open space to the north.
    - Development which forms the edge of the urban area should provide an appropriate and attractive edge to integrate with neighbouring open space.

10.36 This option would have little or no impact on addressing the existing constraints which limit the ability for the Golf Course to improve its standing. Transport mitigation measures are unlikely to alleviate the current constrained access route whilst maintaining the flood defence level would increase the level of flood risk in the long term preventing the development of visitor accommodation.

Potential Impacts on Existing Communities

- Localised improvements to existing road network
- Improved 'green links' to Fowlmead Country Park
- Impact of climate change and rising sea levels increases flood risk

Scenario 2 – Low opportunity and mitigation

Description

10.37 Scenario 2 extends the area of Scenario 1 further north towards Fowlmead Country Park and east towards Northwall Road. The area could also 'wrap' around the east of Sholden village and would extend east to the current open space between the rail line and Northwall Road.

10.38 Given the large overlap with Scenario 1 we provide analysis of the key constraints and opportunities presented by the extended areas, these should be viewed as additional to the issues highlighted above. The consideration of mitigation requirements at the end of the section encompasses the full mitigation needs for delivering this scenario, including those for Scenario 1 and those specific to Scenario 2.

10.39 All of the mitigations identified in Scenarios 1 and 2 will be required to alleviate existing constraints and to enable future opportunities to be realised.

10.40 A total area of search covering approximately 90 hectares has been assessed. There is a core opportunity area within this which would cover approximately 25 hectares.

10.41 Identified route requirements are purely indicative of the direction and extent of the new access required. More detailed alignments will be considered in later phases of the project.

Opportunity

10.42 The extension of the area to the north and east offers the opportunity to create a clear and well defined edge to the town, improving the relationship between the urban area and the Lydden Valley. The delivery of high quality development would potentially improve the view of the town from Fowlmead Country Park with the option to redefine the urban edge.

10.43 The area will provide opportunities for easy walking and cycling to/from the town centre and railway station as well as providing some high quality development within walking distance of the golf course and marshes to the north of Deal.

10.44 Proximity to existing neighbourhoods provides opportunities for new homes to be conceived as an extension to established neighbourhood and therefore provide support to existing community facilities and the option to introduce new accessible facilities if required.

10.45 By sustaining the current level of flood protection there may be opportunities to enhance the visitor accommodation linked to the Golf Course given the south eastern corner of the Course (south of the Clubhouse) will be removed from the 1 in 200 year flood extent.

Constraints

Transport

10.46 Development is likely to generate high levels of new car trips given the scale of potential growth. This will be particularly acute at peak times, and be experienced both in the immediate vicinity and further along the network.

10.47 The existing residential highway network (Church Lane, Orchard Avenue, Southwall Road, etc.) is not wholly suitable for accommodating significant increases in traffic levels. The local highway network is narrow in places and there are limited opportunities for significant highway mitigation measures. Significant congestion is likely to occur along Middle Deal Road and the A258 London Road / Manor Road junction.

10.48 For Development Scenario 2 to be delivered, new highway capacity is required. This will require a new direct access road and junction on to the A258 linking through the area to North Wall.

10.49 Currently walking and cycling provision is inadequate as is the public transport service to the area. Neither are suitable at present to encourage any level of modal shift from car. However, major transport nodes are relatively close; therefore an improvement in infrastructure and service should facilitate change in behaviour.

Flooding and drainage

10.50 The area to the east of the rail line is located entirely in tidal Flood Zone 3 and not suitable for any new vulnerable development. However, 'less vulnerable' and water compatible development is permitted in this area after fulfilling certain safety measures, these uses

would include commercial floorspace, utilities, community infrastructure, recreation and open/amenity space.

10.51 Rising sea levels and the impact of climate change are likely to increase the potential extent and severity of flood risk across North Deal, although its impact will be limited for the majority of the area considered in this scenario.

10.52 Essential infrastructure and 'more vulnerable' development can also be allowed providing that the site passes the Exception Test. However, based on the adopted Core Strategy and the SFRA it is unlikely that the site will be allowed for 'more vulnerable' development. For example the SFRA has considered two Brownfield sites at Cannon Street and land north of Ark Lane for 58 dwellings but the likelihood of passing the Exception Test is stated as low.

10.53 Surface water runoff management can be considered crucial within this area due to the location and lack of capacity of the existing sewer network.

Ecology

10.54 Parts of the area required to deliver this growth scenario border European Designated Sites that are of international value and sensitive to human disturbance. The sites are of restricted access and limited to Public Rights of Way with the exception of the SPA foreshore habitat.

10.55 Indirect impacts may be subject to Appropriate Assessment if judged that there are likely significant effects on any of these Sites. Development would only be possible with high levels of intervention.

Other environmental factors

10.56 Scenario 2 does not bring into consideration any other environmental factors beyond those identified within Development Scenario 1.

Design

10.57 Development layout needs to take into account the rail line and ensure appropriate noise attenuation measures are in place.

10.58 The rail line presents severance issues between the opportunities created either side of the rail line, development design should seek to overcome this issue.

10.59 Development at key access points needs to be sympathetically designed in order to minimise disturbance from traffic.

Mitigation

10.60 The following range of interventions to mitigate constraints associated with this scenario have been identified:

Essential strategic interventions

- Transport
  - New link road to north of Deal connecting the A258 to Northwall Road. This will reduce pressure on key 'hotspots' such as London Road-Manor Road and West Street-Queen Street by providing alternative access and egress points to the north.
  - Improvements to the A258-London Road-Manor Road junction. It is expected improvements here are likely to be modest given the nature of development around the junction and the designation as a Conservation Area. However, it is expected some improvements can be made which go some way to alleviating congestion issues and potentially improve the setting of the Listed Buildings.
- Flooding
  - Improvements to coastal flood defences to 'sustain' existing levels of protection. This would enable a greater range of 'more vulnerable' uses (as defined in Table 2) to be developed immediately west of the rail line but development types to the east of the rail line would remain restricted to 'less vulnerable' or 'water compatible' uses.
  - The 'sustain' level of improvements would also negate any impact from forecast climate change and sea level rises.
- Ecology
  - Environmental 'buffer zone' for protection and enhancement of Ramsar site.
  - Provision of compensatory habitats to act as a buffer between the development area and Fowlmead Country Park, particularly around existing bodies of water.

- Design
  - Deployment of appropriate SUDS within new developments.

Further 'site specific' interventions

- Transport
  - Minor junction and signal improvements within wider network at congestion hotspots.
  - Enhancements to walking/cycling routes to encourage modal shift.
  - Introduce increased frequencies, extensions of existing routes or new bespoke bus services.
- Flooding
  - Incorporate water saving technologies to minimise water usage, in particular rainwater/greywater harvesting.
  - Preventing 'more vulnerable' uses locating east of the rail line.
- Ecology
  - Incorporate green spaces into development to create new green links and enhance green network.
- Design
  - Development would need to reflect the scale of existing neighbourhoods and respect key view aspects between the town and open space to the north.
  - Development which forms the edge of the urban area should provide an appropriate and attractive edge to integrate with neighbouring open space.

10.61 This Scenario would provide some limited benefits to the Golf Course by removing some traffic from the existing network onto a new access route to the area north of Deal. The new access could also provide an opportunity for the Golf Course to extend the road link over the rail line to serve the Course, without having to build/fund the whole link to the A258 themselves.

10.62 Sustaining the flood defences will provide some level of flood alleviation around the Course, however it is unlikely to be significantly improved in order to enable the development of a hotel, which is considered a 'more vulnerable' use.

Potential Impacts on Existing Communities (over and above Scenario 1)

- New access road from A258 towards Northwall Road
- Retention of current level of flood protection
- Enhancement of RAMSAR site
- New habitat areas to reduce impact on NATURA 2000 sites
- Improved pedestrian/cycle links to the town centre from North/Middle Deal

Scenario 3 – Medium opportunity and mitigation

Description

10.63 Scenario 3 extends the amount area of search to the east of the rail line and north of Deal. This encompasses land between the existing residential areas to the west of Golf Road and the rail line, stretching as far north as the existing boundary of the urban area to the north of Canute Road.

10.64 The area also includes the urban extension site identified within the Core Strategy to the north of Sholden, which is the subject of an extant planning application. The area considered under Scenario 2 is included in this Scenario unchanged. The additional area is principally arable agricultural land and would offer the opportunity for 'infill' development between Lanfranc Road, the Fairway and West Lea alongside an extension of North Deal towards Kennels Farm.

10.65 The identified area provides a mix of opportunities, including the above and currently under-used employment sites and car parks. The majority of the area is greenfield land or 'infill' green space between Lanfranc Road and West Lea. A third component would infill part of the open space north of the rail line and south of Northwall Road.

10.66 A range of mitigation interventions will be required and extend beyond those identified in Scenario 2.

10.67 A total area of search covering approximately 120 hectares has been assessed. Within this a core area of opportunity, covering approximately 40 hectares has been identified.

10.68 Identified route requirements are purely indicative of the direction and extent of the new access required. More detailed alignments will be considered in later phases of the project.

Opportunity

10.69 Extending the area considered to the east of the rail line offers significant opportunities to create a compact form of development which is within close proximity to the town centre and can therefore provide a potential high quality living environment within walking distance of coast, golf course, town centre and attractive countryside.

10.70 The relationship to the existing town centre would enable new housing to contribute to the strength of the town, and help further economic development and regeneration of North Deal. The provision of new housing and other development will also contribute to diversifying the social and economic characteristics of North Deal.

10.71 The opportunity to create new housing as an extension to an established neighbourhood will also allow it to supporting existing community facilities and deliver new infrastructure, open space and links to the Lydden Valley for existing residents.

10.72 An appropriate scale and design of development can improve the setting of the town in relation to the marshes and golf course, providing a better designed and defined edge to the town. This provides the opportunity to enhance views to Deal from the Lydden Valley and Fowlmead Country Park.

10.73 There are considerable potential benefits for the Golf Course under this scenario. The improving of flood defences is likely to remove much of the Course from the Flood Zone, enabling more vulnerable uses to be brought forward in this area. The provision of a new link from the A258 over the rail line into North Deal would also improve access, removing the need for visitors to travel through the existing constrained urban network.

Constraints

Transport

10.74 Development in the additional area is likely to generate relatively low levels of new vehicle trips. Whilst the local highway network is narrow in places there are limited opportunities for highway mitigation measures and, depending on location of development, the highway network should be able to accommodate additional traffic.

10.75 The additional area to the east is relatively close to Deal town Centre which should encourage cycling and walking, however upgrades to the pedestrian/cycle infrastructure will be required to maximise uptake.

10.76 The additional area also has relatively good links to public transport infrastructure. Bus links to town centre (via Route 15A) are regular and provide good access to rail services within the town centre.

Flooding and drainage

10.77 The additional area is currently located entirely in tidal Flood Zone 3 and not suitable for any new vulnerable development. However, 'less vulnerable' and water compatible development is permitted in this area after fulfilling certain safety measures.

10.78 Rising sea levels and the impact of climate change are likely to increase the potential extent and severity of flood risk across North Deal, although its impact will be limited for the majority of the area considered in this scenario it would be particularly acute east of the railway line..

10.79 Essential infrastructure and 'more vulnerable' development can also be allowed providing that the site passes the Exception Test. However, based on the adopted Core Strategy and the SFRA it is unlikely that the site will be allowed for 'more vulnerable' development. Therefore significant development within this area is unlikely to be deliverable without improvements to the sea defences; the proposed EA improvement scheme may address this issue and will be fully tested in Phase 2.

10.80 Surface water runoff management can be considered crucial within this Scenario due the location and lack of capacity of the existing sewer network.

Ecology

10.81 The larger area to the east of the rail line borders European Designated Sites that are international value and sensitive to human disturbance. The sites with the exception of the SPA foreshore habitat are however of restricted access and limited to Public Rights of Way. Indirect impacts may be subject to Appropriate Assessment if judged that there maybe likely significant effects on any of these Sites hence the classification as developable only with high levels of intervention.

10.82 The extended area also contains areas of coastal grazing marsh (BAP priority habitat) that are of local value for birds, possibly invertebrates and plant species. Baseline surveys of the coastal grazing marsh habitats are required to confirm the extent and value of these habitats in relation to the matrix of habitats of lesser ecological value. Mitigation of any grazing marsh habitat loss would be required.

Other environmental issues

10.83 By extending the potential development area east of the rail line future growth will need to appropriately address and mitigate the presence of the sewage treatment works and landfill site on Golf Road.

Design

10.84 Growth to the east of the rail line towards the Golf Course will need to be of an appropriate scale and nature to relate to its setting as the interface with the Lydden Valley landscape.

10.85 Severance caused by the rail line will need to be overcome in order to promote east-west movement and integrate communities either side of the rail line.

10.86 Development close to the railway line would need to attenuate impacts of noise from its operation.

Mitigation

10.87 The following range of interventions to mitigate constraints associated with this scenario have been identified:

Essential strategic interventions

- Transport
  - New link road to north of Deal connecting the A258 to Northwall Road. This will reduce pressure on key 'hotspots' such as London Road-Manor Road and West Street-Queen Street by providing alternative access and egress points to the north.
  - Improvements to the A258-London Road-Manor Road junction. It is expected improvements here are likely to be modest given the nature of development around the junction and the designation as a Conservation Area. However, it is expected some improvements can be made which go some way to alleviating congestion issues and potentially improve the setting of the Listed Buildings.

- Flooding
  - Improvements to coastal flood defences to 'improve' existing levels of protection. This would provide the opportunity to locate a full range of uses east of the rail line, opening up a number of new locations to 'more vulnerable' uses (as defined by Table 2).
  - Improving flood defences would fully address any issues caused by the impacts of climate change and raised sea levels.
- Ecology
  - Environmental 'buffer zone' for protection and enhancement of SAC and Ramsar site.
  - Provision of compensatory habitats along the southern edge of Fowlmead County Park and to the east of Golf Road.
- Design
  - Deployment of appropriate SUDS within new developments.
  - Provide new southern access to Fowlmead Country Park.

Further 'site specific' interventions

- Transport
  - Minor junction and signal improvements within wider network at congestion hotspots.
  - Enhancements to walking/cycling routes to encourage modal shift.
  - Introduce increased frequencies, extensions of existing routes or new bespoke bus services.
- Flooding
  - Incorporate water saving technologies to minimise water usage, in particular rainwater/greywater harvesting.
  - Preventing 'more vulnerable' uses locating to the east of the rail line unless flood defences are appropriately upgraded.

- Ecology
  - Incorporate green spaces into development to create new green links and enhance green network.
- Design
  - Development would need to reflect the scale of existing neighbourhoods and respect key view aspects between the town and open space to the north.
  - Development which forms the edge of the urban area should provide an appropriate and attractive edge to integrate with neighbouring open space.
  - Appropriate design techniques to reduce the impact of noise from the railway line.

10.88 This Scenario has the potential to provide significant benefits to the Golf Course by providing a link across the rail line to serve new opportunities to the east. It could, therefore, provide a lower cost opportunity to extend the link into the Golf Course.

10.89 The improved flood defences could also remove much of the area around the existing Clubhouse from high level flood risk, enabling the development of visitor accommodation in the area.

Potential Impacts on Existing Communities (over & above Scenarios 2 & 3)

- Improved level of flood protection, reducing coverage and severity of flood risk
- New road access to east of rail line and improved flood defence enable golf course to maximise its potential
- New opportunities to locate new community facilities and other 'vulnerable' uses to the north of Deal

Scenario 4 – High opportunity and mitigation

Description

10.90 Scenario 4 incorporates all of the areas of search considered in Scenarios 1 to 3 alongside a further area of search to the west of the A258 which would provide an extension to the west of Deal, north of Mongeham Road, linking Sholden to the north east boundary of Great Mongeham.

10.91 Whilst there are some residential uses to the north west of Mongeham Road the majority of the extended area is currently arable agricultural land, principally Mongeham Farm and Church Farm to the west. The area to the west of the A258 is bisected by a series of footpaths linking Deal/Great Mongeham to Northbourne and Betteshanger.

10.92 A range of mitigation interventions will be required and extend beyond those identified in Scenarios 1 to 3 in order to address the constraints affecting the existing communities and also to realise opportunities to the west of the A258.

10.93 A total area of search covering approximately 200 hectares has been assessed. A core opportunity area of approximately 50 hectares has been identified.

10.94 Identified route requirements are purely indicative of the direction and extent of the new access required. More detailed alignments will be considered in later phases of the project.

Opportunity

10.95 There are advantages in developing in this location particularly in terms of the potential to develop links to employment development at Betteshanger and Sandwich. However development is at the greatest distance from the town centre.

10.96 Opportunities exist to deliver development at the western end of the Area, closest to Sholden where the transport and environmental constraints are lower. Development can be more closely aligned and integrated with existing communities and provide assets which benefit residents.

10.97 Delivering development to the west of the A258 could benefit from direct access to/from the strategic movement network i.e. A258 / Mongeham Road providing an attractive location for people who commute out of Deal for work. Alignment of any new route or increased traffic flows towards Mongeham would need to consider and minimise any impact on the conservation areas in the area.

10.98 As with Scenario 3 there are potential benefits for the Golf Course under this scenario which may help it achieve its aspirations. The improvement to coastal flood defences is likely to remove much of the Course from the most severe Flood Zone, enabling more vulnerable uses to be brought forward in this area (such as a hotel). The provision of a new link from the A258 over the rail line into North Deal would potentially improve access, removing the need for visitors to travel through much of the existing constrained urban network.

Constraints

Transport

10.99 Development to the west is likely to generate comparatively high levels of new car trips; in particular this will impact on Mongeham Road's approach to A258 London Road which is one of the congestion hotspots within the town.

10.100 Mongeham Road is narrow close to junction with A258 London Road therefore local widening may be required to enable development although this might not be possible as it would potentially involve third party land and impact on the setting of Listed Buildings in the area. There are also congestion and right turn issues out of Mongeham Road into London Road, this junction will require improvement mitigation.

10.101 Given forecast trip rates there is limited opportunity for the existing network to be upgraded significantly, therefore without major intervention to improve access to the A258 development is unlikely to be deliverable.

10.102 St Richard's Road and Ellens Road are both likely to form part of key routes to Dover via A258 Dover Road. Ellens Road is very narrow and unsuitable for high traffic levels. Mitigation is likely to be required to enable higher levels of two way traffic and improve opportunities to cross the railway line, although this would significantly alter the character and appearance of Ellens Road.

10.103 Improvements to the highways around Great Mongeham will need to consider and minimise impacts on the conservation area located at the junction between Mongeham Road and Ellens Road.

10.104 Development will also increase traffic delays at Ellens Road / A258 Dover Road Junction this junction will need improvements in order to appropriately facilitate development.

10.105 Existing bus services (14, 82 and 13) operate close to the development site, although service frequency is unlikely to be sufficient

10.106 Cycling opportunities from site to town centre are limited and will need addressing to encourage use.

Flooding and drainage

10.107 North Stream runs across the middle of the western area from south east to north west. It therefore provides a risk of fluvial and surface water flooding along the path of the stream, without appropriate mitigation this will limit the ability to deliver development in this location.

10.108 The area is also at high to very high susceptibility to groundwater flooding, especially along the route of the stream, this may impact the below ground construction and surface water management options.

10.109 Increased sea levels and the impact of climate change both have the potential to increase the extent and severity of flood risk. This will be a particular issue for any growth located to the east of the area considered. It is unlikely to be a constraint to the west of the A258.

Ecology

10.110 The western extremities of this site are close to the southern edge of the Hacklinge Marshes SSSI, part of the Ramsar site. This potentially contains areas of high value grazing marsh and important ditch plant and invertebrate assemblages. This area is thus of high potential value and surveys are required to properly assess the value of habitats in relation to development areas.

10.111 Mitigation of loss of wetland ditch habitats 'functionally linked' to the Ramsar site may not be achievable within parts of this area because of the strict tests for developments within

the Conservation of Habitats and Species Regulations 2010 and the Appropriate Assessment process.

Other environmental factors

10.112 Outside of the issues identified under the previous scenarios there are few other environmental factors to consider, however the legacy and impact of the factory site and Milk Depot on Mongeham Road (likely to be risks linked to potential contamination) would need to be considered as part of any site specific proposals.

Design

10.113 Growth west of the A258 may have a high visual impact on countryside to west of Deal and significantly alter the long range views of Deal from the Downs.

10.114 The site at its western extremity will be relatively distant from North and Middle Deal's communities limiting its direct contribution to improving these areas.

10.115 Large scale development in the western area could cause the coalescence of Sholden and/or Great Mongeham in to Deal compromising the character of either village.

Mitigation

10.116 The following range of interventions to mitigate constraints associated with this scenario have been identified:

Essential strategic interventions

- Transport
    - New link road to north of Deal connecting the A258 to Northwall Road. This will reduce pressure on key 'hotspots' such as London Road-Manor Road and West Street-Queen Street by providing alternative access and egress points to the north.
    - New access road west of A258 to serve new development. This will potentially alleviate congestion issues at the Mongeham Road-London Road junction by providing alternative routes into and out of areas to the west of the A258. The Conservation area within Great Mongeham may limit some options for locating

any new route or expanding existing capacity. The impact of increased traffic in this Conservation Area will require careful consideration.

- Widening of Ellens Road and improvements to it's junction with A258. This may alleviate some pressure on other junctions by providing an alternative north-south route, avoiding the town centre. This impact will be limited given the low proportion of movements that are considered to be through traffic, however it is likely to impact the character of the road itself. Widening and the provision of new railway crossing may have impacts on existing properties.
- Improvements to the A258-London Road-Manor Road junction. It is expected improvements here are likely to be modest given the nature of development around the junction and the designation as a Conservation Area. However, it is expected some improvements can be made which go some way to alleviating congestion issues and potentially improve the setting of the Listed Buildings.

- Flooding
  - Improvements to coastal flood defences to 'improve' existing levels of protection. As with Scenario 3 this would provide the opportunity to locate a full range of uses east of the rail line, opening up a number of new locations to 'more vulnerable' uses (as defined by Table 2).
- Ecology
  - Environmental 'buffer zone' for protection and enhancement of SAC/Ramsar sites and Higher Level Stewardship Area.
  - Provision of compensatory habitats along the southern edge of Fowlmead County Park, to the east of Golf Road and along the alignment of North Stream.
  - Provide new southern access to Fowlmead Country Park.
- Design
  - Deployment of appropriate SUDS within new developments.

Further 'site specific' interventions

- Transport
  - Minor junction and signal improvements within wider network at congestion hotspots.

- Enhancements to walking/cycling routes to encourage modal shift.
- Introduce increased frequencies, extensions of existing routes or new bespoke bus services.

- Flooding
  - Incorporate water saving technologies to minimise water usage, in particular rainwater/greywater harvesting.
  - Preventing 'more vulnerable' uses locating to the east of the rail line unless flood defences are appropriately upgraded.
- Ecology
  - Incorporate green spaces into development to create new green links and enhance green network.
- Design
  - Development would need to reflect the scale of existing neighbourhoods and respect key view aspects between the town and open space to the north.
  - Development which forms the edge of the urban area should provide an appropriate and attractive edge to integrate with neighbouring open space.

10.117 This Scenario has the potential to provide significant benefits to the Golf Course by providing a link across the rail line to serve new opportunities to the east. It could, therefore, provide a lower cost opportunity to extend the link into the Golf Course. The deliverability of this link requires further investigation.

10.118 The improved flood defences could also remove much of the area around the existing Clubhouse from high level flood risk, enabling the development of visitor accommodation in the area.

Potential Impacts on Existing Communities (above & beyond Scenarios 1,2 & 3)

- New access road from A258 towards Great Mongeham, avoiding any negative impacts on the conservation area.

Summary

10.119 The table below draws together the range of interventions required to address the current issues, mitigate future challenges and identifies the consequent opportunities each level of intervention could create.

10.120 Where specific intervention is required we have provided a brief summary of the nature and extent of the intervention required. Green shading represents a low level of intervention or mitigation, amber a moderate level and red a high level.

10.121 Non-shaded areas represent the constraints considered do not require specific mitigations beyond those that would typically form part of any standard development proposal.

Table 9 - Summary of development scenarios

Domain	Factor	Scenario 1 – Minimum mitigation and opportunity	Scenario 2 – Low mitigation and opportunity	Scenario 3 – Medium mitigation and opportunity	Scenario 4 – High mitigation and opportunity
Development	**Assessment Area (HA)**	**60**	**90**	**120**	**200**
	Core Opportunity Area (HA)	**15**	**25**	**40**	**50**
Transport	Highway	A258 - London Road Junction improvements	New link road to east of A258	New link road to east of A258	New link road to east and west of A258 and significant upgrades to Ellens Road
	Public transport services	Service upgrade	Service upgrade	Increased frequency and route development to eastern growth area	Increased frequency and route development to eastern and western growth area

Domain	Factor	Scenario 1 – Minimum mitigation and opportunity	Scenario 2 – Low mitigation and opportunity	Scenario 3 – Medium mitigation and opportunity	Scenario 4 – High mitigation and opportunity
	Cycling / pedestrian	Network improvements	Network improvements	Upgrades to current network and introduction of small set of new routes	Upgrades to current network and introduction of new routes
Urban Design / Townscape		Design to resolve conflicts of use with employment, integration with town, distinction from Sholden, edge views	Overcoming rail line severance	New access to Fowlmead Country Park	Distance from north to Deal Town Centre, coalescence with Sholden
Landscape	Topography	No Mitigation	No Mitigation	No Mitigation	No Mitigation
	Landscape character	No Mitigation	No Mitigation	No Mitigation	No Mitigation
	Views & vista	No Mitigation	No Mitigation	No Mitigation	Visual impact west of A258
Flooding & drainage	Tidal	Limit development at east	Maintenance of current flood protection level to enable limited growth east of rail line	Improvements to coastal defence to enable greater growth east of rail line	Improvements to coastal defence to enable greater growth east of rail line
	Groundwater	Deployment of SUDs	Surface water management, water saving technology	Surface water management, water saving technology	Mitigation measures in area of North Stream

Domain	Factor	Scenario 1 – Minimum mitigation and opportunity	Scenario 2 – Low mitigation and opportunity	Scenario 3 – Medium mitigation and opportunity	Scenario 4 – High mitigation and opportunity
Ecology	Statutory designation – European	Compensatory habitats	Buffer zone creation for NATURA 2000 sites east of A258	Buffer zone creation for NATURA 2000 sites east of A258	Buffer zone creation for NATURA 2000 sites east of A258 and at Hacklinge Marsh
	Statutory designation – National	No Mitigation	No Mitigation	No Mitigation	Buffer zone required for Higher Level Stewardship Area
	Non-Statutory	Compensatory habitats	Compensatory habitats	Compensatory habitats	Compensatory habitats
	Species	New green links	New green links	New green links	New green links
Other environmental	Air quality	No Mitigation	No Mitigation	No Mitigation	No Mitigation
	Contaminated land	No Mitigation	No Mitigation	No Mitigation	No Mitigation
	Archaeology	No Mitigation	No Mitigation	No Mitigation	No Mitigation
	Ground Stability	No Mitigation	No Mitigation	No Mitigation	No Mitigation
	Heritage Assets	No Mitigation	No Mitigation	No Mitigation	No Mitigation

10.122 The SA/HRA Scoping Reports have not, at this stage, highlighted any fundamental concerns relating to the Scenarios or the manner in which they have been tested. However, it is important to note the relationship between the SA/HRA is iterative. As more detailed interventions and growth opportunities are identified these will be tested by the SA/HRA and the findings used to further refine and inform the final approach to addressing constraints and opportunities in North and Middle Deal.

10.123 The SA/HRA Scoping Reports (which are appended to this Baseline Study) and the comments received from statutory consultees will a key tool in informing the direction of the next stage of this project. Ongoing engagement with Natural England, the Environment Agency and others will ensure that any proposed interventions do not

adversely affect the NATURA 2000 sites. Indeed, by undertaking the SA/HRA and using its findings to inform the recommendations of this study we will be able to identify opportunities and mechanisms for enhancing these sensitive areas.

11. Next Steps

11.1 The Deal Transport and Flood Alleviation Model Study has established a robust baseline understanding of the range of issues facing Deal today, the future challenges to the town and the constraints facing potential future growth. It has provided a specific focus and interpretation of how those which directly effect North and Middle Deal can be addressed.

11.2 The analysis highlights that improvements to address current issues and interventions to provide mitigation for future threats and constraints will create opportunities for growth beyond the Core Strategy level. It also recognises that the realisation of development opportunities will be vital to facilitate the funding of the new investment and new infrastructure which will be required to provide a net benefit for existing residents.

11.3 Through the creation and testing of four conceptual scenarios we have established the relationship between the required mitigation interventions and the levels of opportunity each would create in order to deliver benefits to the town as a whole. This analysis has led to a recommendation to carry two closely allied development scenarios forward for further investigation. It is within the range provided by these scenarios that a 'tipping point' between improvements to conditions, development viability and the impacts of new growth lie.

11.4 In summary the proposal to carry two scenarios forward is based upon the following conclusions:

- Scenario **One** – this scenario presents the lowest level of mitigation and opportunity and, ultimately, provides no benefit to existing residents. Whilst relatively easy to accommodate within the existing infrastructure framework, opportunities created and mitigations implemented are unlikely to be of sufficient scale to raise the quality of life in North/Middle Deal and the wider town for existing residents. The required mitigations are still likely to have a high cost burden, which the modest level of opportunity could only make a limited contribution to.
- Scenario **Four** – whilst this scenario creates the most significant benefits for existing residents along with new growth opportunities it also requires the greatest level of

intervention in order to mitigate constraints. The scale of investment required is likely to be out of proportion with the additional opportunities it creates, making it difficult to deliver necessary interventions at this scale.

- Scenarios **Two and Three** – based on this high level assessment these two scenarios present the opportunity begin to balance the scale of intervention required to achieve address constraints both now and in the future with the scale of development opportunity in a manner that will provide net benefits to the Deal community. Both offer opportunities to provide a level of development which could support wider investment in infrastructure which will benefit the existing residents as well as support this new growth.

11.5 This is the first stage of the study. Based on our analysis it is recommended that Scenarios 1 and 4 are not carried forward.

11.6 It is recommended that the next stage focus on defining the scale of potential growth and mitigating investments and infrastructure in more detail. Scenario's Two and Three provide a range of opportunities and mitigations which appear to be more balanced. The ranges suggested by scenarios 2 and 3 are the recommended starting point.