RiverOak Strategic Partners

Manston Airport Development Consent Order

Preliminary Environmental Information Report Volume 3: Noise, Socio-Economic and Traffic & Transport June 2017

For consultation

Scheme Name	Manston Airport DCO
Promoter's Name	RiverOak Strategic Partners
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2017 Consultation

Suite of Consultation Documents

1.1 As part of the statutory consultation under section 47 of the Planning Act 2008 a suite of consultation documents relating to the proposal to reopen Manston Airport is available to the public. Together these documents give an overview of the development proposals including information on the potential benefits and impacts of the Project, environmental considerations and the business case. The documents also provide further information on the consultation process and enable the public to submit their feedback.

1.2 This consultation also forms part of RiverOak's initial engagement on the design of airspace and procedures associated with the airport. As such it is an opportunity for members of the community to highlight any factors which they believe RiverOak should take into account during that design phase. Having taken all such factors into account, the subsequent proposals for flightpaths and airspace will be subject to a separate round of consultation once the DCO application has been made.

1.3 The suite of consultation documents includes:

1. a Consultation Leaflet giving an overview of the proposals and details of where more information about the Project can be found;
2. a Feedback Form in order to collect responses to the consultation;
3. an Overview Report giving a summary of the proposals including the potential benefits and impacts of the Project, how we propose to mitigate against potential impacts, and a non-technical summary of the Preliminary Environmental Information Report (PEIR);
4. **a Preliminary Environmental Information Report (PEIR); containing preliminary information on the likely environmental effects of our proposals as we have ascertained them so far, including noise, transport and air quality, and how we propose to minimise these effects, as well as how we propose to maximise the benefits of the Project;**
5. a draft Masterplan for Manston Airport;
6. Manston Airport - a Regional and National Asset, Volumes I-IV; an analysis of air freight capacity limitations and constraints in the South East and Manston's ability to address these and provide for future growth;
7. an Outline Business Case;
8. a Statement of Community Consultation;
9. a Location Plan; and
10. an Interim Consultation Report, setting out the details of the first stage of consultation and how feedback received has been used to help develop the proposals.

1.4 This Preliminary Environmental Information Report has been prepared pursuant to the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009, as amended.

Contents

12. Noise

12.1 Introduction

12.1.1 This chapter provides a preliminary assessment of the likely significant noise impacts arising as a result of the reopening of Manston Airport as a dedicated airfreight facility capable of handing over 10,000 air cargo movements per year.

12.1.2 Noise can have an effect on the environment and on the quality of life, health and well-being of individuals and communities. It can also pervade and affect the quality of natural resources.

12.1.3 The applicable National, Regional and Local planning policies relating to noise matters are discussed, together with the relevant legislative and policy context. Baseline noise levels in the areas around the airport site are considered and there then follows a discussion of the spatial, temporal and technical scope of the assessment, including the identification of noise sensitive receptors.

12.1.4 This assessment evaluates effects from the following principle sources of noise at key sensitive receptors:

- noise effects from the construction of the airport masterplan and the transport of construction materials;
- renewed exposure to noise from aircraft in the air from the re-opening and mature operation of the airport;
- renewed exposure to noise from aircraft on the ground and associated Ground Support Equipment (GSE) from the re-opening and mature operation of the airport;
- operation of static noise sources, for example HVAC and back-up generators, required for the operation of the airport; and
- changes in and exposure to surface access noise, namely road traffic noise from vehicle movements associated with the operation of the airport.

12.1.5 The assessment also considers the potential cumulative noise effects from other developments within the Zone of Interest (ZOI) and the potential in-combination effects resulting from the interaction of other effects associated with the re-opening of the airport.

12.1.6 The implications of noise effects on ecological receptors are assessed within see **Chapter 7: Biodiversity**.

12.1.7 It should be noted that at this stage, vibration from construction has been considered within the scope of the assessment, however, vibration from the operation of the Proposed Development has been scoped out of the assessment based on professional experience of undertaking similar studies for other airports.

Limitation of the PEIR

12.1.8 This report is based upon the latest design of the components making up the Manston Airport project (the 'Proposed Development'). At the time this chapter was written a number of data sources were not available and these are discussed in **Table 12.1**. These limitations have meant that the chapter has been informed only by the assessment of noise effects where data is available. This has included some understanding of potential effects from aircraft in-flight (i.e. aircraft air noise) which has been based on adopting reasonably foreseeable worst-case assumptions and indicative airspace procedures.

12.1.9 It should be noted that even though indicative effects from aircraft in-flight are presented in this PEIR, the exact airspace options and aircraft flight paths, will be formalised following or in parallel with the DCO through an Airspace Change Proposal (ACP), which is a separate consenting regime. The ACP will be submitted through the Civil Aviation Authority's (CAA) airspace change process and the potential noise effects will be assessed following the CAA guidance[167].

12.1.10 A summary of the limitations associated with this PEIR are presented in **Table 12.1** alongside the affected relevant noise effects and the materiality of the limitation upon the assessment.

Table 12.1 Limitations of the PEIR

Limitation	Assessment Scenario	Impact on Assessment
The details of construction (for example on-site equipment types, number of plant, on-times and project phasing) are yet to be finalised.	Construction noise	A detailed construction noise assessment is not included within the PEIR and a qualitative assessment has been undertaken. The qualitative assessment describes the locations that could be significantly affected by construction noise.
Airspace procedures to be confirmed through the CAA's Airspace Change Proposal process	Operational air noise	The assessment approach for modelling air noise needs to be agreed with PINS and CAA and a preliminary meeting with the CAA was held on 15th May 2017. The assessment of air noise within the PEIR is based on a design swathe and at this stage, it is considered that the ES will assess prototype airspace route options within that design swathe. The prototype routes are considered likely to be 'worst case' and 'best-case' in noise terms and most 'likely' to be operated. It is then expected that the ACP will finalise airspace routes within those prototype routes. For the purposes of the PEIR, a qualitative assessment has been undertaken. The qualitative assessment considers only those locations significantly affected by noise. These locations are affected by the final stages of aircraft approach and early stages of aircraft departure, where for the Proposed Development the airspace procedures have little effect.
Future aircraft performance characteristics through engine and airframe design not known	Operational air noise	For the PEIR a worst-case assessment of noise from future aircraft movements has been undertaken. This assessment is based on noise emissions data from aircraft operating today,
Aircraft taxi routes, hold points and engine ground	Operational airside ground noise	For the purposes of the PEIR, a qualitative assessment has been undertaken based on locations likely to be significantly affected by airside ground noise.

[167] Current CAA guidance on airspace change is provided in CAP 725 which is in the process of being withdrawn and will be replaced by CAP1520 by no earlier than August 2017.

Limitation	Assessment Scenario	Impact on Assessment
running locations are yet to be finalised.		
The locations and types of fixed plant (for example sound power levels) are yet to be finalised.	Operational Industrial and commercial sound (fixed plant noise)	Industrial and commercial sound is not rated or assessed within the PEIR.
Forecast future road traffic flows as result of the development are not available	Operational road traffic noise	Surface access noise is not assessed within the PEIR
Future baseline road traffic flows are not available	Future baseline road traffic noise	For the purposes of the PEIR, the future baseline level of noise is considered to be the same as today

12.2 Policy and legislative context

12.2.1 A review of noise-related planning policy, legislation and guidance at national, regional and local level has been undertaken in order to highlight any requirements, which the Proposed Development needs to consider.

12.2.2 Noise from airports is considered in a number of planning policy documents and is subject to legislative control and regulation. At an international level, standards governing aircraft noise emissions are set by the International Civil Aviation Organization (ICAO). In the UK, the Department for Transport (DfT) and the Department for Environment, Food and Rural Affairs (Defra) are responsible for regulating the various environmental aspects of the aviation industry. At a local level, local planning authorities such as Thanet District Council can also have some control through planning conditions and legal agreements.

12.2.3 Furthermore, relevant legislation exists for the control of aircraft and environmental noise. For most commercial UK airports, the DfT and Defra are responsible for regulating environmental noise. For example, the Secretary of State has powers under Sections 78-80 of the Civil Aviation Act 2006 to control aircraft noise at designated airports, however, at present only Heathrow, Gatwick and Stansted are designated because of aircraft noise.

12.2.4 In addition to legislative powers, national and local policy exists to help manage the effects of noise and a number of guidance documents and British standards exist to inform the assessment of aircraft noise and other noise sources associated with the construction and operation of airports.

12.2.5 It should be noted that at the time of drafting this PEIR, the UK Government was currently consulting on a number of matters relating to aviation noise. This included consultation on its Airports National Policy Statement (NPS) relating to airport expansion in the southeast of England and its consultation on reforming policy on the design and use of UK airspace.

- **Table 12.2** presents a summary of legislation relevant to noise;
- **Table 12.3** presents a summary of national planning policies relevant to noise;

- **Table 12.4** presents a summary of emerging national planning policies relevant to noise;
- **Table 12.5** presents a summary of local planning policies relevant to noise;
- **Table 12.6** presents a summary of emerging local planning policies relevant to noise; and
- **Table 12.7** presents a summary of national planning guidance and standards relevant to noise.

12.2.6 Further details of all national and local planning policies relevant to the Proposed Development can be found in **Appendix 4.1**.

Table 12.2 Legislation Relevant to Noise

Policy reference	Policy Information relevant to Noise
The Aerodrome (Noise Restrictions) Rules and Procedures Regulation, 2003	The Aerodromes Regulations implements into UK law the provisions of Directive 2002/30/EC and requires EU member states to take a 'balanced approach' to aircraft noise management. Directive 2002/30/EC is therefore closely related to the ICAO Assembly Resolution A33/7 ('Balanced Approach to Aircraft Noise Management'). The Balanced Approach to Aircraft Noise Management recognises the balance that needs to be struck between environmental benefit and economic incentives, but without imposing measures that would be overly restrictive. The Balanced Approach requires consideration of noise reduction at source, land-use planning, noise abatement, operational procedures and operating restrictions.
EU Regulation 598/2014 (on the establishment of rules and procedures with regard to the introduction of noise-related operating restrictions at Union airports within a Balanced Approach and repealing Directive 2002/30/EC), 2016	EU Regulation 598/2014 is a 'regulation' and therefore is directly binding on EU Member States and repeals Directive 2002/30/EC. The Regulation provides a framework for introducing measures to address local airport noise issues in a cost effective manner.
Control of Pollution Act, 1974	The Control of Policy Act 1974 gives the local authority special powers to deal with noise and vibration arising from construction and demolition works, regardless of whether a statutory nuisance has been caused or is likely to be caused. The powers may be exercised either before works start or after they have started.
The Civil Aviation Act, 2006	The Civil Aviation Act is the principal legislation for the regulation of aircraft operations. The Act was updated in 2006 when additional powers to avoid, limit or mitigate the effects of noise connected with departures or arrivals of aircraft at an aerodrome were introduced.
The Environmental Noise (England) Regulations, 2006 (as amended)	The Environmental Noise (England) Regulations 2006 (Statutory Instrument 2006 No. 2238) give effect to EU Directive 2002/49/EC ('the Environmental Noise Directive' or 'END'), relating to the assessment and management of environmental noise. The END requires Member States to prepare Noise Action Plans based on the results of strategic noise mapping which must be reviewed or revised every five years.
Environmental Protection Act 1990	Section 79 of the Environmental Protection Act (EPA) 1990 (as amended by the Noise and Statutory Nuisance Act 1993) provides the principal controls "statutory nuisances", and declares a number of items as statutory nuisance. Under the provisions of the EPA, local authorities have a duty to inspect their areas periodically to detect any nuisance, and where a complaint of statutory nuisance is made, to take such steps as are reasonably practicable to investigate the complaint. The EPA does not currently relate to noise emitted from airports or aircraft, however, in 2016 a Private Member's Bill was introduced to Parliament under the Ten Minute Rule, to amend Part 3 of the Environmental Protection Act 1990 to make noise caused by aircraft a statutory nuisance. The Bill is expected to have its second debate in parliament before summer 2017.
The Land Compensation Act 1973	Under Part 1 if the Act, property owners can claim compensation for properties that have been reduced in value by a certain amount by the use of a new or altered airport runways.

Policy reference	Policy Information relevant to Noise
The Noise Insulation Regulations 1975	The noise insulation regulations make it compulsory for noise insulation to be provided to residential dwellings where noise from new or realigned road schemes results in certain levels and changes in road traffic noise.

Table 12.3 National Planning Policies Relevant to Noise

Policy reference	Policy Information relevant to Noise
Aviation Policy Framework (APF), 2013	The Government's current Aviation Policy Framework (APF) was published in March 2013 and provides the Government's overall policy for aircraft noise. It should be noted that this policy is likely to be withdrawn and replaced in 2017 and the Government has signalled its intention to replace this policy with a new 'Aviation Strategy'[168].
National Planning Policy Framework (2012)	The NPPF seeks to achieve sustainable development and states that the planning system should be concerned with "*preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability".*
National Planning Practice Guidance, 2014	Paragraph 005 of the National Planning Practice Guidance (NPPG) explains when noise should be considered for new developments.
Noise Policy Statement for England (NPSE) (2010)	The NPSE forms the overarching statement of noise policy for England. NPSE sets out the long-term vision of the Government with the overall of aim of avoiding, mitigating and minimising adverse impacts on health and quality of life and where possible contribute to improved health and quality of life.

Table 12.4 Emerging Draft National Planning Policies Relevant to Aviation Noise

Policy reference	Policy Information relevant to Noise
Draft Airports National Policy Statement: new runway capacity and infrastructure at airports in the South East of England, 2017	The draft Airports NPS was published in 2017 and is focused on the development of the Heathrow Northwest Runway. Nevertheless, the Airports NPS does say: "*It will be an important and relevant consideration in respect of applications for new runway capacity and other airport infrastructure in London and the South East of England* and therefore provides context for the assessments of all airports.
Draft UK Airspace Policy: A framework for balanced decisions: on the design and use of airspace, 2017	The draft UK airspace policy was published in 2017 and outlines the Government's draft future policy for airspace. The policy aligns the Government's noise policy (NPSR) with decision making on airspace and aviation noise. Furthermore the policy suggests that noise affects are observed from 51 dB $L_{Aeq,16hr}$ (i.e. LOAEL), based on the CAA'S Survey of Noise Attitudes 2014 and from 45 dB $L_{Aeq,8hr}$ during the night.

Table 12.5 Local Planning Policies Relevant to Noise

Policy reference	Policy Information relevant to Noise
Thanet District Council Local Plan Saved Policies - Policy EP7 and Policy EP8 (Aircraft Noise and Residential Development)	The saved policies from the Thanet District Council local plan covers the control of noise sensitive development or redevelopment on sites likely to be affected by aircraft noise, including noise exposure categories to be used in determining applications and a requirement for proposals to include adequate levels of sound insulation.
Thanet District Council and Kent International Airport Plc., Section 106 Agreement	The former airport (Kent International Airport plc.) and Thanet District Council had a Section 106 Agreement (s106) which contained a number of obligations for managing and controlling aircraft noise including the requirement for a night-time flying policy, introduction of an aircraft noise Quota Count (QC) system and establishment of a dwelling insulation scheme.

[168] Draft UK Airspace Policy: A framework for balanced decisions: on the design and use of airspace, Paragraph 2.4

Table 12.6 Emerging Local Planning Policies Relevant to Noise

Policy reference	Policy Information relevant to Noise
Draft Thanet Local Plan to 2031 - Preferred Options - Policy SE08 and Policy SE09 (Aircraft Noise and Residential Development)	The emerging Thanet District Council local plan includes aircraft noise policy and defines similar noise exposure categories to those set in the saved policies of the current local plan for the control of aircraft noise and sets criteria for noise insulation required for developments that are approved on sites expected to be affected by aircraft noise.

Table 12.7 National Planning Guidance and Standards Relevant to Noise

Policy reference	Policy Information relevant to Noise
BS 4142:2014 - Methods for rating and assessing industrial and commercial sound	BS 4142:2014 is used to rate and assess sound of an industrial nature, including but not limited to assessing sound from proposed, new, modified or additional sources of industrial sound. It contains guidance on the monitoring and assessment of industrial and commercial sound sources (including fixed installations comprising mechanical and electrical plant and equipment) affecting sensitive receptors.
BS 5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites	BS 5228 provides guidance on the assessment and control of noise and vibration from construction sites, along with suggestions for the derivation of guideline noise thresholds and a methodology for calculating noise from construction and reference information for noise from construction plant. Part 1 is in relation to noise and it provides a recommended scope for construction and demolition noise assessment. Part 1 also provides example threshold levels for potential significant effects at noise sensitive receptors based upon the results of ambient sound monitoring. Part 2 is in relation to vibration and provides guidance on the assessment of ground-borne vibration associated with activities such as demolition and construction. Annex E BS 5228-2:2009+A1:2014, describes methods of estimating vibration emanating from proposed construction activities.
BS 6472-1:2008 Guide To Evaluation of Human Exposure to Vibration in Buildings	BS 6472 presents an assessment approach to determining adverse impacts from road and rail traffic vibration within residential buildings, offices and workshops and provides guidance on predicting human response to vibration in buildings over the frequency range 0.5 Hz to 80 Hz.
BS 7445-1:2003 Description and measurement of environmental noise – Part 1: Guide to quantities and procedures' (BS7445-1:2003)	BS 7445 provides guidance for describing and measuring noise from all sources. The standard recommends equivalent continuous A-weighted sound pressure level (L_{Aeq}) as the most appropriate basic noise indicator.
BS 8233:2014 Guidance on sound insulation and noise reduction for buildings. British Standards Institute, London.	BS8233:2014 provides information on the design of buildings that have internal acoustics environments appropriate to their functions. BS 8233:201 provides guidance on the control of noise outside buildings, the control of noise from plant within buildings, and room acoustics. The BS 8233:2014 design requirements are intended considerations for new residential dwellings. The internal ambient noise levels are set assuming external noise is anonymous i.e. does not have a specific distinguishable character such as a tone
CAP 725: Airspace Change Process Guidance Document (2016)	CAP 725 sets out the CAA's current process for airspace change and ensuring that the CAA reduce, control and mitigate the environmental impacts of civil aircraft operations, particularly from noise and aircraft engine emissions.
CAP 1278 Aircraft Noise and Health Effects: Recent Findings (2015)	Published by the CAA, this report is an update to the previous ERCD Report 0907 and highlights key research that has been published in aircraft noise and health effects since 2007, including sleep disturbance, cardiovascular disease, children's learning and other health effects.
CAP 1506: Survey of noise attitudes 2014: Aircraft	Latest UK-based evidence on the effects of aircraft noise exposure on social attitudes and annoyance. The results of this survey have been used to aid the setting of noise exposure thresholds in the Government's draft Airspace Policy consultation.
CAP1520: Draft airspace design guidance (2017)	CAP1520 operates within the Government's framework presents the draft guidance to support the new process of assessing airspace change and outlines the process and metrics for environmental assessments, including noise.

The Calculation of Railway Noise (CRN), 1995	CRN provides procedures for calculating and measuring noise from moving railway vehicles.
Calculation of Road Traffic Noise (1988) (CRTN)	CRTN is a prediction methodology for road traffic noise. Using detailed information on two-way traffic flows, percentage of HGV movements, road gradient, vehicle speed, ground conditions and screening, the methodology calculates the propagation of noise from roads.
Design Manual for Roads and Bridges (DMRB) Volume 11 Environmental Assessment Part 7 Noise and Vibration (2011 – Revision 1)	DMRB contains advice on the assessment of noise from road traffic, particularly from new and altered roads and presents a methodology for determining impacts upon noise sensitive receptors from changes in road traffic noise due to road projects.
ISO 9613-2 1996: Acoustics – Attenuation of Sound During Propagation Outdoors: Part 2 General Method of Calculation	ISO 9613-2 specifies a method for calculating the attenuation of sound during propagation outdoors in order to predict the levels of environmental noise at distances from a source.
SAE-AIR-1845 Procedure for the Calculation of Airplane, Noise in the Vicinity of Airports, 1986	The Aerospace Information Report (AIR) describes the methodology used by aircraft noise modelling software for calculating sound exposure levels from aircraft.
ECAC Doc.29 4th Edition, 2016	The report on 'Standard Method of Computing Noise Contours around Civil Airports' provides guidance on aircraft noise modelling, and is consistent with the methodology presented in SAE-AIR-1845.
Web-based Transport Analysis Guidance (WebTAG)	*Transport Analysis Guidance (Department of Transport)* (2017): WebTAG analysis is mandatory for all projects that require government approval. The assessment approach consists of a software tool and guidance on transport modelling and appraisal methods for transport related developments.
Institute of Environmental Management and Assessment Guidelines for Environmental Noise Impact Assessment (IEMA), 2014	The IEMA Guidelines for Environmental Noise Impact Assessment presents guidelines on how the assessment of noise effects should be presented within the Environmental Impact Assessment (EIA) process. The IEMA guidelines cover aspects such as scoping assessments, baseline prediction and definitions for significance criteria.
Good Practice guide on noise exposure and potential health effects	Developed by the European Environment Agency (EEA), the guide assists policy makers to fulfil the requirements of the Environmental Noise Directive for a noise action plan.
World Health Organisation Guideline on Community Noise, 1999	The WHO Guidelines for Community Noise presents guideline noise levels for community noise in specific residential environments, e.g. outdoor living areas.
World Health Organisation Night Noise Guidelines for Europe, 2009	The WHO Night Noise Guidelines for Europe present guideline noise levels for community noise at night (e.g. target of outdoor night noise threshold of 40 dB and short-term interim target of 55 dB for countries where 40 dB target cannot be met).
World Health Organisation Burden of disease from environmental noise: Quantification of healthy life years lost in Europe, 2011	The WHO Burden of disease from environmental noise provides a methodology for measuring the burden of disease from environmental noise, including aviation using a process called the disability-adjusted-life-year (DALY) and summarises the evidence on the relationship between environmental noise and health effects. The DALY methodology measures the combined years lost due to premature death and the time lost due to years lived at less than full health.
Basner M, Samel A. Nocturnal aircraft noise effects. Noise Health 2004;6:83-93 (2004)	This paper presents a summary of a DLR (Institute for Aerospace Medicine) research of a large-scale, multi-stage study for investigating the acute effects of nocturnal aircraft noise on human sleep.

12.3 Data gathering methodology

Study Area

12.3.1 The study areas have been defined by the extent of the potentially significant effects (in terms of EIA), and the potential adverse effects (in terms of Government Policy) arising from the construction and operation of the airport and the operation of its airspace.

12.3.2 For the purposes of this PEIR, the following parameters have been used to define the study areas applicable to the assessments associated with the ground and airspace activities.

- Ground noise and vibration activities – including activities associated with construction and operation of the Proposed Development. An initial study area (as measured from the site boundary) of 2 km has been adopted for the PEIR. This is to account for the likely large number of noise sources associated with the construction phase and airside ground noise activities, which have the potential to propagate over large distances during sensitive periods, such as the night-time when background sound levels are lower than the day-time period; and
- Air noise activities – an initial study area (as measured from the site boundary) of 14 km along the westerly runway centreline (i.e. to Herne Bay coastline) and 3.5 km along the easterly centreline (i.e. to Ramsgate coastline) has been adopted for the PEIR. The extents of this study area have been defined to include locations that are further away from the airport and potentially under the aircraft flight paths. These locations, which have the potential to be overflown by aircraft, may be affected by aircraft air noise and could potentially be exposed to significant adverse effects in terms of noise exposure.

12.3.3 The study areas applicable to the Manston Airport project are expected to be refined for the ES.

Desk Study

12.3.4 This section describes the desk study undertaken to collate the current baseline data associated with the Proposed Development and the surrounding areas to inform the EIA process. The desk study was used as a basis for design of the baseline survey work, undertaken to inform the noise and vibration assessments, and for the identification of residential, non-residential receptors, and quiet areas. The relevant data sources are listed in **Table 12.8**.

Table 12.8 Information used in the preparation of the PEIR

Source	Data
Aerial imagery	Aerial imagery of the local area was obtained using Google Earth Pro version 7.1.7.2606. The aerial imagery was used to inform the relevant study area for the baseline sound survey, including identification of potential noise sensitive receptors. It has also been used to identify locations further away from the airport, which may be overflown by arriving and/or departing aircraft.

Source	Data
CACI population dataset	Dataset for the identification of dwellings and other noise sensitive receptors within Study Areas and extents.
Historical meteorological data	Weather data was obtained from the Met Office for the previous 10 years, including information on wind direction and wind speed. The weather data has been used to inform parameters for noise modelling, including average ambient temperature, average air pressure, average humidity and average headwind speed. The average wind direction has been used to determine the modal split of runway direction.
Manston Airport Aircraft Night Noise Assessment Report (2010)	An assessment of aircraft night noise from future operations was undertaken by Bickerdike Allen Partners in 2010. The assessment was undertaken when the airport was previously open and assessed the potential noise effects of night-time operations. The report was reviewed to understand noise effects associated with the operation of Manston Airport and any conditions or limitations for the operation of the airport at that time.
Manston Airport Night Noise Assessment Review (2010)	On behalf of Thanet District Council, Bureau Veritas reviewed the Bickerdike Allen Partners night noise assessment. The review was undertaken to provide assurance to the local council of the assessment undertaken for the airport on plans for night-time operations. Again, this report was reviewed to understand noise effects associated with the operation of Manston Airport and any conditions or limitations associated with the operation of the airport.
Manston Airport Noise Action Plan – First Draft (2014)	Prior to the airport closing, the airport was required to produce a Noise Action Plan (NAP), under the requirements of the *Environmental Noise (England) Regulations 2006*. The action plan was undertaken as part of the second round of noise action plans, due to the airport location and ability to affect noise exposure within the Thanet agglomeration. However only a draft NAP was produced as the airport closed before the NAP was adopted and approved by the relevant Secretary of State. The draft NAP included a number of noise contours that were produced based on annual average airport operations and conditions in 2011. The noise contours represented sound exposure levels in terms of L_{den}, L_{day}, $L_{evening}$ and L_{night} and were produced to fulfil the former airport's commitments under the Regulations. The draft NAP was reviewed to inform the noise exposure associated with Manston Airport when previously operational and the noise controls and amelioration schemes that were in place.
Round 2 Strategic Noise Maps	Noise maps for the Thanet Agglomeration, as produced under the *Environmental Noise (England) Regulations 2006* have been reviewed. This include noise exposure levels for major roads and railways within the agglomeration and noise maps for 'major' roads and railways near the airport. These are considered to provide an indication of the level of noise exposure from these transport modes within the agglomeration. The noise maps include the A299, A28, A291 and Ashford to Ramsgate Railway Line
Manston Airport UK Aeronautical Information Publication, AIP (2005)	Details of airport's noise abatement and flight procedures from when previously operational have been reviewed to determine the locations previously overflown by aircraft.
Manston Airport Masterplan	Airport masterplan drawings have been produced for the promoter. The drawings set out potential airfield infrastructure locations including locations of fixed plant and services. These drawings will be used to inform the construction, operational airside ground noise and operational fixed plant sound assessments.
Manston Airport construction programme	Information of construction methods, phasing and plant have been produced for the promoter. These have been used to inform a qualitative assessment of construction noise.

Source	Data
Indicative future airspace design procedures	Indicative future aircraft departure and arrival procedures have been produced for the promoter. These have been produced to inform the arrival and departure flight paths, including the design swathe.
Logs of historical aircraft movements	Daily aircraft movement logs between April 2012 and September 2014 were provided by the promoter. These have been reviewed to inform the type and number of aircraft previously operating at the airport. It is recognised that the aircraft fleet mix is different to that previously operated due to the change in focus towards airfreight from mainly passenger-led operations.
Forecast of future aircraft movements	Forecasts of future aircraft movements have been produced for the promoter for the first year of operations until the twentieth year of operations. These have been reviewed to determine the forecast aircraft fleet mix for future operations.

Survey Work

12.3.5 Survey work undertaken to date has concentrated on locations that are likely to be affected by airside ground noise and air noise, and to inform of potential construction noise impacts. Within these key areas, the current baseline level of noise has been informed by a combination of sound monitoring and characterisation of the sound environment.

12.3.6 Prior to undertaking the baseline sound surveys, Thanet District Council were consulted to agree the format and methodology of the sound survey and to agree key receptors. An invitation was also offered to Thanet District Council to observe the deployment of sound monitoring instrumentation required for long-term baseline sound surveys.

12.3.7 However, at the time of the surveys, Thanet District Council were not in a position to agree to the format and methodology of baseline sound surveys. Therefore, the baseline sound surveys have been undertaken using a methodology consistent with industry best practice and the technical experience and professional judgment of the noise consultant.

Baseline Sound Surveys

12.3.8 The purpose of the baseline sound surveys was to:

- Obtain baseline ambient sound levels during the daytime to inform the assessment of construction noise emissions at the nearest potential noise sensitive receptors and to inform indicative construction noise thresholds as set prescribed in BS5228-1:2009+A1:2014 *'ABC method'*;
- Obtain baseline sound levels during different periods of the day and night to inform the assessment of industrial and commercial sound and inform Environmental Noise Criterion (ENC) thresholds at the nearest potential noise sensitive receptors; and
- Understand the background sound environment at locations where operational noise (including fixed and static plant, airside vehicle movements and aircraft ground operations) could be observed and to provide context to the assessment of operational ground noise.

12.3.9 To ensure collection of reproducible levels of sound, long-term sound surveys were conducted between Sunday 26th February 2017 and Wednesday 22nd March

2017, a period of 24 days. It was initially intended to conduct surveys for a period of 14 days, however, during the survey a number of days experienced weather conditions not suitable for sound monitoring and therefore the survey was extended for a further 10 days.

12.3.10 The instrumentation used for the sound surveys was set up to simultaneously log, $L_{Aeq,T}$, $L_{A90,T}$, $L_{A10,T}$, and L_{AFmax} sound levels over continuous 5-minute sampling periods ('*T*'). All measurements were undertaken, in accordance with the methodologies presented in BS 7445-1:2003 and BS 4142:2014.

12.3.11 All sound monitoring was completed using an IEC 61672-1 Class 1 Rion NL31 Sound Level Meter (SLM) and microphones were positioned at height of 1.2 metres above ground level in a free-field position.

12.3.12 Furthermore, observations of the baseline sound environment were made on four separate occasions, including: during deployment of sound monitoring instrumentation; during a visit to calibrate and change the batteries; on collection of the sound monitoring instrumentation; and during a night-time period.

General Characterisation to support Air Noise Assessment

12.3.13 To support the assessment of air noise baseline conditions at a number of locations further away from the airport were selected. These locations were selected based on centres of population around the airport. The purpose of the observations at these locations was to understand and characterise the current baseline environment in locations that could potentially be overflown, including characterising the dominant sources of sound.

12.3.14 In total, observations were undertaken at 13 locations during both daytime and night-time periods. The observations at each location were not static, and instead consisted of a walkover around the location.

Consultation

12.3.15 Since 2015 and throughout the undertaking of the survey and assessment work, RiverOak has engaged with consultees with an interest in potential noise effects. A scoping report (**Appendix 1.1**), which included a chapter covering noise effects, was submitted to PINS who provided a scoping opinion (**Appendix 2.2**).

12.3.16 Organisations that were consulted and provided a response on the noise chapter include:

- Planning Inspectorate (PINS);
- Cliffsend Parish Council;
- Thanet District Council;
- Minster Parish Council; and
- Natural England.

12.3.17 A summary of the consultee comments relevant to the noise chapter and the response is provided in **Table 12.9**.

Table 12.9 Consultee comments

Consultee	Comments and considerations	How this is addressed in this PEIR
PINS	Vibration effects on residential receptors from construction is listed as being scoped out in Chapter 11 paragraph 11.6.7 but is not listed in Chapter 14. The Secretary of State considers that further justification is required to scope out this effect, based on whether activities with potential to give rise to vibration will occur within a set distance from receptors, e.g. less than 100m, otherwise it is expected that a vibration assessment would be carried out in accordance with a recognised standard such as BS5228-2:2009+A1:2014 or equivalent.	At this stage, vibration effects on residential receptors from construction are considered within this assessment. It should be noted that vibration from the operation of the airport has been scoped out of the assessment based on experience of undertaking similar studies for other airports and the types of activities that will be undertaken at the Proposed Development. Should any activities be planned for the airport that may result in operational vibration effects then operational vibration will be assessed.
PINS	The ES will need to provide a full, detailed description of sensitive receptors within the area adjacent to the airport, whilst avoiding duplication of baseline information between chapters where possible. The description should include reference to nearby properties in the northern part of Minster, off Alland Grange Lane, Woodchurch and immediately north of Spitfire Way. This may in part be addressed under Scoping Report paragraph 11.5.13 but it is unclear from the description.	The PEIR includes the potential noise sensitive receptors as suggested by PINS and survey work of the current baseline near these receptors has been undertaken.
PINS	Scoping Report paragraph 11.7.4 states that baseline noise monitoring will be undertaken at locations around the airport. The position and duration of noise monitoring should be agreed with TDC Environmental Health Officers (EHOs). Monitoring should be undertaken in accordance with BS7445-1:2003 as highlighted in Scoping Report Table 11.3. Base data such as survey reports should be presented as part of the ES.	All baseline sound monitoring has been undertaken in accordance with BS7445-1:2003 and summary reports of surveys are included as **Appendix 12.2.** The format and methodology of the baseline survey was communicated with TDC prior to undertaking any surveys.
PINS	Scoping Report paragraphs 11.5.4 and 11.5.5 reference future baseline conditions assuming that the airport will remain closed. The Secretary of State considers that the future baseline should also consider potential changes in road/rail traffic and in housing development in the locality, e.g. such as Manston Green.	The ES will consider the current and future baseline with the airport closed and the current and future baseline will be informed by road and rail traffic and noise surveys.
PINS	The Secretary of State considers that the 'ABC method' in BS5228-1:2009+A1:2014 is an appropriate methodology for the construction noise assessment. The Secretary of State notes the Scoping Report paragraph 11.6.8 comment that it is 'not clear what construction activities will take place'. The noise assessment should be based on a robust and consistent set of worst case assumptions regarding the duration, phasing and type of construction activity to be undertaken and on a clear description of operational activity. Where the two phases of activity overlap a combined worst case assessment should be provided.	For the ES, a precautionary assessment of construction noise will be undertaken. The assessment will assume construction activities which are consistent with the most recent masterplan, including noise levels when two phases of activity overlap It should be noted that no assessment of construction noise is presented within the PEIR and instead relevant BS5228-1:2009+A1:2014 threshold levels are prescribed based on the current baseline level of sound.
PINS	The Scoping Report does not explicitly reference construction traffic noise assessment, although	The construction assessment undertaken as part of the ES will include construction traffic, including the

Consultee	Comments and considerations	How this is addressed in this PEIR
	BS5228 allows for assessment of noise effects on haul routes. For the avoidance of doubt, the Secretary of State considers that construction traffic noise assessment should be undertaken, particularly in light of the potential requirement to import large volumes of fill material.	contribution of on-site construction vehicles, which will be determined using the 'Haul Road Calculation Methodology' as per BS 5228-1:2009+A1:2014.
PINS	The Applicant proposes to model operational air noise using the AEDT or Integrated Noise Model (INM) (Scoping Report paragraph 11.7.8). It is understood that INM was withdrawn in 2015; therefore the Secretary of State considers that modelling based on the most up to date version of AEDT should be undertaken.	For the purposes of the PEIR operational air noise modelling has been undertaken using the FAA's Integrated Noise Model (INM). The forecast aircraft fleet mix for Manston Airport includes only aircraft currently in operation and therefore INM will provide little material difference to AEDT. AEDT and INM were both produced by the US Federal Aviation Administration (FAA) and AEDT is not yet widely used in the UK. It is however intended that AEDT will be used for the ES.
PINS	The Secretary of State agrees with the use of the ISO9613-2:1996 standard to inform modelling of ground noise from static sources. The noise modelling should transparently identify the location of any noisy operational activities such as Engine Ground Runs (EGR) and their proximity to sensitive receptors.	For the ES, modelling of operational airside ground noise will be undertaken using the calculation methodology advocated within ISO 9613-2:1996 and locations of static aircraft noise (for example runway hold points, aircraft parking stands and EGRs) will be considered.
PINS	The Secretary of State considers that the ES should also include an assessment of vortex strike arising from plane movements.	Vortex strike is not a noise related effect and therefore is not included within the scope of the noise assessment.
PINS	Scoping Report paragraph 11.7.3 states that the assessment will assume a no-airport baseline, and that a review of environmental noise conditions at Manston Airport when last operational will also be undertaken. Any comparison with previous operations should acknowledge the differences in the types of aircraft used, against the likely aircraft predicted to use the airport.	An overview of baseline conditions that considers the airport when previously operational has been provided for context. It is recognised that the aircraft fleet mix is different to that previously operated due to the change in focus towards airfreight from mainly passenger-led operations.
PINS	The Secretary of State considers that operational road traffic noise can be assessed using the Calculation of Road Traffic Noise (CRTN) 1998 methodology as adapted by the Design Manual for Roads and Bridges (DMRB) 2011. The Secretary of State recommends that the detailed methodology and choice of noise receptors should be agreed with the relevant TDC EHO.	For the ES, the assessment of road traffic noise will be undertaken using the Calculation of Road Traffic Noise (CRTN) 1998 methodology as adapted by the Design Manual for Roads and Bridges (DMRB) 2011. The format for the road traffic assessment will be agreed with the TDC EHO once TDC is in a position to agree to the survey.
PINS	Where appropriate, effective measures should be provided to mitigate against noise nuisance and these should demonstrate the balanced approach set out in the Aviation Policy Framework, minimising the number of people affected by aircraft noise, particularly night noise, where possible. This may include physical measures such as bunds, screens and the orientation of buildings on site as well as management measures relating to flight paths and vehicle management. The Applicant should also outline how previous airport noise controls and commitments delivered through s106 agreements with TDC would be reflected as part of any operational environmental management system.	A Noise Mitigation Strategy is being prepared that is consistent with the proposer's business plan, the aims of the NPSE and the ICAO's Balanced Approach to Aircraft Noise Management. The noise strategy will also recognise the previous airports Section 106 (s106) agreement with TDC and as a minimum include the s106 requirements, and update where appropriate.

Consultee	Comments and considerations	How this is addressed in this PEIR
Cliffsend Parish Council	This subject is covered quite comprehensively in the scoping report, but we would like to make the suggestion that aircraft for disposal (which most probably will have noisier engines) be scheduled to land (wherever possible) from the West to minimise noise, especially in Ramsgate.	The noise consultant and the airspace consultant are working together to identify airspace options that are consistent with the aims of the NPSE, safe to operate and conform to CAA guidance including the existing and emerging guidance on airspace change proposals.
Thanet District Council	Operational noise is a significant concern of the Council, and the impact assessment and significance criteria will need further consideration particularly as guidance used for assessing significance does not correspond well with aircraft noise; for instance a C-weighted metric is more highly correlated to aircraft noise impact in communities than A-weighted metrics.	Operational aircraft noise is to be assessed in accordance with all relevant policies, standards and guidance, much of which rely on A-weighted noise exposure metrics. Furthermore, the saved Policy EP7 (Aircraft Noise) from TDC's local plan determines applications for residential developments using noise exposure categories specified using an A-weighted dB $L_{Aeq.}$
Thanet District Council	The proposed noise assessment makes reference to both the existing baseline conditions and conditions prior to the airport closing. Whilst this will prove a useful comparison, in EIA terms the baseline of the site is as existing i.e. a vacant site and not operating as an airport. Notwithstanding this it will be a useful comparison to make but the weight given to this will be determined by the decision maker.	An overview of baseline conditions that considers the airport when previously operational has been provided for context. The ES will rely upon current baseline conditions for assessment purposes that consider the airport whilst closed.
Minster Parish Council	Topics to be covered assume a zone of influence of 5km or, in the case of the road network, the local impact. The potential for the impact of operational development to exceed this distance seems clear, particularly with regard to noise impact upon the resident population beneath and adjacent to flight paths and the impact upon the nearby SPA and Ramsar site in terms of ecology.	The operational aircraft noise assessments has considered locations under potential flight paths and outside the 5 km zone of influence. The study area to be considered for the aircraft noise assessment will be bound by noise exposure levels rather than distances.
Minster Parish Council	This paragraph refers to a level of at least 18 night time movements, presumably on the basis of no definitive number of aircraft movements the statement will need to assess the impact of this large number of night time movements and demonstrate whether mitigation will be able to sufficiently reduce the level of the significant adverse effects of such a level of flying.	The number of night flights assessed are consistent with the most recent aircraft forecasts. This paragraph is not stating that there are to be 18 night-time movements, but merely that if there were, then this could be considered likely to result in a significant effect should external noise levels be above 80 dB LA_{Smax} for each movement.
Natural England	We note that there is no cross reference here to Biodiversity as there is within the Air Quality chapter and would advise the applicant to address this when preparing the ES so that all relevant chapters are cross referenced.	The PEIR has cross references the Biodiversity chapter and the noise effects of the Proposed Development on ecological receptors has been assessed within the Biodiversity chapter (see Chapter 7).

12.4 Overall baseline conditions

12.4.1 This section presents a summary of the baseline conditions as determined by the desk study and surveys. The baselines relevant to the noise and vibration assessments include:

- Historic Context – including an overview of aircraft operations at the airport when previously operational (i.e. pre 2014) and a summary of the likely air noise baseline (i.e. under flight paths) and the ground noise baseline (i.e. in the vicinity of the airport;
- Current baseline – including an overview of the residential areas around the airport and a summary of the current ground noise baseline and the current air noise baseline. The current ground noise baseline has been informed by long-term sound surveys and the current air noise baseline informed by observations of the baseline in locations which will potentially be overflown and interpretation of noise mapping data for locations near to major roads and major railways; and
- Future baseline – including how the future baseline will be determined for the ES and how the future baseline has been assumed for the PEIR.

Overview

12.4.2 The airport is located adjacent to the Thanet urban agglomeration and Ramsgate is located to the east. To the west, the nearest residential area is St Nicholas-at-Wade which is approximately 6 km away from the Site boundary, and to the north Margate is located approximately 5 km away.

12.4.3 The nearest residential areas to the site are Cliffsend, Minster and Manston. To the southwest, northern areas of Cliffsend are less than 300 metres southeast of Runway 28 and the A299 runs through Cliffsend. To the southwest, northern areas of Minster are approximately 600 metres south of Runway 10 and the airport's main access route to the airport terminal buildings (the A253) runs approximately 200 metres north of the area. To the north of the airport the proposed access route to the airport, the B20190 and the B2050 runs through the village of Manston and a number of dwellings within southern parts of Manston are located less than 300 metres away from the main hangar area. The closest residential area to the west is St Nicholas-at-Wade, 6km away.

12.4.4 In addition to the airport, Polar Helicopters, a helicopter charter business, operates from a hangar at the north of the site on Spitfire Way and it is proposed that the business will be retained as part of the reopening of the airport, although it will likely be moved to new Business Aviation Facility. Furthermore, the Spitfire and Hurricane Museum and the RAF Manston History Museum are located north of Manston Road, inside of the site boundary and these are still operational today and will be retained as part of the reopening.

Historic Context

12.4.5 Manston Airport, Kent is a former civil aerodrome that closed in May 2014. However, much of the infrastructure remains unchanged from when it was operational. The airport has one main runway (Runway 10/28) which is 2,748 metres in length, and one terminal building located to the northeast of the site, with dedicated aircraft parking stands positioned around the terminal. To the north of the site are a maintenance area and freight area. The freight facilities consist of a number of hangar buildings and aircraft parking stands.

12.4.6 During its last full year of operation (i.e. 2013), the airport handled approximately 30,000 tonnes of freight and approximately 2,000 ATMs in addition to a number of non-ATMs including training flights and military aircraft. The airport handled a wide variety of aircraft types, with aircraft as large as Boeing 747-400, McDonnell Douglas DC-10, Antonov An-124, McDonnell Douglas MD-11 and Airbus A300.

12.4.7 Currently there are no aircraft operations from Manston Airport, however, aircraft operations were occurring as recently as May 2014 and therefore a review of the noise conditions associated with Manston Airport when it was last operational has been undertaken to provide context to the assessment of operational air noise.

Historic ground noise

12.4.8 For areas in the immediate vicinity of the airport, airside ground noise and sources of air noise that occur on the ground (for example reverse thrust and start-of-roll) contributed to the sound environment.

12.4.9 There is no evidence that noise from aircraft ground operations has previously been assessed for Manston Airport. However, experience of this type of noise from other studies indicates that several receptors around the Airport would have experienced sounds from ground operations and would have been exposed to airside ground noise prior to the airport closing. These receptors would have typically been located in a proximity to areas where aircraft ground movements take place, for example near to taxiways, runway hold points and aircraft parking stands. These receptors would therefore have included northern areas of Cliffsend (e.g. King Arthur Road), northern areas of Minster (for example Southall Close and Smugglers Leap), southern areas of Manston (e.g. High Street) and southern areas of Acol (e.g. western receptors along Spitfire Way). It is also likely that northern areas of Minster and Cliffsend, which are less than 1 kilometre from the ends of Runway 10 and Runway 28 respectively, would have received noise from aircraft start-of-roll and some of this noise may have been observed at distances greater than 1 kilometre.

Historic air noise

12.4.10 When previously operational, Manston airport had established arrival and departure routes, including a noise abatement route for jet and large aircraft operations. The airport also had a preferential westerly runway direction and aircraft would operate in a westerly mode with a tail wind of up to 5 m/s. In previous years of operation, this meant that approximately 30% of aircraft movements operated in an easterly mode and 70% in a westerly mode.

12.4.11 When operational and during a westerly mode of operation (approximately 70% of time), departures would take-off to the west and overfly St Nicolas-at-Wade and eastern areas of Herne Bay and arrivals would land from the east and overfly Ramsgate. During an easterly mode (approximately 30% of time), aircraft would arrive and land from the west overflying Herne Bay and take-off to the east overflying Ramsgate. The former airspace procedures for Manston Airport were presented in the Manston Airport AIP as described in **Table 12.8**.

12.4.12 Due to the proximity of the airport to the Thanet agglomeration, the airport was required to produce noise contours under The Environmental Noise (England)

Regulations 2006 (as amended). The contours were produced based on aircraft movements in 2011 and were published as part of the draft Noise Action Plan.

12.4.13 The level of noise exposure presented within the draft Noise Action was expressed in terms of $L_{Aeq,16hr}$, L_{night}, and L_{den} contours. The modelling for the contours was based on 18,695 aircraft movements, however, of the total aircraft movements only around 10% were considered Air Transport Movements (ATMs) and the rest were likely to comprise non-ATMs including general aviation flights, training flights and positioning flights.

12.4.14 Although the previous operating conditions at Manston Airport provide context to the level of noise exposure as a result of operations at the airport, the types and activities of the aircraft operating in 2011 and therefore underpinning the noise contours reported, these are not representative of the proposed future aircraft movements as part of the Proposed Development. Nonetheless, the draft Noise Action Plan did show that in 2011, 100 dwellings were exposed to noise levels of at least 57 dB $L_{Aeq,16hr}$ and that the 54 dB L_{day} contour extended easterly to St. Lawrence and Ramsgate, and westerly to Mount Pleasant. The contours also show that levels of noise above 63 dB L_{day} did not extend further than the airport boundary.

Current ground noise baseline

12.4.15 In total, baseline sound monitoring was undertaken in February and March 2017, at six locations as illustrated in **Figure 12.1**. A summary of the daytime and night-time sound levels at these locations is presented in **Table 12.10**, and presented in detail including on-site observations, in **Appendix 12.2.** The format and methodology of the sound surveys is described in **Section 12.3 – Survey Work.**

Table 12.10 Summary of current ground noise baseline survey locations

Location ref.	Address	Indicative Current Baseline	
		Daytime 0700 to 2300 ($L_{Aeq,16hr}$)	Night-time 2300 to 0700 ($L_{Aeq,8hr}$)
LT1 – Acol	The Street, Acol, Birchington	53 dB	48 dB
LT2 – Beamont Close	Beamont Close, Manston	51 dB	45 dB
*LT3 – Manston Road	Manston Road, Manston	51 dB	46 dB
LT4 – St John's Avenue	St John's Avenue, Ramsgate	53 dB	46 dB
LT5 – Cliff View	Cliff View Road, Cliffsend, Ramsgate	51 dB	47 dB
LT6 – Tothill Street	Tothill Street, Minster	53 dB	48 dB

*A weather station was deployed with the sound monitoring equipment at the survey location

Current air noise baseline

12.4.16 A number of locations further away from the airport, which may be affected by air noise as a result of airspace design, were identified using aerial imagery. Locations were determined based on the centres of population that could potentially be overflown by aircraft. Within these locations, an acoustic technician

conducted a walkover of the area and made observations of the daytime and night-time sound environment. The aim of the observations was to characterise the sound environment at the time of the visit, including identifying the dominant sources of sound.

12.4.17 For the ES the current air noise baseline will be supported by modelling of the major sources of sound, namely road traffic and railway movements, however, this data is not yet available for the PEIR and therefore the current baseline at these locations is informed by observations only.

12.4.18 In total, 13 no. locations were selected for observations and these are shown in **Table 12.11** and illustrated in **Figure 12.2**. Further information on current air noise baseline observation locations is provided in **Appendix 12.3**.

Table 12.11 Summary of current air noise baseline observation locations

Observation ref.	Residential area	Observations	
		Daytime	**Night-time**
OBS 1 - St Nicholas-at-Wade	St Nicholas-at-Wade	Road traffic noise from the A299 was the dominant contributor to the baseline sound environment, which was in the region of 55 to 60 dB $L_{Aeq,5min}$. Intermittent road traffic noise from local roads through the village was audible as well as a railway event on the Chatham Main Line.	Road traffic noise from the A299 was still dominant, however the levels had reduced due to decreased traffic flow. Monitored levels were in the region of 42 to 47 dB $L_{Aeq,5min}$.
OBS 2 - Beltinge	Beltinge	Road traffic noise from the A299 dominated the sound climate, which was measured in the region of 60 dB $L_{Aeq,5min}$. Train pass-bys were audible along the Chatham Main Line.	Road traffic noise from the A299 remained the dominant source of sound, measuring in the region of 45 dB $L_{Aeq,5min}$.
OBS 3 – Avenue of Remembrance, Herne Bay	Herne Bay	Road traffic noise from Kings Road was the dominant source of sound, however during lulls in traffic flow distant road traffic noise from the A299 and A2990 was noted to be the dominant source of sound.	Due to reduced traffic flow on Kings Road, road traffic noise from the A299 and A2990 was dominant, measuring in the region of 46 dB $L_{Aeq,5min}$.
OBS 4 – Studd Hill, Herne Bay	Herne Bay	Road traffic noise from Sea St was the dominant source of sound, measured as being in the region of 60 dB $L_{Aeq,5min}$. A train pass-by was also audible during observations.	Distant road traffic noise from the A2990 was the dominant source of sound, which would be dominated by infrequent vehicle pass-bys on Sea St. Measured levels were in the region of 49 dB $L_{Aeq,5min}$.
OBS 5 - Sarre	Sarre	The sound climate of the village was dominated by road traffic noise emanating from the A28. This measured in the region of 60 dB $L_{Aeq,5min}$. Aircraft noise was also audible intermittently.	During night-time, the sound climate was again dominated by road traffic noise from the A28, however due to reduced traffic flow the levels had lowered to 50 dB $L_{Aeq,5min}$.
OBS 6 - Stourmouth	Stourmouth	The sound climate was dominated by road traffic noise from the A28. Monitored levels were in the region of 50 dB $L_{Aeq,5min}$. Train horns were audible whilst making observations.	Road traffic noise from the A28 was dominant. Monitored levels were in the region of 30-35 dB $L_{Aeq,5min}$.
OBS 7 – Grove Ferry, Upstreet	Upstreet	The dominant source of sound was road traffic noise from the A28, however during a train pass-by, rail noise would dominate this. Measured levels were in the region of 55 to 60 dB $L_{Aeq,5min}$.	Road traffic noise from the A28 remained the dominant source of sound. Measured levels were in the region of 35 dB $L_{Aeq,5min}$.

Observation ref.	Residential area	Observations	
		Daytime	**Night-time**
OBS 8 - Reculver	Reculver	The dominant source of sound was waves from the sea crashing against the shore, as well as bird song, in particular seagulls.	Distant road traffic noise from the A299 was the dominant source of sound, with intermittent high flying aircraft noise noted. Monitored levels were in the region of 34 dB $L_{Aeq,5min}$.
OBS 9 - Birchington-on-Sea	Birchington-on-Sea	Road traffic noise on the A28 was dominant during observations, with local traffic dominating this whilst vehicles passed-by. A rail pass-by occurred which dominated the sound climate. Measured levels were in the region of 61 dB $L_{Aeq,5min}$.	Road traffic noise from the A28 was dominant. As well as this, high flying aircraft noise was audible, which was intermittent. Measured levels were in the region of 53 dB $L_{Aeq,5min}$.
OBS 10 - Staner Court	Ramsgate	Road traffic noise from the B2050 was the dominant source of sound, with road traffic noise from the A256 also audible. A helicopter fly over was audible during the observations. Measured levels were in the region of 46 to 54 dB $L_{Aeq,5min}$.	Ventilation plant from the commercial units in the vicinity of Staner Court was the dominant source of sound. Whilst road traffic noise on the B2050 was intermittent. Measured levels were in the region of 49 dB $L_{Aeq,5min}$.
OBS 11 - St Lawrence	St Lawrence	The sound of trains idling was the dominant source of sound until a rail pass-by occurred, which dominated the sound climate.	During the night-time the sound of trains idling at the train station was dominant, levels were measured in the region of 45 to 50 dB $L_{Aeq,5min}$.
OBS 12 – Ramsgate Harbour	Ramsgate	Road traffic noise from the B2054 was dominant throughout, with intermittent aircraft noise audible. Measured levels were in the region of 50 to 55 dB $L_{Aeq,5min}$.	Traffic flow on the B2054 was much reduced and therefore the dominant source of sound was wind rustling through the trees. Levels measured were in the region of 50 $L_{Aeq,5min}$.
OBS 13 - Pegwell	Pegwell	Road traffic noise from traffic on local roads was the dominant source of sound. Agricultural noise and aircraft noise was also audible during observations. Measured levels were in the region of 40 to 45 dB $L_{Aeq,5min}$.	At night-time, road traffic noise was still the dominant source of, however it was noted to be quieter than that of during the day. Measured levels were in the region of 40 dB $L_{Aeq,5min}$.

Future baseline

12.4.19 For the ES the future baseline sound environment will be assessed through sound propagation modelling of the major sources of sound, namely road traffic movements. At the time of writing the PEIR, forecast future road traffic data was not available and therefore no sound propagation modelling had been.

12.4.20 Therefore, for the purposes of the PEIR, the future baseline has assumed to be the same as the current baseline. It is expected that road traffic movements for the future baseline will be greater than those for the current baseline, and hence noise levels will increase as a result, and therefore this assessment approach is considered conservative.

12.5 Environmental measures incorporated into the Proposed Development

Noise mitigation strategy

12.5.1 Further work is currently being undertaken to develop a noise mitigation strategy that fully considers potential operating procedures and restrictions. This strategy is developing an evidence base that defines and evaluates the measures that are

achievable within the context of the development proposals. The strategy will further, consider the cost-benefit of achievable measures in line with the ICAO balanced approach.

12.5.2 It is acknowledged that noise-related restrictions will be a possible requirement of any consent given. The strategy is therefore determining how noise can be managed and controlled in a manner that provides local communities with certainty around the levels of noise that can be expected from the reopening of the airport and its forecast operation. Proposals for these restrictions will be presented alongside the assessments within the ES.

Aircraft noise insulation scheme

12.5.3 A noise insulation scheme will be offered as part of the Proposed Development to help avoid significant adverse effects of health and quality of life. The scheme will take into account both daytime and night-time noise exposure. The details of this insulation scheme are still being finalised but will include details on the level of funding that will be made available, the sound insulation measures for which funding can be used, and the rooms these measures may be installed for. The eligibility of the scheme will be entirely consistent with current and emerging Government Policy. The scheme will therefore be based upon the extents of both the daytime 63 dB $L_{Aeq,16hr}$ and night-time 55 dB L_{night} contours. Where properties are affected by levels of noise at or above 55 dB L_{night}, the insulation scheme will include bedrooms.

Summary of environmental measures

12.5.4 A summary of the environmental measures that have been incorporated into the development proposals to date in order to avoid, reduce or compensate for potential adverse noise effects are summarised in **Table 12.12**.

12.5.5 Where environmental measures are currently unknown, or uncertain, they are not included within **Table 12.12**. Further measures will be included within the ES as they are identified along with how they will be secured through the relevant regimes.

Table 12.12 Rationale for incorporation of environmental measure

Potential receptor	Incorporated measure	Summary of measure
Construction noise and vibration All sensitive human receptors including those used for educational, commercial and leisure purposes	Construction Environmental Management Plan (CEMP)	A CEMP will be produced which will include standard measures to limit noise and vibration from construction activities (for example limit on construction hours, requirement (where possible) to locate noisy or high magnitude vibratory plant or activities away from receptors and a complaints reporting procedure.
Construction noise All sensitive human receptors including those used for educational, commercial and leisure purposes	Operational traffic management plan	The plan will restrict road traffic from travelling on certain routes (e.g. through Manston or Acol villages).
Operational road traffic noise	Operational traffic management plan	The plan will restrict road traffic from travelling on certain routes (e.g. through Manston or Acol villages).

All sensitive human receptors including those used for educational, commercial and leisure purposes		
Operational air noise All sensitive human receptors including those used for educational, commercial and leisure purposes	Noise mitigation strategy	Work is currently being undertaken by the project team in developing a noise mitigation strategy which fully considers a number of operating procedures and restrictions
Operational air noise All sensitive human receptors including those used for educational, commercial and leisure purposes	Aircraft noise insulation grant scheme	An aircraft noise insulation scheme will be offered as part of the Proposed Development to help avoid significant adverse effects of health and quality of life.

12.6 Scope of the assessment

12.6.1 This section summarises the noise and vibration scenarios for which a technical approach to the assessment of likely significant effects is presented within this PEIR. This section summarises the process whereby receptors are identified and the potential receptors that could be affected by the Proposed Development.

12.6.2 The scope of the assessment has been informed by: the scoping study; consultee responses to the Scoping Report; the results of the baseline work described in **Section 12.4**; and the evolution of the masterplan scheme design.

Receptor scope

Potential receptors

12.6.3 There are three main categories of receptor to be considered in the assessment of noise and vibration within the Study Area. These include:

- Residential receptors – existing and proposed residential receptors in isolation or as a community (i.e. a group of receptors located in close proximity to one another, or within a named hamlet, village or town);
- Non-residential community receptors – including schools, places of worship, and medical facilities; and
- Quiet areas – areas referred to in the NPPF as being prized for their recreational and amenity value.

12.6.4 The assessment of likely noise effects associated with the construction and operation of the Proposed Development on ecological receptors will be addressed within the Biodiversity Chapter (**see Chapter 7**).

Approach to identifying receptors

12.6.5 The identification of receptors within the three receptor categories outlined above is based upon relevant guidance and the professional judgement of a qualified

technical specialist who has undertaken a desk study for the site location. This section outlines the approach adopted in identifying the potential receptors.

12.6.6 The following considerations have been taken into account in identifying potential receptors:

- The extent to which the receptor will be affected by changes that are expected to result from the Proposed Development;
- The sensitivity of the receptors to the changes that are likely to occur;
- The likely magnitude, duration and other characteristics of the effects;
- The importance or value of the receptor at a local, regional and national level; and
- Relevant best practice and guidance where specialist methodologies have been developed as detailed below.

12.6.7 Residential receptors, considered to be at risk of being significantly affected by the Proposed Development are listed in **Table 12.13.** These receptors have been identified adopting the considerations outlined above, and are based on consultation responses received from PINS.

Table 12.13 Potential receptors

Receptor	Type of receptor	Location in relation to airport	Distance from site boundary	Reason for selection
Plumstone Road, Acol	Residential	Northwest	840 m	Closest residential area to northwest of site
Alland Grange, Minster	Residential	Northwest	380 m	Close to northwest boundary of airport and recommended for inclusion by PINS
Spitfire Road, Manston	Residential	North	<100 m	Closest residential area to proposed access road
Bell Davies Drive (Woodchurch), Manston	Residential	North	<100 m	Closest residential area to maintenance area and Woodchurch recommended for inclusion by PINS
Manston Court Road, Manston	Residential	North	<100 m	Closest residential area to airport terminal building
High Street, Manston	Residential	Northeast	<100 m	Closest residential area to easterly runway end
Spratling Lane, Newington	Residential	Northeast	1 km	Closest residential area to northeast of site
Kentmere Road, St Lawrence	Residential	East	480 m	Closest residential area to east of site

Receptor	Type of receptor	Location in relation to airport	Distance from site boundary	Reason for selection
King Arthur Road, Cliffsend	Residential	Southeast	<100 m	Closest residential area to southeast of site
Ivy Cottage Hill, Manston	Residential	South	120 m	Closest residential area to south of site
Southall Close, Minster	Residential	Southwest	240 m	Closest residential area to southwest of site
Smugglers Close, Minster	Residential	West	<100 m	Closest residential area to west of site
Manston Court/Haine Road, Newington	Residential	Northeast	1.2 km	Reserved for mixed development in *Proposed Revisions to draft Local Plan (preferred options)*, 2017 (ref OL/TH/14/0050)
Shottendane Road, Manston	Residential	North	2.3 km	Reserved for future residential development in *Proposed Revisions to draft Local Plan (preferred options)*, 2017
The Street , Acol	Residential	Northwest	1.2 km	Survey location
Beamont Close, Manston	Residential	North	160 m	Survey location
Manston Road, Manston	Residential	Northeast	500 m	Survey location
St John's Avenue, Ramsgate	Residential	Northeast	1.3 km	Survey location
Cliff View Road, Cliffsend	Residential	Southeast	140 m	Survey location
Tothill Street, Minster	Residential	Southwest	700 m	Survey location
St Nicholas at Wade	Residential community	West	3.7 km	Observation location and likely to be overflown
Beltinge	Residential community	North	600 m	Observation location and likely to be overflown
Avenue of Remembrance, Herne Bay	Residential community	West	13.4 km	Observation location and likely to be overflown
Studd Hill, Herne Bay	Residential community	West	15.4 km	Observation location and likely to be overflown
Sarre	Residential community	West	3.8 km	Observation location and likely to be overflown

Receptor	Type of receptor	Location in relation to airport	Distance from site boundary	Reason for selection
West Stourmouth	Residential community	Southwest	1 km	Observation location and likely to be overflown
Upstreet	Residential community	Southwest	800m	Observation location and likely to be overflown
Reculver	Residential community	Northwest	4.5 km	Observation location and likely to be overflown
Birchington-on-Sea	Residential community	North	13.5 km	Observation location and likely to be overflown
Staner Court, Ramsgate	Residential	East	880 m	High-rise residential dwellings under final stages of westerly aircraft arrival route
St Lawrence	Residential community	East	11.5 km	Observation location and likely to be overflown
Ramsgate	Residential community	West	0.4 km	Observation location and likely to be overflown
Pegwell Bay	Residential community	Southeast	5.3 km	Observation location and likely to be overflown

12.6.8

12.6.9 For the ES, Non-residential noise sensitive receptors, considered capable of being significantly affected within the residential community areas (as identified in **Table 12.13**), will be identified using the CACI dataset and aerial photography, as summarised in **Table 12.8.**

12.6.10 It is understood that there are no areas within the study area that would be referred to in the NPPF as being prized for their recreational and amenity value. Assessments considering the likely impacts upon quiet areas have not therefore been undertaken.

Spatial scope

12.6.11 The principles and geographical extents of the spatial scope are defined by the Study Area of the associated assessments, as discussed in **Section 12.3**.

12.6.12 The spatial extents are governed by the extent of the potential significant effects (in EIA terms) and the potential adverse effects (in terms of Government Policy). Until the design and layout of the Proposed Development has been fully developed, it is not possible for these extents to be specific. The study areas applicable to the Manston Airport project are expected to be refined for the ES.

12.6.13 For the ground noise and vibration activities, an initial study area of 2 km has been set. This is based upon likely effects from the construction phase and airside

ground noise activities, which have the potential to propagate over such distances during sensitive periods or during periods of activities with much higher levels of noise such as Engine Ground Running (EGR).

12.6.14 The spatial scope of the air noise activities assessment is partly governed by the extents to which areas are overflown, and thus adversely affected by aircraft noise. As discussed in **Section 12.1 – Limitations**, the location of the flight paths is not yet known and will be formalised through an airspace change proposal (ACP).

12.6.15 Therefore, for the purposes of the PEIR a design swathe has been considered, within which the ES will assess a number of prototype routes. The design swathe has taken into account the 'knowns' of the local airspace, whilst being designed with the objective of overflying the least number of people in line with Government aviation policy and associated guidance. The design swathe is presented in **Figure 3.32.**

12.6.16 The noise impact of routes within the design swathe has been considered and this has been used to inform the assessment of air noise within this PEIR.

Temporal scope

12.6.17 The temporal scope associated with the operational noise assessment is based upon Year 2 (2020), Year 6 (2024) and Year 20 (2038), as these represent opening year of operations the first year that 10,000 freight aircraft movements is reached, and maximum capacity and hence likely worst-case year, respectively. However, the temporal scope is not yet finalised, therefore this is subject to some change.

Summary of assessment scope

12.6.18 A summary of the noise and vibration assessments to be undertaken in the ES for the relevant Study Area is given in **Table 12.14**. For each assessment, the methodology for the prediction of effects and associated assessment criteria is detailed in **Section 12.7**.

Table 12.14 Summary of noise and vibration assessment scope

Noise assessment scope
Construction noise – earthworks, fixed & mobile plant
Construction and Operational noise – road traffic
Construction vibration - earthworks, fixed & mobile plant
Operational noise – industrial and commercial sound (fixed plant)
Operational noise – aircraft air noise and airside ground noise (including mobile and static sources of noise)

12.6.19

12.6.20 Until the design and layout of the Proposed Development has been fully developed, it is not possible within this PEIR to present an assessment for each of the scenarios listed in **Table 12.14.**

12.6.21 It has however been possible for a preliminary assessment of the likely effects associated with construction noise and operational air noise to be undertaken.

12.6.22 For those scenarios where a preliminary assessment was not possible, the proposed methodology for predicted effects and significant evaluation criteria, to be adopted in the final ES, is outlined in **Section 12.7**.

12.7 Assessment methodology

12.7.1 This section sets out the methodology to be adopted within the ES documentation for the prediction of effects from each of the noise and vibration assessments.

12.7.2 For each of the assessment scenarios there is an element of uncertainty inherent in the adopted methodologies. A pragmatic approach will therefore be adopted in order to minimise uncertainty throughout the assessment process. The areas that have the potential to introduce uncertainty will be clearly discussed within the final ES documentation.

Modelling methodology

12.7.3 In order to facilitate the assessment of ground-based noise sources, a modelling exercise has been undertaken which has considered:

- Construction noise – earthworks, fixed and mobile plant;
- Construction and Operational noise – road traffic;
- Operational noise –airside ground noise (including fixed and mobile sources); and
- Operational noise – industrial and commercial sound (fixed plant).

12.7.4 Ground-based noise sources have been modelled using three-dimensional information within proprietary noise modelling software adopting digital information including a Digital Terrain Model (DTM), and datasets describing the location of buildings, bridges, barriers, and other obstacles to sound propagation.

12.7.5 To support the assessment of construction vibration, empirical modelling techniques using spreadsheet models have been utilised where direct measurement of levels associated with the Construction Vibration (earthworks, fixed and mobile plant) assessment scenario, cannot be undertaken.

12.7.6 With respect to aircraft air noise, noise modelling exercises have been undertaken using the Federal Aviation Administration's (FAA) Integrated Noise Model (INM) v.7.0d. INM is the most widely used airport noise modelling software and had been used in the UK by many airports, including by Manston Airport when previously operational and by airports undertaking airspace change proposals consistent with CAA's CAP 725 guidance and for the purposes of airport noise mapping under the Environmental Nosie Directive (2002/49/EC).

12.7.7 For all assessment scenarios, the final adopted methodology for the prediction of effect is dependent upon the format of the design and layout of the Proposed Development, therefore is subject to change. Where necessary, assumptions will be made with respect to the proposed construction and operation of the Proposed Development. These assumptions will be made based upon discussions with the relevant contractors and Amec Foster Wheeler's experience of other, similar developments.

Construction noise – earthworks, fixed & mobile plant

12.7.8 This section considers the methodology to be adopted in the calculation of noise levels from the earthworks activities, and the fixed and mobile plant associated with the construction of the Proposed Development. The predicted noise levels are used within the assessment of adverse effects from construction activities at receptors within the Study Area.

12.7.9 The greatest adverse noise effects are likely to be during the earthworks associated with the construction of the Proposed Development, which require the use of heavy earth moving machinery in close proximity to identified receptors.

Assessment extents

12.7.10 The extents at which potential construction noise effects may occur varies depending on the context of the construction phases, and associated noise sources under evaluation. The extents of the construction noise assessments therefore focuses on the closest, and thus greatest affected receptors.

12.7.11 Given the high noise emissions from the earthmoving machinery associated with the earthworks phase, and based upon the assessment approaches advocated within BS 5228-1:2009+A1:2014 (2014) , assessment extents of up to 2 km (as measured from the activity location) have been considered.

Calculation method

12.7.12 Industry standardised guidance has been used to inform the calculation methodology to be adopted in the calculation of noise levels from construction activities associated with each assessed phase. The methodology and calculation algorithms advocated within BS 5228-1:2009+A1:2014 (2014) will be adopted, and modelled within a three-dimensional environment using LimA.

12.7.13 Calculations from the following two source types have been undertaken:

- Point sources (fixed plant); and
- Line sources (haul roads).

12.7.14 The modelling software tools will allow the three-dimensional environment to be considered in the calculations including topographical features, such as barriers and bridges, which provide noise attenuation.

Construction and Operational noise – road traffic

12.7.15 This section considers the methodology to be adopted for the calculation of road traffic noise levels associated with the construction and operation of the Proposed Development.

12.7.16 The assessment scenarios and extents are consistent with the advice set out within The Highways Agency (now Highways England) *'Design Manual for Roads and Bridges*' (DMRB, 2011). The baseline year and future assessment year(s) have been selected in order to identify the periods when likely noise effects from road traffic would be greatest. The future assessment year(s) have been selected to be representative of the road traffic flows during the busiest construction periods and the periods immediately after the commissioning of the Proposed Development (both 'short-term'), and the greatest traffic flows in (up to) the 15th year after opening ('long-term').

12.7.17 The objective of an assessment is to gain an appreciation of the noise climate both with and without the road project, referred to as the 'Do-Something' and 'Do-Minimum' scenarios respectively.

12.7.18 For each of the future assessment years, a minimum of the following scenarios will be considered:

- Do-Minimum scenario in the baseline year against Do-Minimum in the future assessment(s) year (long-term);
- Do-Minimum scenario in the baseline year against Do-Something scenario in the baseline year (short-term); and
- Do-Minimum scenario in the baseline year against Do-Something in the future assessment year (long-term).

12.7.19 In addition to the scenarios outlined above, the assessment will be based upon the absolute predicted road traffic noise levels at receptors.

Assessment extents

12.7.20 The extents of the road traffic noise model are consistent with the guidance set out within DMRB (2011), being dictated by both distances from 'affected routes' and the likely magnitude of change on those routes.

12.7.21 The affected routes are generally defined as:

- All routes that have been bypassed or improved, any proposed new routes or where the road has altered the alignment of any existing carriageway;
- All road segments that were predicted to experience a 25% increase or 20% decrease in vehicle flows, and/or a noticeable change in %HGV content, and all roads within 2 km of these;
- All routes where there has been a significant change in traffic speed or proportion of heavy goods vehicles; and
- Construction traffic haul routes (on public roads).

12.7.22 It is considered that locations within 1 km of the affected routes are likely to be affected by road traffic noise and therefore the road traffic noise model will be based upon extents of 1 km around the affected routes.

Calculation method

12.7.23 The calculation of construction and operational road traffic noise will be undertaken with reference to the following guidance documents:

- Department of Transport's document 'Calculation of Road Traffic Noise' (CRTN, 1988); and
- Transport and Road Research Laboratory 'Converting the UK traffic noise index $L_{A10,18hr}$ to EU noise indices for noise mapping' (TRL PR/SE/451/02, 2002).

Construction vibration - earthworks, fixed & mobile plant

12.7.24 This section sets out the methodology to be adopted in calculating the levels of vibration from construction activities associated with the Proposed Development. The predicted levels of vibration are to be used in the assessment of adverse effects from earthworks, and fixed and mobile plant at receptors in the vicinity of the Proposed Development.

12.7.25 The greatest sources of vibration at receptors during construction activities are likely to be from activities involving piling (vibratory or percussive) and compaction (vibratory or dynamic). The assessment of these sources will be based upon absolute values at receptors, therefore there is no requirement for an assessment based upon vibration change. It is understood that blasting is not required as part of the construction phases, therefore associated calculations will not been undertaken.

12.7.26 The methodology adopted for the calculation of vibration levels from construction activities is that advocated within Transport and Road Research Laboratory *Research Project 429 – Groundborne vibration caused by mechanised construction works* (TRL 429, 2000) and BS5228-2:2009+A1:2014 *'Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration'* (BS5228-2:2009:A1:2014, 2014). Additional general guidance on the considerations to be made when calculating vibration levels has been taken from Transport and Road Research Laboratory *Research Project 53 – Ground vibration caused by civil engineering works* (TRL 53, 1986) and The Association of Noise Consultants *ANC Guidelines - Measurement and Assessment of Groundborne Noise and Vibration* (ANC, 2012).

Assessment extents

12.7.27 The extents at which potential vibration induced disturbance to receptors and cosmetic damage to properties may occur is dependent upon the nature and duration of the associated event. The extents of the construction induced vibration will be focused on the closest, and thus greatest affected receptors.

12.7.28 Assessments of the vibration induced effects during construction will be limited to a distance of 100 m from the associated activities, consistent with the research presented within TRL 53 (1986) and TRL 429 (2000).

Calculation method

12.7.29 The empirical methods presented within TRL 429 (2000) and BS5228-2:2009:A1:2014 (2014) will be used for the calculation of vibration levels during the earthworks, and from the fixed and mobile plant associated with the construction.

12.7.30 The outputs in peak particle velocity (PPV) will be used in the assessment of likely cosmetic building damage, and then converted to a VDV inside the receptor building, where necessary, using a suitable conversion factor and a vibratio6n transfer function appropriate to the receptor buildings construction and likely propagation distance. The calculated VDV is used for evaluating human perception and thus likely disturbance.

Operational noise – industrial and commercial sound (fixed plant)

12.7.31 This section sets out the methodology to be adopted in the calculation of noise levels from the operation of fixed plant associated with the Proposed Development. The calculated sound levels will be used to inform the assessment of adverse effects at noise sensitive receptors from the Proposed Development.

12.7.32 Separate operational noise calculations will be undertaken for the daytime (07:00 – 23:00 hrs) and night time (23:00 – 07:00 hrs) periods. Where necessary, additional calculations will be undertaken for discrete periods, such as during shift changes.

Assessment extents

12.7.33 The extents at which potential operational noise effects may occur varies depending on the context of the sound source under evaluation. The extents of the assessment of sound sources, as discussed in **Section 12.3 – Study Area** is 2 km, which is considered appropriate given the types of activities that could be undertaken and the types of fixed plant that may be required for the Proposed Development.

Calculation method

12.7.34 Detailed information on the nature and scale of proposed sound sources are yet to be finalised. Where these are not fully available at the time of the ES, industry standardised guidance will be used to inform the calculation methodology adopted in the calculation of sound levels from the operation of the Proposed Development.

12.7.35 The methodology and calculation algorithms to be implemented, will be those advocated within the following guidance:

- BS4142:2014 ‘Methods for rating and assessing industrial and commercial sound’ (BS4142:2014, 2014);
- BS8233:2014 ‘Guidance on sound insulation and noise reduction for buildings’ (BS8233:2014, 2014); and

- ISO 9613-2:1996 'Attenuation of sound during propagation outdoors: Part 2 General Method of Calculation' (ISO 9613-2, 1996).
- Receptor details and calculation inputs have been aligned with that detailed within ISO 9613-2 (1996), BS4142:2014 (2014) and BS 8233:2014 (2014d).

12.7.36 LimA will be used to undertake the environmental sound propagation calculations in relation to the proposed operational sound sources. The nature and scale of each sound source has determined the most appropriate emission characteristics i.e. point, line or area source.

12.7.37 Wherever possible, calculations will be undertaken in third octave bands as per recommendations within BS4142:2014 (2014) and using the methodology advocated within ISO 9613-2 (1996).

Operational noise – aircraft air noise and airside ground noise (including mobile and static sources of aircraft noise)

12.7.38 This section sets out the methodology adopted for the calculation of noise associated with the operation of the Proposed Development, and particularly air noise and airside ground noise.

12.7.39 Airside ground noise is the noise generated by aircraft whilst on the ground during taxiing, hold and whilst at a stand. Engine ground runs (EGRs) are also considered airside ground noise. In addition, airside ground noise is generated by ground support equipment (GSE), which are need to service the aircraft whilst on the ground.), for example aircraft pushback-tug, re-fuelling trucks and ground power units.

12.7.40 Aircraft air noise is the noise generated by aircraft in-flight. In addition, aircraft noise which occurs on the runway immediately before take-off and after landing are considered aircraft air noise, for example start-of-roll and reverse thrust activities.

Assessment extents

12.7.41 For airside ground noise, the extents at which potential operational noise effects may occur varies depending on the context of the sound source under evaluation. Therefore, due the various sources of airside ground noise and the types of activities that may be undertaken during operation of the Proposed Development, the extents of the assessment of sound sources, as discussed in **Section 12.3 – Study Area** is 2 km.

12.7.42 Due to the uncertainty around airspace procedures as described in **Section 12.1 - Uncertainty**, aircraft air noise could extend up to 14 km along the westerly runway centreline (i.e. to Herne Bay coastline) and 3.5 km along the easterly centreline (i.e. to Ramsgate coastline), as defined in **Section 12.3 – Study Area.**

Calculation method

12.7.43 Different calculation methodologies are to be implemented for aircraft air noise and airside ground noise. For airside ground noise, the methodology and calculation algorithms to be implemented, will be those advocated within the following guidance ISO 9613-2 (1996).

12.7.44 For the purposes of the PEIR, aircraft air noise will be calculated using the latest version of Federal Aviation Administration's (FAA) Integrated Noise Model (INM) v.7.0d. It should be noted that for the ES, aircraft air noise will be modelled using the latest available version of FAA's Aviation Environmental Design Tool (currently AEDT v2c).

12.7.45 Both INM and AEDT have been developed by the FAA and both utilise the same assessment methodology, namely the SAE AIR 1845 standard and therefore the share the same calculation methodology. The main difference with AEDT is an updated aircraft database with future aircraft types included. However, the forecast fleet for Manston Airport includes only aircraft types operating today and therefore there is not expected to be any material difference between the outputs of AEDT and INM.

12.8 Assessment approach

12.8.1 This section details the assessment criteria to be applied to each of the assessment scenarios summarised in **Table 12.14**.

12.8.2 The EIA Regulations require that assessments identify the likely significant effects of a proposed development. The likely significant effects are considered in the following categories:

- Adverse effect – an increase in noise levels;
- Beneficial effect – a decrease in noise levels;
- Temporary effect – a temporary change in noise levels, such as during the construction phase; and
- Permanent effect – a permanent change in noise levels, such as during the operation of Proposed Development.

12.8.3 The EIA Regulations require that identified impacts should be mitigated with the aim to avoid, prevent or reduce the associated significant adverse effects on the environment.

12.8.4 Government noise policy as set out within the Noise Policy Statement for England (NPSE, 2010) and the policies listed in **Table 12.3**, requires that noise assessments identify effects that would result in significant adverse impacts on health and quality of life from a proposed development.

12.8.5 In NPSE (2010) and NPPG (2014) the effect levels in relation to adverse impacts on health and quality of life are set out as:

- NOEL – No Observed Effect Level – level below which no effect on health and quality of life is detected;
- LOAEL – Lowest Observed Adverse Effect Level – level above which adverse effects on health and quality of life can be detected;
- SOAEL – Significant Observed Adverse Effect Level – level above which significant adverse effects on health and quality of life occur; and

- UAEL – Unacceptable Adverse Effect Level – level above which adverse effects are unacceptable.

12.8.6 The NPPG (2014) links the increasing effect levels to an effect, perception by receptor and associated action, as summarised in **Table 12.15.**

Table 12.15 NPPG – Summary of noise exposure hierarchy

Increasing effect level	Effect	Perception	Action
Less than NOEL (No Observed Effect)	No effect	Not noticeable	No specific measures
Greater than NOEL (No Observed Effect)	Effect	Noticeable and not intrusive	No specific measures
Greater than LOAEL (Lowest Observed Adverse Effect Level)	Adverse effect	Noticeable and intrusive	Mitigate and reduce to a minimum
Greater than SOAEL (Significant Observed Adverse Effect Level)	Significant adverse effect	Noticeable and disruptive	Avoid
Greater than UOAEL (Unacceptable Observed Adverse Effect Level)	Unacceptable adverse effect	Noticeable and very disruptive	Prevent

12.8.7 In relation to the effect levels summarised in **Table 12.15**, NPSE (2010) sets out three aims:

- Avoid developments or activities which are demonstrated to have significant observed adverse effects i.e. greater than the SOAEL;
- Mitigate and minimise developments or activities where the effect lies between the LOAEL and the SOAEL; and
- Contribute to the improvement of health and quality of life through the effective management and control of environmental noise.

12.8.8 This is consistent with the Governments overall policy on aviation noise, the Aviation Policy Framework (APF, 2013), which aims to:

12.8.9 *“limit, and where possible, reduce the number of people in the UK significantly affected by aircraft noise”.*

12.8.10 The NPSE (p.8, 2010) states that it is not possible to have a “single objective” noise based measure applicable to all sources and receptors that define the on-set of the LOAEL or the SOAEL. It is however possible to define threshold levels for the onset of each of the effect levels, based upon available Standards and technical guidance.

12.8.11 The Standards and technical guidance used within this assessment to define the NPSE (2010) threshold levels are summarised in **Appendix 12.1**, and the associated reasoning is presented in the following sections.

12.8.12 As outlined in **Section 12.2**, there is emerging national planning policies relevant to aviation noise and the Government is consulting on new national airport and

aviation policies. In the Government's consultation on Airspace Policy, there is a much clearer alignment of the aims and objectives of the NPSE in the context of aviation, taking the step in defining values for LOAEL and SOAEL. The consultation on Airspace Policy also reaffirms the Government's aviation noise policy objectives as outlined in the Aviation Policy Framework (2013).

12.9 Significance evaluation methodology

12.9.1 The evaluation of significance differs depending on the sensitivity of the assessed receptor(s). National noise policy and Standards documents generally focus on the effects of noise on residential receptors in isolation, whilst there is a requirement within the NPSE (2010) and NPPG (2014) to evaluate the effects on a community basis, such as within a neighbourhood. The evaluation of significance within a community is therefore a combination of advice derived from Standards and policy, in addition to considerations of context and receptor sensitivity.

12.9.2 Non-residential receptors, such as offices, hospitals and schools, are often cited as containing buildings and/or activities that are potentially noise sensitive. The World Health Organisation (WHO) Guidelines for Community Noise (WHO, 1999) introduce the concept of differentiating between these uses in terms of the degree of sensitivity to noise effects. The evaluation of significance for non-residential receptors may therefore differ from that adopted for residential receptors and communities.

12.9.3 In summary, the assessments will consider the appropriate noise and vibration effects upon the following receptors:

- Residential receptors – existing and proposed residential receptors in isolation;
- Community receptors – existing and proposed residential receptors in a group located in close proximity or within a named hamlet, village or town; and
- Non-residential receptors – including schools, places of worship, and medical facilities.

Residential receptors

12.9.4 For assessment purposes, where the calculated noise exposure at a receptor are shown to be at SOAEL or greater in terms of government noise policy, and therefore where a 'significant observed adverse' impact on health and quality of life is possible, it is to be considered to indicate a likely significant adverse effect in the context of the EIA Regulations.

12.9.5 Effects at the assessed receptors that are shown to be LOAEL or lower are not considered adverse in terms of EIA Regulations. However, where possible, mitigation will still be recommended with the aim to improve the health and quality of life of those receptors. This approach is in keeping with the third aim of NPSE (2010).

12.9.6 The second aim of NPSE (p.9, 2010) refers to situations where the calculated impact lies between the LOAEL and the SOAEL, where there is a requirement to:

12.9.7 *"mitigate and minimise adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development'"*

12.9.8 Where the impact lies between LOAEL and the SOAEL, reasonable steps should be taken to mitigate and minimise the impact. The NPSE (2010) however recognises that this does not necessarily mean such adverse effects cannot occur.

12.9.9 The assessment as to whether an adverse effect at a residential receptor, which occurs when the noise exposure is between the LOAEL and SOAEL can occur, requires additional quantitative and qualitative considerations. These considerations require elements of professional judgement and consideration of the context within which the effect occurs. In summary, these considerations include:

- The magnitude of the effect;
- The change in magnitude of the effect;
- The type of effect, including its intermittency;
- The existing sound environment;
- The effectiveness of mitigation, including BPM (best practicable means); and
- The duration of effect.

12.9.10 The NPPG (2014) advises that noise effects may be partially offset if the residents of affected dwellings have access to:

- "a relatively quiet facade (containing windows to habitable rooms) as part of their dwelling, and/or;
- a relatively quiet external amenity space for their sole use, (e.g. a garden or balcony). Although the existence of a garden or balcony is generally desirable, the intended benefits will be reduced with increasing noise exposure and could be such that significant adverse effects occur, and/or;
- a relatively quiet, protected, nearby external amenity space for sole use by a limited group of residents as part of the amenity of their dwelling, and/or;
- a relatively quiet, protected, external publically accessible amenity space (e.g. a public park or a local green space designated because of its tranquillity) that is nearby (e.g. within a 5 minutes walking distance)."

12.9.11 Furthermore, the NPPF (2012) requires consideration to be made to the likely cumulative effects at receptors of noise and vibration from all relevant committed and proposed development projects within the study area. The exact details of the methodology to be applied to the cumulative noise and vibration effect assessments will be developed as both the Proposed Development, and other projects emerge and evolve.

Community receptors

12.9.12 Where the calculated noise exposure at residential receptors within a community area is greater than the LOAEL but less than the SOAEL, and thus in terms of

government noise policy has an adverse effect, a significant adverse effect in terms of the EIA Regulations can be demonstrated to occur if the overall effect upon the community is deemed severe enough.

12.9.13 Additional considerations in determining whether the adverse community effect is significant, include:

- The number of residential receptors affected; and
- The sensitivity of receptors within the 'community'.

12.9.14 The assessment of likely significant adverse effects upon communities is therefore largely evidence-based but also requires professional judgements assisted by the considerations outlined for residential receptors. Depending on the number of receptors and their associated sensitivity, a likely significant adverse effect may occur when there is a large effect at a small number of properties, or a smaller effect at a larger number of properties.

12.9.15 It is possible that a likely significant adverse effect can apply on a community basis when significant adverse effects are not derived on an individual basis for any of the receptors within it.

Non-residential receptors

12.9.16 For non-residential receptors, the evaluation of significance shall take into account the considerations outlined for residential receptors, and the sensitivity of the non-residential receptors accounting for its existing use.

12.10 Assessment Criteria – residential and community receptors

12.10.1 This section sets out how the criteria for likely significant effects upon residential and community receptors in terms of EIA Regulations for each of the scoped assessments have been derived, taking into account significant adverse effects as outlined in government policy, and other relevant guidance.

Construction noise – earthworks, fixed & mobile plant

12.10.2 In accordance with the methodologies advocated within Annex E of BS 5228-1:2009+A1:2014 *'ABC Method'*, the determination of impact thresholds for the construction phase noise effects will have regard to baseline levels of ambient noise at the receptors.

12.10.3 Using the three-tiered threshold level system set out within the ABC Method, the impact thresholds to be adopted within the construction noise assessment are shown in **Table 12.16**. Exceedance of the Category C threshold levels are considered to correlate with SOAEL in government policy, and to have a significant adverse effect, in terms of the EIA Regulations.

12.10.4 The daytime Category C (SOAEL) threshold of 75 dB $L_{Aeq,\,T}$ is taken from the Committee on the '*Problem of Noise: Noise Report'* (Wilson, 1963) and was set to avoid interference with normal speech indoors. This is considered a conservative approach given the improvement in construction methods and glazing specifications since 1963. The night-time Category C (SOAEL) of 55 dB $L_{Aeq,8hr}$ is

consistent with advice presented within the *'WHO Night Noise Guidelines for Europe'* (WHO NNG, 2009). The evening Category C (SOAEL) is set at 10 dB lower than the daytime criteria, based upon advice presented within the *'Department of the Environment Advisory Leaflet 72 – Noise Control on Building Sites (AL 72, 1976)'*.

12.10.5 Therefore, a potential significant effect may also occur if the ambient noise level exceeds the Category C threshold values provided in **Table 12.16,** (i.e. the ambient noise level is higher than the threshold value) and the total $L_{Aeq, T}$ noise level for the period increases by more than 3 dB because of construction noise.

12.10.6 The Category A and Category B threshold levels set out within **Table 12.16** are considered representative of LOAEL given they are the '*ABC Method*' lower thresholds for the adverse effects.

LOAEL and SOAEL impact thresholds

12.10.7 The threshold levels related to noise during the development's earthworks and construction activities are summarised in **Table 12.16**. A significant adverse effect is determined to occur when the calculated noise is greater than the SOAEL threshold level. The threshold levels are set out for the daytime, evening and night-time periods, and are considered free-field (i.e. away from acoustically reflective surfaces).

Table 12.16 Noise from Construction – Impact criteria for residential receptors (airborne sound only)

Noise Sources	Receptor	Period	Category A (LOAEL)	Category B (LOAEL)	Category C (SOAEL)
Construction noise (earthworks, fixed & mobile plant)	Residential	Daytime	65 dB $L_{Aeq,12hr}$	70 dB $L_{Aeq, 12hr}$	75 dB $L_{Aeq, 12hr}$
	Residential	Evening	55 dB $L_{Aeq, 4hr}$	60 dB $L_{Aeq, 4hr}$	65 dB $L_{Aeq, 4hr}$
	Residential	Night-time	45 dB $L_{Aeq, 8hr}$	50 dB $L_{Aeq, 8hr}$	55 dB $L_{Aeq, 8hr}$
Definitions and notes: Daytime – Weekdays (0700-1900) and Saturdays (0700-1300)					
Evening – Weekdays (1900-2300), Saturdays (1300-2300), Sundays and Bank Holidays (0700-2300)					
Night-time – Weekdays, Weekends and Bank Holidays (2300-0700)					
Category A – threshold level is LOAEL when ambient noise levels (rounded to the nearest 5 dB) are less than these values					
Category B – threshold level is LOAEL when ambient noise levels (rounded to the nearest 5 dB) are the same as Category A values					
Category C – threshold level is SOAEL for ambient noise levels (rounded to the nearest 5 dB) which are 3 dB or more below these values. Where ambient noise levels are less than 3dB below these values, SOAEL is indicated if the total LAeq, T noise level for the period increases by more than 3 dB due to site noise.					

12.10.8

12.10.9 Considerations in determining whether there is a significant adverse community effect, in terms of EIA Regulations, are summarised in **Section 12.7 – Significant Evaluation Methodology** and include the type and duration of effect.

Construction and Operational noise – road traffic

Residential receptors (in isolation)

12.10.10 The determination of impact thresholds for road traffic noise is based upon the guidance values set out within the Noise Insulation (Amendment) Regulations (NIR, 1988) and the WHO Guidelines for Community Noise (WHO, 1999), for daytime noise criteria, and the WHO Night Noise Guidelines for Europe (WHO NNG, 2009) for night-time noise criteria.

12.10.11 During the daytime, a significant adverse effect is determined to occur when noise exposures exceed 63 dB $L_{Aeq,16hr}$ free-field (equivalent to 68 dB $L_{A10,18hr}$ façade level) at assessed residential receptors. The 68 dB $L_{A10, 18hr}$ façade level is one of the requirements set out within the NIR (1988) under which buildings may qualify for statutory noise insulation. In the event that the assessment identifies any requirements for mitigation under the NIR, these would be clarified. For the purpose of the assessment of likely significant effects the 63 dB $L_{Aeq,16hr}$ free-field threshold level is considered a suitable value for the SOAEL.

12.10.12 During the night-time 55 dB $L_{Aeq,8hr}$ is considered representative of SOAEL and is consistent with advice presented within WHO NNG (2009).

12.10.13 The day-time and night-time LOAEL are set at 50 dB $L_{Aeq,16hr}$ (free-field) and 40 dB $L_{Aeq,8hr}$ (free-field) respectively, based upon advice set out within WHO (1999) and WHO NNG (2009).

LOAEL and SOAEL impact thresholds

12.10.14 The threshold level relating to road traffic noise during the construction and operation of the proposed development are summarised are summarised in **Table 12.17**. A significant adverse effect is determined to occur when the calculated noise is greater than the SOAEL threshold level. The threshold levels are presented for the daytime and night-time periods and are considered free-field (i.e. away from acoustically reflective surfaces).

Table 12.17 Summary of road traffic noise thresholds

Noise Sources	Receptor	Period*	LOAEL	SOAEL
Construction and operational noise – road traffic	Residential	Daytime	50 dB $L_{Aeq,16hr}$	63 dB $L_{Aeq,16hr}$
		Night-time	40 dB $L_{Aeq,8hr}$	55 dB $L_{Aeq,8hr}$

* Daytime – (0700-2300), Night-time – (2300-077)

12.10.15 Where the road traffic noise effects at residential receptors lie between the LOAEL and the SOAEL, consideration will be given to the items listed in in **Section 12.7 – Significant Evaluation Methodology** to evaluate the magnitude of significance in terms of EIA Regulations.

Community receptors

12.10.16 In addition to the considerations summarised in **Section 12.7 – Significant Evaluation Methodology**, the determination as to whether there is a significant adverse community effect in terms of the EIA Regulations from road traffic noise will take into account the likely magnitude of change.

12.10.17 The Highways Agency (now Highways England) Design Manual for Roads and Bridges (DMRB) presents an the interpretation of changes in road traffic noise levels ($L_{A10, 18hr}$) for determining the potential magnitude of impact. DMRB sets out differing criteria associated with noise change for short term (i.e. immediately after the development opening) and long term (15 years from the development opening) effects, as outlined in **Table 12.18** and **Table 12.19**, respectively.

Table 12.18 DMRB Classification of magnitude of noise impacts in the short-term

Noise Change in dB $L_{A10,18hr}$, dB	Magnitude of Impact
0	No Change
0.1 – 0.9	Negligible
1 – 2.9	Minor
3 – 4.9	Moderate
5+	Major

Table 12.19 DMRB Classification of magnitude of noise impacts in the long-term

Noise Change in dB $L_{A10,18hr}$, dB	Magnitude of Impact
0	No Change
0.1 – 2.9	Negligible
3 – 4.9	Minor
5 – 9.9	Moderate
10+	Major

12.10.18 The classification of magnitude of noise impacts in **Table 12.18** and **Table 12.19** have been used to assist the evaluation of significance for communities located in proximity to new and existing road networks.

12.10.19 At residential receptors where the baseline road traffic noise is already greater than the SOAEL threshold level, a significant adverse community effect is likely to occur when the overall magnitude of change is greater than 1 dB. This approach is in keeping with the DMRB short-term criteria, summarised in **Table 12.18**.

12.10.20 At residential receptors where both the existing and proposed levels of road traffic noise exposure are calculated to be less than the SOAEL threshold level, there is a potential for a significant adverse community effect where the magnitude of

change is 3 dB. This approach is in keeping with the DMRB long-term criteria, summarised in **Table 12.19**.

Construction vibration - earthworks, fixed & mobile plant

12.10.21 Sources of potential adverse effects due to vibration at residential receptors include from the construction of the airport include:

- Earthworks – construction activities such as vibratory compactions; and
- Construction – activities such as those associated with impact or vibratory piling.

12.10.22 BS 6472:2008 Part 1 Guide to Evaluation of Human Exposure to Vibration in Buildings (BS 6472-1:2008) covers vibration sources other than those associated with blasting. The standard provides guidance on predicting human response to vibration over the frequency range 0.5 Hertz (Hz) to 80 Hz. The standard uses typical human responses to whole-body vibration in order to determine a Vibration Dose Value (VDV), which may be used to determine the potential for unfavourable reaction and adverse comment to vibration from residential occupants.

12.10.23 The response of the human body to vibration is very complex and depends on many different factors, one of which (but not necessarily the most important), is the magnitude of vibration. Once an individual has perceived a vibration then it is possible for concern to be raised about the source of that vibration. This concern is usually expressed, as fear of the vibration and the potential to cause damage to the occupant's property and that further damage may occur from repeated vibration events.

12.10.24 BS 6472-1:2008 discusses the fact that structural vibration within buildings can be detected by the occupants and examines how the occupant's quality of life and/or working efficiency may be reduced. Tentative guidance is given on the various magnitudes of vibration at which adverse comment by the occupants may begin to arise. The standard also discusses how and where to measure vibration and gives the factors which influence human response.

12.10.25 The standard discusses the possible effects that various types of vibration may have on the inhabitants of any building. BS 6472-1:2008 Section 6 describes methods for the evaluation of such vibration and indicates levels, in terms of vibration dose values (VDV $ms^{-1.75}$) that might possibly give rise to adverse comment under a given range of circumstances. **Table 12.20** presents a summary of these values.

Table 12.20 Summary of Vibration Dose Values (VDV) above which various degrees of adverse comment may be expected from the residents of dwellings

Period	Satisfactory VDV ($ms^{-1.75}$)		
	Low Probability of Adverse Comment	Adverse Comment Possible	Adverse Comment Probable
Daytime (0700-2300),	0.2 – 0.4	0.4 – 0.8	0.8 – 1.6
Night-time (2300-0700)	0.1 – 0.2	0.2 – 0.4	0.4 – 0.8

LOAEL and SOAEL impact thresholds

12.10.26 The vibration dose values (VDV $ms^{-1.75}$) which relate to human response, as summarised in **Table 12.20**, have been used to determine the effect criteria in terms of government policy, as summarised in **Table 12.21**.

12.10.27 Exposures relating to the LOAEL are based upon the VDV values outlined in BS 6472-1:2008 for a low probability of adverse comment. The exposures relating to the SOAEL are based upon lower VDV value for adverse comment probable.

12.10.28 The LOAEL values vary dependent upon the length of time that the impact takes place. The requirement to mitigate and minimise effects is therefore less stringent where activities are to take place for less than one month.

12.10.29 The threshold levels related to vibration during a proposed development's earthworks, construction activities and rail traffic movements are summarised in **Table 12.21**. A significant adverse effect is determined to occur when the calculated vibration is greater than the SOAEL threshold level. The VDV are representative of the worst-case location within the property.

Table 12.21 Noise from Construction – Impact criteria for residential receptors (airborne sound only)

Vibration Sources	Receptor	Duration	Period*	VDV (LOAEL)	VDV (SOAEL)
Vibration - earthworks, fixed & mobile plant and rail traffic	Residential	Less than 1 month	Daytime	0.4	0.8
			Night-time	0.2	0.4
	Residential	More than 1 month	Daytime	0.2	0.8
			Night-time	0.1	0.4

* Daytime – (0700-2300), Night-time – (2300-0700)

12.10.30

12.10.31 Where the calculated vibration impacts at residential receptors lie between the LOAEL and the SOAEL, consideration will be given to the items listed in **Section 12.7** to evaluate the magnitude of significance in terms of the EIA Regulations.

12.10.32 It is noted that the assessment of vibration effects from the earthworks and construction (fixed and mobile plant) phases will be based upon the absolute values of the predicted vibration effects at residential receptors. There will be no earthworks and construction activity related vibration effects in the absence of the development, therefore an assessment that considers the magnitude of change will not be undertaken, and will be based upon meeting associated threshold limits.

Cosmetic damage

12.10.33 The assessment criteria for the likelihood of cosmetic damage to buildings are based upon guidance presented within BS 7385 *'Evaluation and measurement for vibration in buildings: Part 2 Guide to damage levels from ground-borne vibration*' (BS 7385-2: 1993). An exceedance of the values, specified in terms of Peak Particle Velocity (mms^{-1}), in **Table 12.22** would indicate, in terms of EIA Regulations a significant adverse effect. Cosmetic damage is an additional consideration to those outlined in **Table 12.21**.

Table 12.22 Assessment criteria for likely cosmetic damage to buildings

Building Category	Transient vibration guide values for cosmetic damage in buildings	
	Transient vibration mms^{-1}	Continuous vibration mms^{-1}
Structurally sound and non-protected buildings	12	6
Protected or potentially vulnerable buildings	6	3

Community Receptors

12.10.34 In addition to the assessment criteria set out within **Table 12.21** and **Table 12.22**, the main considerations in determining whether adverse effects on a community basis constitute a significant adverse community effect in terms of the EIA Regulations are summarised in **Section 12.7 – Significant Evaluation Methodology.**

12.10.35 Similarly, to the assessment of vibration effects upon residential receptors in isolation, the assessment at community receptors will not consider the magnitude of change as it is assumed there is currently no earthwork and construction activity related vibration effects in the absence of the development. The assessment will therefore be based upon meeting threshold limits.

Operational noise – industrial and commercial sound (fixed plant)

Residential receptors (in isolation)

12.10.36 BS 4142:2014 is used to rate and assess new, modified or additional noise sources of an industrial and commercial nature. BS 4142:2014 contains guidance on the monitoring and assessment of industrial and commercial noise sources, in particular from factories, industrial premises, fixed installations or sources of an industrial nature in commercial premises. BS 4142:2014 is not suitable for assessing noise measured inside buildings or when the background sound levels and rating levels are measured within 10 dB above the noise floor of the sound measuring equipment.

12.10.37 Using the assessment methodology advocated within BS 4142:2014, to fully understand the effects associated with the operation of the Proposed Development it is necessary to get an understanding of the margin by which the rating level (the specific sound level plus adjustments for any distinguishable features) exceeds the background sound level (the level that would be occur without the development), and the context in which the noise occurs.

12.10.38 The assessment of the rating level compared to the background sound level is considered the initial assessment framework, whereby the final determination of effect is modified taking into account its context.

12.10.39 For the initial assessment framework the rating level, $L_{Ar,Tr}$, of the specific sound is determined using subjective and objective methods. The maximum penalties associated with each of the characteristics are:

- Tonality – up to + 6 dB penalty;

- Impulsivity – up to + 9 dB penalty;
- Intermittency – a + 3 dB penalty; and
- Other sound characteristics (i.e. neither tonal nor impulsive, but still distinctive) - a + 3 dB penalty.

12.10.40 The BS 4142:2014 penalties allow for, as an absolute worst case, linear summation of up to +18 dB. This correction would only apply to specific sources that are described in BS 4142:2014 as being highly perceptible in terms of tonality and impulsivity, and readily distinctive against the residual acoustic environment in terms of intermittency. It is considered, based on experience that overall penalties greater than + 9 dB are rare.

12.10.41 The derived rating level is compared with the background sound level over a representative time period. The representative time period depends on the operational times of the assessed noise source, i.e. 1 hour during the daytime and 15 minutes during the night-time. The BS 4142:2014 assessment methodology states greater effects where there is a larger difference between the rating level and the background sound level, as summarised in **Table 12.23**.

Table 12.23 BS 4142 Assessment guidance

Guidelines	Comment
Rating level from site operations of around +10 dB or more above the existing L_{A90} background sound level.	An indication of *significant adverse impact*, depending on the context.
Rating level from site operations of around +5 dB above the existing L_{A90} background sound level.	An indication of an *adverse impact*, depending on the context.
Rating level from site operations does not exceed the existing L_{A90} background sound level.	An indication of a specific sound source having a *low impact*, depending on the context.

12.10.42 The assessment guidance in **Table 12.23** is considered an initial framework for the determination of effects from operational noise. Additional considerations in determining whether there is a likely significant adverse effect in terms of the EIA Regulations, which take into account the assessments context, are summarised in **Section 12.7 – Significant Evaluation Methodology**. Considerations specific to the assessment of operational noise are detailed in BS 4142:2014, and summarised below:

- The magnitude of the effect – such as consideration of the absolute level of noise;
- The existing acoustic environment – the character of the existing acoustic environment, including consideration of its frequency spectrum and temporal variation; and
- The sensitivity of receptors – whether noise sensitive receptors already incorporate design measures that secure good internal and/or outdoor acoustic conditions. This includes façade insulation treatment, mechanical or passive ventilation, which would remove the requirement to open windows for ventilation, and/or a noise barrier.

12.10.43 In keeping with the methodology advocated within BS4142:2014, the determination of impact threshold levels for the operational noise assessment is based upon the difference between the rating level and the background sound level, over a representative time period.

12.10.44 During daytime (0700-2300) and night-time (2300-0700) periods a significant adverse effect in terms of the EIA Regulations and SOAEL in terms of government policy is determined to occur when the rating level (free-field) exceeds the background sound level by 10 dB or more, subject to taking into account factors relating to context.

12.10.45 The LOAEL in terms of government policy is determined to occur at the point when the rating level (free-field) exceeds the background sound level.

LOAEL and SOAEL impact thresholds

12.10.46 The threshold levels related to operational noise (fixed plant) are summarised in **Table 12.24**. A significant adverse effect is determined to occur when the calculated noise is greater than the SOAEL threshold level.

Table 12.24 Summary of operational noise (fixed plant) threshold levels

Noise Sources	Period*	LOAEL	SOAEL
Operational rating level, $L_{Ar,Tr}$ dB	Daytime	Background sound level, $L_{A90,\,T}$ (including consideration of context)	Background sound level, $L_{A90,\,T}$ + 10 dB (including consideration of context)
	Night-time	Background sound level, $L_{A90,\,T}$ (including consideration of context)	Background sound level, $L_{A90,\,T}$ + 10 dB (including consideration of context)

* Daytime – (0700-2300), Night-time – (2300-077)

12.10.47 Where the calculated operational noise (fixed plant) effects at residential receptors, taking into account context, lie between the LOAEL and the SOAEL, consideration will be given to the items listed in **Section 12.7 – Significant Evaluation Methodology** to evaluate the magnitude of significance in terms of EIA Regulations.

Community receptors

12.10.48 In addition to the considerations summarised in **Section 12.7 – Significant Evaluation Methodology** the determination as to whether there is a significant adverse community effect in terms of the EIA Regulations from operational noise (fixed plant) will take into account the existing acoustic environment and the type of effect, including its intermittency.

Operational noise – aircraft air noise and airside ground noise (including mobile and static sources of noise)

12.10.49 The determination of impact thresholds for the consideration of significance in terms of the EIA Regulations is informed by relevant existing and emerging

aviation noise policies, in addition to the relevant guidance summarised in **Table 12.7**, namely:

- Aviation Policy Framework (APF, 2013);
- Draft policy consultations on airport expansion in the South East of England[169] and UK Airport Policy[170];
- Transport Analysis Guidance (WebTAG, 2016);
- CAP1506a: The 2014 Survey of Noise Attitudes (SoNA, 2017); and
- CAP1520: Draft airspace design guidance.

12.10.50 In the UK Government's Airspace Policy consultation, it is stated that whilst the APF (2013) is the current policy framework, a new Aviation Strategy due for consultation in 2017 will eventually replace the APF.

12.10.51 Therefore, whilst the methodology for operational air noise is has been developed based on the APF (2013) consideration has been given to relevant recent draft policy consultation. Whilst this consultation may not represent the final Government policy position, it is to be considered the direction of travel with respect to airspace and aviation noise policy. This is particularly relevant to greater consistency between aviation noise policy as set out in the draft Airports NPS and UK Airspace Policy consultation with overarching noise policy in England as set out in the NPSE.

12.10.52 For the daytime period, a *significant adverse effect* is determined to occur when average absolute free-field operational noise exposures are greater than 63 dB $L_{Aeq,16hr}$. This is based upon the APF (Par. 3.37-3.39, 2013), which indicates that above 63 dB $L_{Aeq,16hr}$ airports should provide assistance towards noise insulation at noise-sensitive buildings and residential dwellings. This is further supported by emerging policy as set out in UK Airspace Policy consultation (Par. 4.44 – 4.47, 2017). For the purpose of the assessment of *likely significant effects* 63 dB $L_{Aeq,16hr}$ free-field threshold level is considered a suitable value for SOAEL on this basis.

12.10.53 For the aircraft noise element of the operational noise, consideration will also be given to the size of population exposure to noise above 57 dB $L_{Aeq,16hr}$[171] and 69 dB $L_{Aeq,16hr}$[172], in accordance with current UK Government Policy (APF, 2013).

12.10.54 During the night-time period, a *significant adverse effect* is determined to occur when average absolute free-field noise exposures are greater than 55 dB $L_{Aeq,8hr}$ based upon advice set out within WHO NNG (2009).

[169] Consultation on Draft Airports National Policy Statement: new runway capacity and infrastructure at airports in the South East of England, February 2017
[170] Consultation on UK Airspace Policy: A framework for balanced decision on the design and use of airspace, February 2017
[171] The Aviation Policy Framework (APF) states in Paragraph 3.17 that 57 dB $L_{Aeq,16hr}$ will continue to treat as *'the average level of daytime aircraft noise marking the approximate onset of significant community annoyance'*
[172] The Aviation Policy Framework (APF) states in Paragraph 3.36 that the Government expects airports operators to offer households exposed to 69 dB $L_{Aeq,16hr}$ or more assistance with the costs of moving.

12.10.55 For night-time periods, operational noise will also be considered to result in an adverse effect on residential receptors where noise levels at the façade as a result of the Development are at least 60 dB L_{Amax}[173].

12.10.56 For residential receptors with no specific form of noise insulation, operational noise will be considered to give rise to significant adverse effects if there is an absolute noise level of at least 80 dB L_{ASmax} (approximately 90 dB SEL[174]) and the average number of noise events during the night above this level is already at least 18. This metric is informed by emerging best practice and research into aircraft induced sleep disturbance, namely research being undertaken by Basner et al (2004) [175]. The use of this metric does not imply any plan or proposal to attain this level of night flights, but merely that if there were, then this could be considered likely to result in a significant effect should external noise levels be above 80 dB L_{ASmax} for each movement. *Use of the 18 event metric does not imply any plan or proposal to attain this or any level of night flight*.

12.10.57 For the purposes of this assessment, the daytime and night-time LOAEL are set at 50 dB $L_{Aeq,16hr}$ (free-field) and 40 dB $L_{Aeq,8hr}$ (free-field) respectively, based upon advice set out within WHO (1999) and WHO NNG (2009).

12.10.58 It is noted that the Government is currently consulting on proposals that would set a daytime and night-time LOAEL of 51 dB $L_{Aeq,16hr}$ (free-field) and 45 dB $L_{Aeq,8hr}$ (free-field), respectively, within the draft Airspace Policy consultation (Par. 5.47 – 5.50). At this stage, these values of LOAEL are proposals only, and are not fixed policy thresholds. The adoption of lower values for LOAEL for this assessment protect against potential changes in Government policy and specifically align with values adopted on other major transport infrastructure projects in England including HS2.

12.10.59 Whilst the above effect criteria provide objective measures for the significance of the noise effects associated with the Development, adverse or beneficial effects may also be identified through any potential features of the effects or through professional judgement.

LOAEL and SOAEL impact thresholds

12.10.60 Threshold levels relating to the operation of the proposed development are summarised in **Table 12.25**. A significant adverse effect is determined to occur when the calculated noise is greater than the SOAEL threshold level. The threshold levels are presented for the daytime and night-time periods and are considered free-field (i.e. away from acoustically reflective surfaces).

[173] An outdoor 60 dB L_{Amax} at the façade is likely to result in an indoor L_{Amax} value of around 45 dB L_{Amax} which is cited by WHO in publications 'Guidelines for Community Noise' (1999) and 'Night Noise Guidelines for Europe' (2009) as a known threshold for the potential effects of sleep disturbance.
[174] 90 dB SEL has been used by Department for Transport and at other UK airports as a measure of sleep disturbance and the basis of for night-noise insulation schemes when considering the number and nature of aircraft night operations.
[175] Based on the findings of Basner et. al. *'Aircraft noise effects on sleep: Application of the results of a large polysomnographic field study'* 2006 enabling the calculation one additional awakening due to aircraft noise using L_{ASmax} noise events. Assumes an average insulation value of the 21 dB for a bedroom façade as adopted by the WHO Night Noise Guidelines for Europe (2009)

Table 12.25 Summary of operational noise thresholds

Noise Sources	Receptor	Period*	LOAEL	SOAEL
Operational noise	Residential	Daytime	50 dB $L_{Aeq,16hr}$	63 dB $L_{Aeq,16hr}$
		Night-time	40 dB $L_{Aeq,8hr}$	55 dB $L_{Aeq,8hr}$ #

* Daytime – (0700-2300), Night-time – (2300-0700)
# Consideration of L_{Amax} also required

12.10.61 Where the operational noise effects at residential receptors lie between the LOAEL and the SOAEL, consideration will be given to the items listed in in **Section 12.7** to evaluate the magnitude of significance in terms of EIA Regulations.

Community receptors

12.10.62 In addition to the considerations summarised in **Section 12.7**, the determination as to whether there is a significant adverse community effect in terms of the EIA Regulations from operational noise will take into account the likely magnitude of change.

12.10.63 This is a similar approach to that to be adopted in the road traffic assessment, based upon the classification of magnitudes summarised in **Table 12.18** and **Table 12.19**.

12.10.64 At residential receptors where the baseline noise levels are already greater than the SOAEL threshold level, a significant adverse community effect is likely to occur when the overall magnitude of change is greater than 1 dB. This approach is in keeping with the DMRB short-term criteria, summarised in **Table 12.18**.

12.10.65 At residential receptors where the current baseline noise levels and the proposed operational noise levels are calculated to be less than the SOAEL threshold level but above the LOAEL, there is a potential for a significant adverse community effect where the magnitude of change is 3 dB. This approach is in keeping with the DMRB long-term criteria, summarised in **Table 12.19**.

Assessment Criteria – non-residential receptors

12.10.66 **Table 12.26** summarises the criteria that will be adopted for assessing the effect of the proposed development upon non-residential noise sensitive receptors. In the case of non-residential noise sensitive receptors, the criteria provided in **Table 12.26** will be used to indicate effects, however, significance will be determined on a case-by-case basis.

Table 12.26 Impact Criteria for Establishing Potentially Significant Effects on Non-Sensitive Receptors

Receptor(s)	Impact Criteria		Potential Effects
	Daytime (0700-2300)	**Night-time (2300-0700)**	
Acoustical resources	60 dB L_{Amax}; or 50 dB $L_{Aeq,T}$; and		Loss in acoustic quality and enjoyment

Receptor(s)	Impact Criteria		Potential Effects
	Daytime (0700-2300)	**Night-time (2300-0700)**	
i.e. Theatres, concert halls, opera houses, concert halls or any specific space for the dedicated to the enjoyment of sound	No increase upon existing levels See Note 1		
Places of worship	50 dB $L_{Aeq,\,T}$ and an increase of 3 dB See Note 2	n/a	Disruption or disturbance
Educational Facilities Including schools, colleges and	50 dB $L_{Aeq,\,T}$ and an increase of 3 dB See Note 2	n/a	Disruption or disturbance and interference with task
Healthcare Facilities Including hospitals and out-patients clinics	50 dB $L_{Aeq,\,T}$ and a change of 3 dB See Note 2	45 dB $L_{Aeq,\,T}$ and a change of >3 dB See Note 3	Disruption or disturbance during daytime periods and sleep disturbance during the night
Community Resources including libraries	50 dB $L_{Aeq,\,T}$ and a change of 3 dB See Note 2	n/a	Disruption or disturbance and interference with task

Notes:
NOTE 1: Values based on indoor noise levels of 25 dB $L_{Aeq,\,T}$ and 25 dB L_{ASmax} as available within BS8233:2014 and FRA/FTA guidance respectively. Values have been converted to outdoor levels assuming a façade adjustment with a partially open window.

NOTE 2: Value is based on an indoor noise level target value of 35 dB $L_{Aeq,\,T}$ as aligned with the guidance available within Building Bulletin 93 and BS8233:2014. Value has been converted to outdoor levels assuming a façade adjustment with a partially open window.

NOTE 3: Value is based on an internal noise level target value of 30 dB $L_{Aeq,\,T}$, which is consistent with the guidance, provided in BS8233:2014 and WHO Guidelines for Community Noise (1999). Value has been converted to outdoor levels assuming a façade adjustment with a partially open window.

12.10.67

12.11 Conclusions of preliminary assessment of effects

12.11.1 As discussed in **Section 12.7**, in the absence of precise details regarding the design and layout of the Proposed Development including its airspace, it is not possible to set out the specific extents of the project study area, or undertake a detailed assessment with respect to noise and vibration.

12.11.2 However, for the purposes of this PEIR, a preliminary assessment of the residual noise and vibration effects associated with the proposed development has been undertaken.

12.11.3 The preliminary assessment is largely qualitative, but has taken into account the spatial scope discussed in **Section 12.6**, and the assessment extents discussed in **Section 12.7**. The receptor groups that have been identified within the study areas of the assessment scenarios are considered as having the potential to be significantly adversely affected as a result of the proposed development. It is noted that given the design and layout is not fully developed, the qualitative assessment does not account for the additional quantitative and qualitative considerations, namely:

- The magnitude of the effect;
- The change in magnitude of the effect;
- The type of effect, including its intermittency;
- The existing sound environment;
- The effectiveness of mitigation, including BPM (best practicable means); and
- The duration of effect.

12.11.4 The results of the preliminary qualitative assessment are therefore subject to change following final assessment within the ES.

Qualitative assessments

12.11.5 The study areas associated with each of the assessment scenarios are summarised in **Table 12.27.**

Table 12.27 Summary of study areas of noise and vibration assessment scenarios

Noise assessment scenario	Study Area (km)
Construction noise – earthworks, fixed & mobile plant	2 km
Construction and Operational noise – road traffic	2 km
Construction vibration - earthworks, fixed & mobile plant	0.1 km
Operational noise – industrial and commercial sound (fixed plant)	2 km
Operational noise – aircraft air noise and airside ground noise (including mobile and static sources of noise)	14 km

12.11.6 A majority of the assessment scenarios consider a study area of 2 km from the existing runway, which includes residential receptors within Manston to the north-east; Cliffsend and Pegwell Bay to the south-east; Minster to the south-west; and southern section of Acol to the north-west.

12.11.7 The operational noise assessment, which has the potential for a study area in the order of 14 km from the existing runway includes residential receptors in: Broadstairs and St. Peters to the east, Pegwell to the south-east; East Stourmouth and Preston to the south-west; and Birchington-on-Sea to the north-west.

12.11.8 Whilst the receptor groups identified within these study areas are considered as being potentially significantly adversely affected by the proposed development, those with the greatest likelihood of being significantly adversely affected are discussed in the following sections. These receptors are identified for each of the scoped assessment scenarios separately, and have been identified based on Amec Foster Wheeler's experience of other similar developments and the assessment extents discussed in **Section 12.7**. In the case of operational aircraft noise, potentially significant effects are described based on preliminary noise modelling and sensitivity testing.

Construction noise – earthworks, fixed & mobile plant

12.11.9 As detailed in **Section 12.7**, the SOAEL threshold levels associated with the construction noise assessment are 75 dB, 65 dB and 55 dB $L_{Aeq,T}$ for the daytime, evening and night-time period, respectively.

12.11.10 Based on the expected types of construction activities the level of noise from these and during the daytime earthworks phase, there is the potential for significant adverse effects at properties within 200 m of the associated activities. These receptors are likely to include those located within: the western parts of Manston; Woodchurch; to the north-west of Cliffsend; Minster; and Acol.

Construction and Operational noise – road traffic

12.11.11 As detailed in **Section 12.7**, the SOAEL absolute threshold levels associated within the road traffic noise assessment is 63 dB $L_{Aeq,16hr}$ for the daytime period.

12.11.12 Those residential properties that are therefore located within 300 m of the main access routes to the proposed development, namely the B2190, have the greatest likelihood of being significantly adversely affected by the proposed development. Those are likely to include properties within Woodchurch, such as Bell Davies Drive and Tollemache Close, and properties within Manston, such as those on Manston Court Road.

Construction vibration – earthworks, fixed & mobile plant

12.11.13 As advocated within TRL 53 (1986) and TRL 429 (2000), the extents of the construction vibration assessment is limited to a distance of 100 m from the associated activities.

12.11.14 Therefore, during construction activities with the greatest vibration magnitudes, residential properties within: the south-west of Manston; the south of Woodchurch;

and southeast of Minster, which are within 100m, have the greatest likelihood of being significantly adversely affected by the proposed development.

Operational noise – industrial and commercial sound (fixed plant)

12.11.15 As detailed in **Section 12.7**, the SOAEL threshold levels associated with industrial and commercial sound are changes in noise of greater than 10 dB above the background level of sound. The background level of sound was measured during the baseline sound surveys as discussed in **Section 12.3** and shows that background levels of sound are in the region of 40 to 47 dB L_{A90}.

12.11.16 It is considered that the industrial and commercial fixed plant required for the Proposed Development is likely to be HVAC services for the warehousing facilities and that standard HVAC is lower than 90 dB L_w. Therefore, in order to be below SOAEL at the nearest residential receptors, all HVAC services should be located at a distance of at least 150 metres of the nearest residential receptor.

Operational noise – aircraft air noise and airside ground noise (including mobile and static sources of noise)

12.11.17 In the absence of precise details regarding airside ground sources noise, this section considers air noise only.

12.11.18 For air noise, even though the airspace procedures are to be finalised following the DCO through an ACP as described in **Section 12.1**, preliminary modelling has shown that different workable airspace procedures will have little effect on the contour extents covered by the daytime SOAEL. Nevertheless, indicative airspace routes have been considered for the worst-case assessment year as described in **Section 12.6**.

12.11.19 Based on these conditions, the 63 dB $L_{Aeq,16hr}$ contour is likely to extend approximately 400 metres laterally to either side of the runway centreline, and approximately 1.3 km to the west and 1.2 km to the east of the existing runway ends.

12.11.20 This therefore takes northern parts of Tothill Street (Minster), Smugglers Close (Minster), Ivy Cottage Hill (Minster), King Arthur Road (Cliffsend), Arundel Road (Cliffsend), Windsor Road (Cliffsend) and dwellings on Spitfire Way (Manston) and it is properties in these locations that have the greatest likelihood of being significantly adversely affected by the air noise from the Proposed Development.

12.11.21 With respect to night-time and as a worst case, the working assumption for illustrative purposes only is that there might be a maximum of eight aircraft movements[176] at night between the hours of 2300 and 0700. Based on these conditions, indicative modelling shows that the 55 dB $L_{Aeq,8hr}$ (SOAEL) contour is likely to extend approximately 450 metres laterally to either side of the runway centreline, and approximately 1.5 km to the west and 1.4 km to the east of the existing runway ends.

12.11.22 This therefore encompasses receptors to the north of Canterbury Road in Cliffsend as well as residential dwellings to the west of St. Lawrence and to the south of Manston Village.

[176] A movement is considered either an arriving or departing aircraft.

Combined Effects

12.11.23 Until the design and layout of the Proposed Development has been fully developed, it is not possible for an assessment of the in-combination or cumulative effects of the proposed developments to be undertaken.

12.11.24 These assessments shall however be included as part of the ES.

Decommissioning phase effects

12.11.25 Until the design and layout of the Proposed Development has been fully developed, it is not possible for an assessment of the decommissioning effects of the proposed developments to be undertaken.

12.11.26 These assessments shall however be included within the ES.

Contents

13. Socio-economics

13.1 Introduction

13.1.1 This chapter sets out the results of an assessment of the effects of the Proposed Development on socio-economics.

13.1.2 This chapter should be read in conjunction with the description of the Proposed Development (**Chapter 3**). Following a summary of the limitations of the PEIR, the chapter outlines the relevant policy, legislation and guidance that has informed the preliminary assessment, and the data gathering methodology that was adopted as part of the socio-economics preliminary assessment. This leads on to a description of the overall baseline conditions, the scope of the assessment, and the assessment methodology. The chapter concludes with the results of the assessment.

Limitation of the PEIR

13.1.3 This PEIR is one of the documents forming a suite of consultation materials for the statutory consultation that is being held on the Proposed Development. It is intended to provide information on possible environmental effects as they have been assessed up to this point, and a more detailed assessment of the identified direct effects and potential indirect effects on identified receptors will be undertaken at the ES stage, drawing on assessment work from other disciplines. This will take consultation responses into account and include more precise information following further design development and refinement relating to: construction employment, operational employment, traffic generation and aircraft movements (and the relationship with noise generation). The analysis of this data and their likely effects will be considered within the ES as well as the effect of specific mitigation measures proposed, where appropriate.

13.2 Policy, legislation and guidance

13.2.1 A study of socio-economic related planning policy, legislation and guidance at the national, regional and local level has been undertaken for the site and its locality in order to highlight any requirements which the Proposed Development needs to consider. It is always important that policies, legislation and guidance are taken into consideration as they help to define the scope of assessment and can inform the identification of particular local issues. Full details of all national and local planning policies relevant to the Proposed Development can be found in **Appendix 4.1**.

13.2.2 **Table 13.1** sets out national and local policies and guidance relevant to the Proposed Development, and its potential effects on socio-economic receptors.

Table 13.1 National and Local Planning Policies relevant to Socio-economics

Policy Document	Reference	Policy information relevant to socio-economics
National Planning Policy Framework (2012)	Para 7	Provides high level guidelines for planning for sustainable development, specifically in relation to socio-economics, identifies the importance of "ensuring that sufficient land of the right type is available in the right places at the right time to support growth and innovation."
	Para 14	Presumption in favour of sustainable development including: "local planning authorities should positively seek opportunities to meet the development needs of their area."
	Para 17	" … proactively drive and support sustainable economic development to deliver the homes, business and industrial units, infrastructure and thriving local places that the country needs. Every effort should be made objectively to identify and then meet the housing, business and other development needs of an area, and respond positively to wider opportunities for growth."
	Para 20	"To help achieve economic growth, local planning authorities should plan proactively to meet the development needs of business and support an economy fit for the 21st century."
South East Local Enterprise Partnership (2014) Strategic Economic Plan	p.19	Our ambition is to : enable the creation of 200,000 sustainable private sector jobs over the decade to 2021, an increase of 11.4% since 2011; complete 100,000 new homes by 2021, which will entail, over the seven years, increasing the annual rate of completions by over 50% by comparison with recent years; and, lever investment totalling £10 billion, to accelerate growth, jobs and homebuilding.
	p.28	"… the area around Manston and Discovery Park contains extensive land suitable for residential and employment use, and is well connected by new infrastructure. As a consequence we are seeking an extension of the designated Discovery Park Enterprise Zone for Manston. A Manston Airport task force has been established with local MPs."
South East Local Enterprise Partnership (2014) Kent and Medway Growth Deal	p.159	The Discovery Park and Manston Growth Deal: We will take forward a coordinated approach to the development of Discovery Park and Manston. We will: Consider extending Enterprise Zone designation to Manston Business Park, Manston Airport and the Richborough Corridor. We ask Government to permit Thanet District Council to retain 100% of business rate receipts within the Zone with no impact on their baseline, in order that discounts can be fully funded by receipts above the discount level. Allocate £3.5 million in Local Growth Fund finance to support commercial development at Manston and Discovery Park. Support SEFUND investment in commercial and residential development.
Kent County Council (2015) Refresh of the 14-24: Learning, Employment and Skills Strategy	p.16	Priorities and actions: Raise Attainment and Skills Levels Improve and extend Vocational Education, Training and Apprenticeships Increase Participation and Employment Target Support for Vulnerable Young People

Policy Document	Reference	Policy information relevant to socio-economics
Kent County Council (2010) Unlocking Kent's Cultural Potential – A Cultural Strategy for Kent	pp.x/xi	Intention 1: We will grow Kent's creative economy by being welcoming and cooperative hosts to the creative workforce Intention 2: We will protect Kent's existing strengths by being passionate and responsible stewards of Kent's built and natural environment Intention 3: We will increase Kent's potential by being ambitious and resourceful cultural planners
Kent Forum (2012) A Vision for Kent		Ambition 1: To grow the economy - For Kent to be open for business with a growing and successful economy and jobs for all. Ambition 2: To tackle disadvantage - For Kent to be a county of opportunity, where aspiration rather than dependency is supported and quality of life is high for everyone. Ambition 3: To put citizens in control - For power and influence to be in the hands of local people so they are able to take responsibility for themselves, their families and their communities.
Thanet District Council (2006) Thanet Local Plan	Policy EC2	Kent International Airport: Policy framework for proposals designed to support the development, expansion and diversification of Manston.
Thanet District Council (2013) Thanet District Council Economic Growth and Regeneration Strategy and Plan 2013 – 2031	Sections 5 and 6	Vision: Accelerate economic growth and achieve greater productivity and profit for businesses; to create more jobs, and increased prosperity for residents. Critical Pathways: Create the right environment and conditions to deliver real economic growth Capitalise on the District's assets Maximise the potential of existing businesses Create an enterprising and aspirational labour force with the right education and skills
Thanet District Council (2013) Destination Management Plan	'What we want to achieve'	Deliver quality experiences for existing markets, develop new experiences to grow market share and attract new higher spending visitors looking for short-breaks. Present the three towns more strongly together, playing to the strengths of each and making it easy for the visitor to explore along the coast and to get around. Invest in the experience of its beaches, Thanet's strongest natural assets – their development and management. Prioritise investment in new quality character accommodation to enable Thanet to grow the short break market - to achieve longer stays and higher spend. Make more of its location – the Isle, the big skies, the natural coastline and importantly its proximity to London by high-speed train and the market opportunities that bring. Stimulate the environment to encourage investment in new quality visitor attractions, visitor experiences and places to stay. Ensure tourism is one of the drivers of the local economy and put steps in place to enable that, including supporting tourism business sustainability, growth and inward investment
Thanet District Council (January 2015) Thanet Local Plan Preferred Options	Summary	A flexible strategy in order to provide for 5,000 additional jobs across all sectors of the economy including tourism, leisure and the green economy The airport and surrounding area is proposed as an opportunity area for which the council will prepare an Area Action Plan to guide its future development The housing provision over the plan period is 12,000 additional homes Development will be focused in accessible areas with existing infrastructure and services, either within or on the edge of existing urban areas. Greenfield housing allocations are proposed at Westwood, Birchington, Westgate-on-Sea and Manston Green

Policy Document	Reference	Policy information relevant to socio-economics
		Important countryside, open spaces, heritage and the built and natural environment will be protected for their character and contribution to sense of place The green wedges that separate Thanet's towns will be protected A new parkway station is promoted for wider economic benefit to the district

13.3 Data gathering methodology

Desk Study

13.3.1 In order to establish the socio-economic baseline, data was obtained from the sources listed in **Table 13.2** below to identify existing data about the site and the surrounding area. These data have been used to identify baseline conditions in the study area and identify any particular socio-economic characteristics, opportunities or challenges relevant to the construction and operation of the Proposed Development which will need to inform the assessment.

Table 13.2 Information used in the preparation of the PEIR

Source	Data
Office for National Statistics (ONS)	2011 Census Data https://www.ons.gov.uk/
NOMIS	Labour market statistics https://www.nomisweb.co.uk/
Experian	Economic profile (Standard Industrial Classification [SIC] by postcode) http://www.experian.co.uk/marketing-services/products/mosaic-uk.html
Thanet District Council (2010) Employment Land Review	Economic profile https://www.thanet.gov.uk/publications/planning-policy/employment-land-review-2010/
Thanet District Council (2012) Economic and Employment Assessment	Economic profile https://www.thanet.gov.uk/media/2326613/Thanet-Economic-and-Employment-Assessment-2012.pdf
Thanet District Council (2013) Destination Management Plan	Tourism statistics and strategy https://www.thanet.gov.uk/publications/destination-management-plan/thanet-destination-management-plan/
Thanet District Council (2013) Thanet District Council Economic Growth and Regeneration Strategy and Plan 2013-2031	Economic profile and strategy http://democracy.thanet.gov.uk/documents/s33636/Regeneration%20Strategy%20Phase%203%20Final%20Version.pdf
Thanet District Council	District profile https://www.thanet.gov.uk/your-services/statistics-and-census-information/state-of-the-district-facts-and-figures/thanet-statistics/

Source	Data
Kent County Council	Population profiles http://www.kent.gov.uk/about-the-council/information-and-data/Facts-and-figures-about-Kent/area-profiles# Education https://www.kent.gov.uk/__data/assets/pdf_file/0012/50304/Education-infrastructure-needs-and-requirements-GIF.pdf# Health http://www.kpho.org.uk/__data/assets/pdf_file/0020/44660/ThanetCCGHealthNeedsAssessmentv2.compressed.pdf Business www.kent.gov.uk/__data/assets/excel_doc/0007/.../District_Profile.xls

Survey Work

13.3.2 No site survey work, relating to households or businesses, has been undertaken at this stage.

Consultation

13.3.3 Since 2015 and throughout the undertaking of the survey and assessment work, RiverOak has engaged with consultees with an interest in potential socio-economic effects. A Scoping Report (**Appendix 1.1**), including a chapter covering socio-economics, was produced and submitted to the Planning Inspectorate ('PINS') who provided a Scoping Opinion (**Appendix 1.2**).

13.3.4 Organisations that were consulted include:

- Kent County Council; and
- Thanet District Council.

13.3.5 Table 13.3 below provides a summary of Thanet District Council's comments as they relate to socio-economic matters and PINS' comments provided in its Scoping Opinion. RiverOak's responses to those comments is also set out in this table. Kent County Council did not have any comments on this particular topic.

Table 13.3 Consultee comments

Consultee	Comments and considerations			How addressed in this PEIR
PINS	Socio Economic Page 43, 3.109	The Secretary of State notes that the socio-economic baseline description includes consideration of health, crime, tourism and education indicators. The proposed effect of Manston Airport should be considered for each of the indicators described. The Applicant is referred to the Secretary of State's comments in Section 4 of this Scoping Opinion in relation to health impact assessment. The Secretary of State recommends that effects on tourism are considered in their own right, as currently this appears to be considered in terms of effects on businesses only.	Effects on tourism should be considered in their own right.	Tourism included as separate section (paras. 13.4.24 – 13.4.29)

Consultee	Comments and considerations			How addressed in this PEIR
PINS	Socio Economic Page 43, 3.110 to 3.113	Significance criteria are set out in Scoping Report Tables 12.13 to 12.15. The description of large magnitude effects in Table 12.13 includes reference to "An effect that is likely to… …significantly affect identified receptors". The Secretary of State considers that use of the term 'significantly' in this context is circular because significance of effect is determined by considering the magnitude of effect against the sensitivity of a receptor. The magnitude criteria are inconsistent as the definition of small and medium magnitude effects include 'number of receptors' as a criteria, whereas negligible and large magnitude effects focus appear to focus on 'identified receptors'. The Secretary of State considers that the criteria have potential to undervalue impacts on key local businesses, since the removal of such a business would be unlikely to be considered greater than a small degree of effect. The Secretary of State also considers that the criteria for sensitivity are too narrow, since they only relate to economic change, whereas the list of effects in Scoping Report paragraph 12.6.1 includes amenity effects. Scoping Report Table 12.15 uses different terminology from Table 12.13 (small, medium, large vs low, medium, high). Terminology should be consistent in the ES.	Significance criteria should be better thought out and consistent terminology used.	Criteria amended accordingly. (section 13.7).
PINS	Socio Economic Page 44, 3.114 to 3.115	The Secretary of State recommends that the assessment of socioeconomic effects includes consideration of the potential opportunities arising from the proposed airport to create local skills and training opportunities. This should include consideration of the potential to create apprenticeship opportunities during construction and operation. The socio-economic assessment and in particular any skills and training opportunities should be developed in discussion with TDC and KCC as appropriate.	Potential opportunities such as the creation of apprenticeships should be considered and skills and training opportunities should be developed in discussion with TDC and KCC.	Noted and incorporated into this assessment. Discussion with TDC and KCC to be conducted as part of pre-application discussions.
Thanet District Council	Appendix 3 Socio-Economic Page 126	The assessment of the proposed airfield on the tourism industry within Thanet should be considered with reference to the landscape and visual impact and noise assessments and cross referenced where necessary.	Effects on tourism should be considered, and cross referenced to other assessments	Tourism included as separate section (paras. 13.4.24 – 13.4.29), this will be cross referenced to other assessments (as appropriate) within the ES
Thanet District Council	Appendix 3 Socio-Economic Page 126	No information on how the total direct job numbers have been calculated is provided, and this reinforces the concerns raised earlier in our comments about the delivery of the project and lack of business plan or other document.	More detail on job forecast to be provided	The jobs forecast, including the methodology used in producing it, is included as part of Appendix 2.1

13.4 Overall Socio-economic baseline

Current baseline

13.4.1 The socio-economic baseline has been considered at three spatial levels:

- The immediate locality of the Airport as defined by the boundaries of Thanet District Council ('Thanet'). At this scale, detailed census data at LSOA (Lower Super Output Area) level has been used, along with data derived from local authority surveys.
- Kent and the South East of England, analysed through secondary data and providing a more general socio-economic overview.
- England and Wales to provide a national level comparison.

13.4.2 The extent of Thanet is shown in **Figure 13.1**.

13.4.3 Manston Airport is located in proximity to the district's town centres, being approximately 3km west of Ramsgate, 5km southwest of Broadstairs and 5km south of Margate. The village of Manston is the closest settlement, but pockets of residential development exist around the periphery of the Airport site.

Figure 13.1 Thanet District

Population Profile

13.4.4 **Table 13.4** and **Figure 13.2** below summarise the profile of the population in Thanet district and show, most notably, a relatively low proportion of those of working age and a relatively high proportion of elderly compared to Kent and

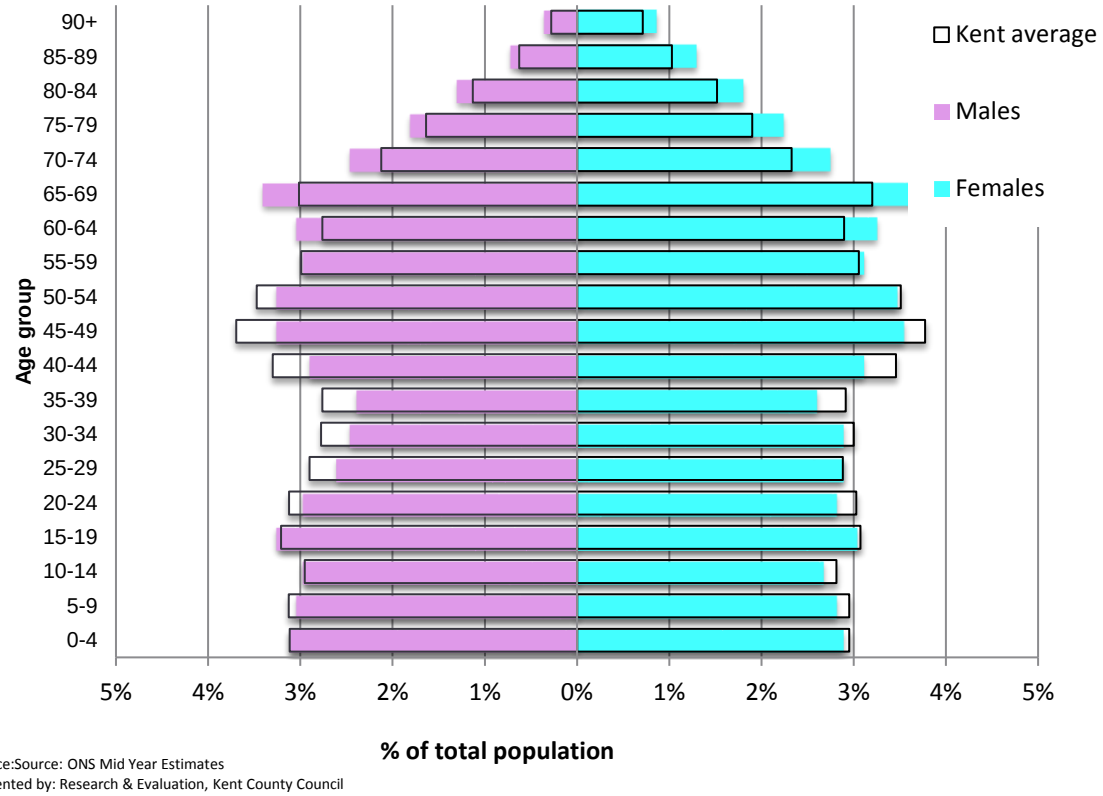
England and Wales more widely, whilst the proportion of those aged 0-15 are in line with County and National figures. Nevertheless, the majority of the population within Thanet is of working age and this is an important resource on which to draw to contribute to economic development in the district.

Table 13.4 Population Profile 2014 by Geography

	Thanet		Kent		England & Wales	
	No.	% of total population	No.	% of total population	No.	% of total population
All People	138,400		1,510,400		57,408,700	
0-15	26,000	18.8%	289,400	19.2%	10,858,400	18.9%
16-64	81,000	58.6%	926,500	61.3%	36,397,802	63.4%
65+	31,300	22.6%	294,500	19.5%	10,152,500	17.7%

Source: ONS Mid Year Estimates

Figure 13.2 Population Profile in Thanet by Age and Gender



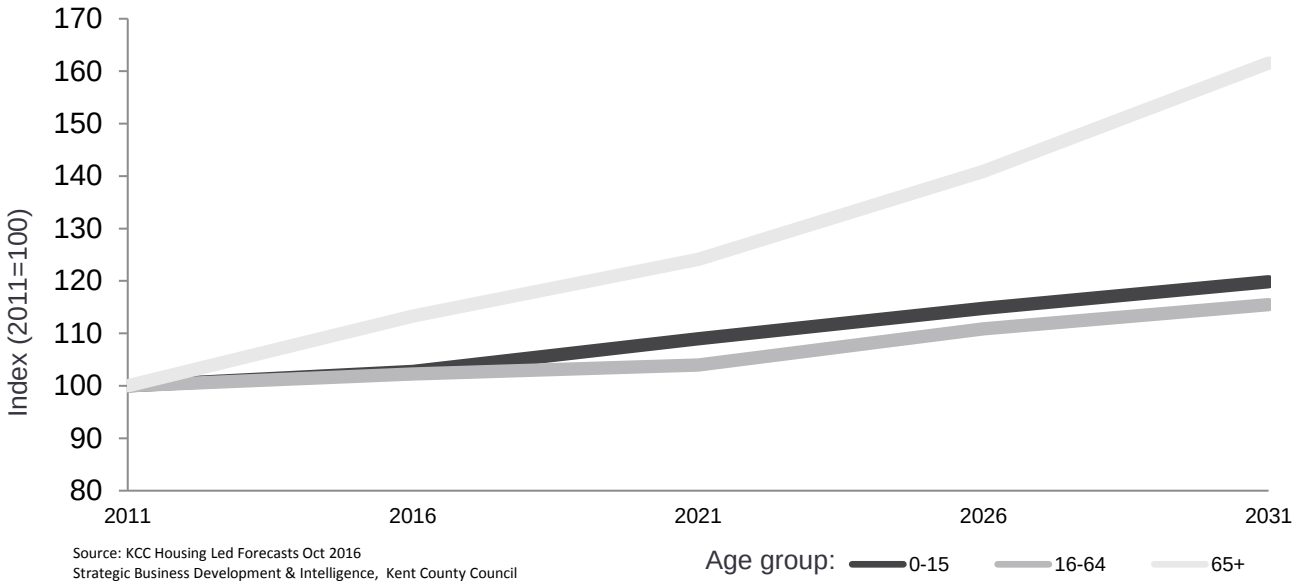
Source:Source: ONS Mid Year Estimates
Presented by: Research & Evaluation, Kent County Council

source: www.kent.gov.uk/__data/assets/excel_doc/0007/.../District_Profile.xls

13.4.5 The expected changes in the population profile in Thanet are more significant, predicting a continuing aging of the population (**Figure 13.3**). Which reflects a combination of the aging of the current cohort of those aged 50-65 which forms

part of the 'post-war bulge', out-migration of those of working age and a falling birth rate.

Figure 13.3 Population Projections in Thanet by Age 2011 - 2031



Source: www.kent.gov.uk/__data/assets/excel_doc/0007/.../District_Profile.xls

Index of Multiple Deprivation

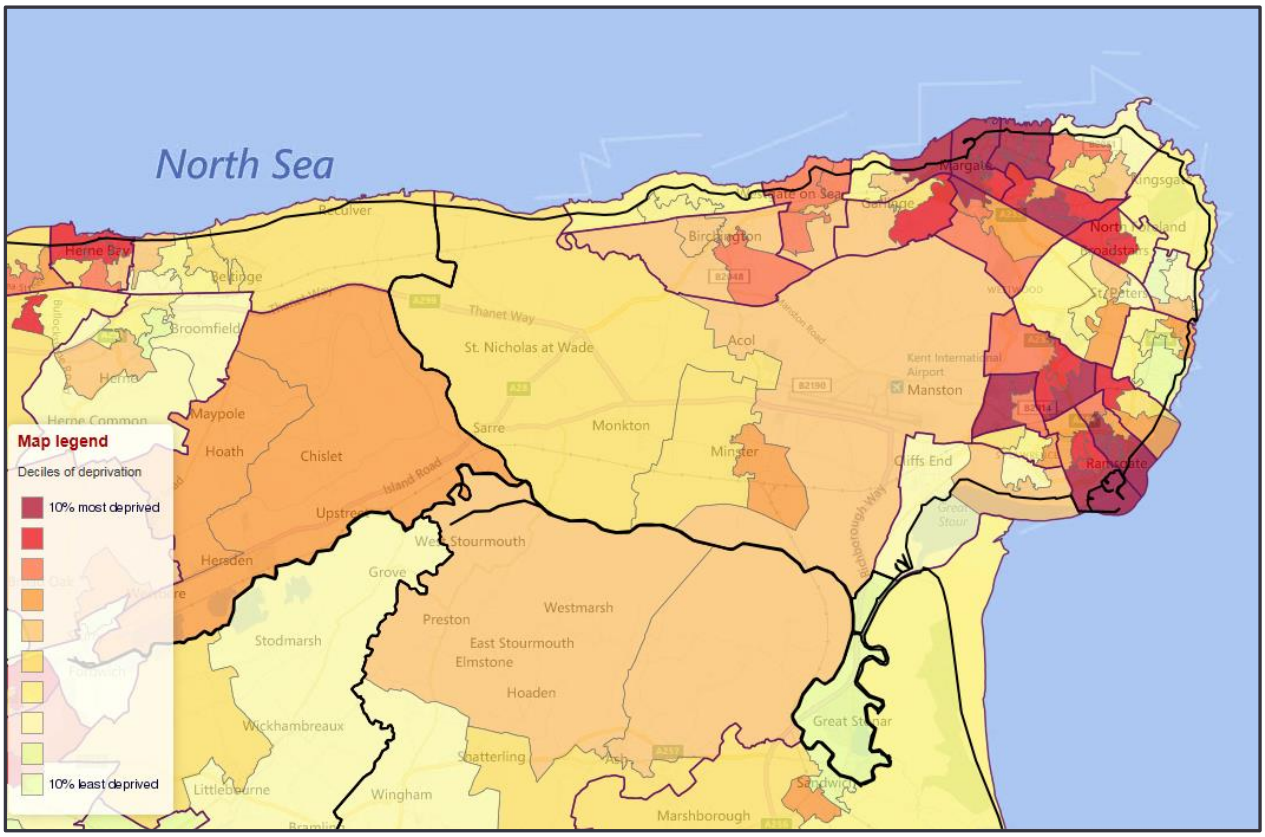
13.4.6 The Index of Multiple Deprivation (IMD) is a composite measure which is defined by a number of domains or dimensions[177], including household income, education, health and living environment. The index offers a readily comparable measure, by area, of the degree to which communities may be struggling with particular issues. Thanet was the most deprived local authority in the IMD2010 and remains Kent's most deprived local authority district in IMD2015.

13.4.7 Nationally, Thanet is ranked at 21 out of 326 authorities placing it within England's 10% most deprived of authorities[178]. This disguises variability amongst local communities (**Figure 13.4)** in which all seven domains of deprivation are considered) where there are significant concentrations of relative deprivation, particularly in parts of the coastal towns.

[177] There are seven domains (or dimensions) used in calculating the Index of Multiple Deprivation: Income, Employment, Health Deprivation and Disability, Education, Skills and Training Deprivation, Barriers to Housing and Services, Crime and Living Environment Deprivation.

[178] Kent County Council (2015) https://www.kent.gov.uk/__data/assets/pdf_file/0006/7953/Indices-of-Deprivation-headline-findings.pdf

Figure 13.4 Index of Multiple Deprivation (2015) at Neighbourhood LSOA) Scale



Source: http://dclgapps.communities.gov.uk/imd/idmap.html

Education

13.4.8 In comparison to the national average, Thanet has a relatively high level of residents with either no qualifications or qualifications equal to 1 or more GCSE at grade D or below (**Table 13.5**), with a commensurately low relative proportion of residents with more advanced qualifications. There is clearly a significant skills gap which serves to supress average wage levels and can prove unattractive to prospective and existing employers seeking to invest in the area[179]. Levels of educational attainment can be closely linked to the IMD, as discussed above, of which education is one dimension. Poor educational achievement can be difficult to turn around and requires time to achieve.

[179] For more analysis of this issue, see Azimuth Associates (2017) **Manston Airport: A National and Regional Aviation Asset - Volume IV, The economic and social impacts of airport operations**, Chapter 5

Table 13.5 Qualifications by Geography

Qualification[180]	Thanet	Kent	England
No Qualifications	28.4%	22.5%	22.5%
Level 1	14.8%	14.7%	13.3%
Level 2	16.4%	16.9%	15.2%
Apprenticeship	3.9%	3.8%	3.6%
Level 3	11.3%	12.3%	12.4%
Level 4	19.6%	24.7%	27.4%
Other	5.6%	5.1%	5.7%

Source: 2011 census

Health and Crime

13.4.9 Health can reflect a range of other indicators such as deprivation, crime and unemployment and this is no exception for Thanet where there a higher proportion of some vulnerable populations in Thanet such as children in care, ex-offenders and people with a mental health condition. Most indicators relating to healthy lifestyles show that Thanet has statistically worse outcomes compared to the England average. These include smoking prevalence (including smoking during pregnancy), excess weight in adults, physically active adults and prevalence of opiate and/or crack use. **Table 13.6** sets out the key health variables by geography, illustrating significantly higher levels of bad and very bad health, lower levels of very good health, combined with lower life expectancy and higher dependence on incapacity benefits than the South East or England.

Table 13.6 Key Health Variables by Geography

Variable	Measure	Thanet	South East	England
Very Good Health	%	40.7	49.0	47.2
Good Health	%	35.1	34.6	34.2
Fair Health	%	16.7	12.0	13.1

[180] Level 1: 1-4 O Levels/CSE/GCSEs (any grades), Entry Level, Foundation Diploma, NVQ Level 1, Foundation GNVQ, Basic/Essential Skills; Level 2: 5+ O Level (Passes)/CSEs (Grade 1)/GCSEs (Grades A*-C), School Certificate, 1 A Level/ 2-3 AS Levels/VCEs, Intermediate/Higher Diploma, Welsh Baccalaureate Intermediate Diploma, NVQ level 2, Intermediate GNVQ, City and Guilds Craft, BTEC First/General Diploma, RSA Diploma; Apprenticeship; Level 3: 2+ A Levels/VCEs, 4+ AS Levels, Higher School Certificate, Progression/Advanced Diploma, Welsh Baccalaureate Advanced Diploma, NVQ Level 3; Advanced GNVQ, City and Guilds Advanced Craft, ONC, OND, BTEC National, RSA Advanced Diploma; Level 4 and above: Degree (for example BA, BSc), Higher Degree (for example MA, PhD, PGCE), NVQ Level 4-5, HNC, HND, RSA Higher Diploma, BTEC Higher level, Foundation degree (NI), Professional qualifications (for example teaching, nursing, accountancy); Other qualifications: Vocational/Work-related Qualifications, Foreign Qualifications (not stated/level unknown).

Variable	Measure	Thanet	South East	England
Bad Health	%	5.8	3.4	4.2
Very Bad Health	%	1.7	1.0	1.2
Low Birthweight Live Births	%	8.0	6.5	7.2
Infant Mortality	Rate per 1000	4.5	3.7	4.4
Life Expectancy at Birth; Males	Years	76.5	79.4	78.3
Life Expectancy at Birth; Females	Years	81.6	83.3	82.3
Incapacity Benefits	%	9	5	7

Source: Census 2011

13.4.10 There are considerable variations in population health within Thanet and inequalities are wider than in any other district in Kent. Around one third of the Thanet population are in the most deprived quintile nationally with less than one in twenty in the least deprived quintile. The difference in life expectancy between the highest and lowest wards is 16.77 years[181].

13.4.11 Crime, as a general trend, has risen in Thanet since 2009 (**Table 13.7**) and across almost every type is higher than that of Kent as a whole (**Table 13.8**).

Table 13.7 Reported crime in Thanet 2009/10 – 2014/15

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Cases	10,783	10,658	10,560	9,945	11,971	11,708

Source: Kent Police

[181] See: http://www.kpho.org.uk/health-and-social-care-maps/pdf-social-care-maps

Table 13.8 Recorded Crimes 2014/15 by Geography per 1,000 population

Type of Crime	Thanet	Kent
Burglary dwelling (per 1,000 households)	9.9	7.1
Burglary other	4.0	4.3
Criminal damage offences	14.6	10.0
Robbery	0.9	0.5
Sexual offences	2.3	1.4
Shoplifting	8.9	6.5
Theft from motor vehicle	4.7	3.6
Theft of motor vehicle	1.4	1.3
Theft of pedal cycle	2.1	1.1
Theft offences	12.2	9.1
Vehicle interference	0.9	0.6
Violence against the person	23.7	15.6
Victim based crime	80.4	57.0

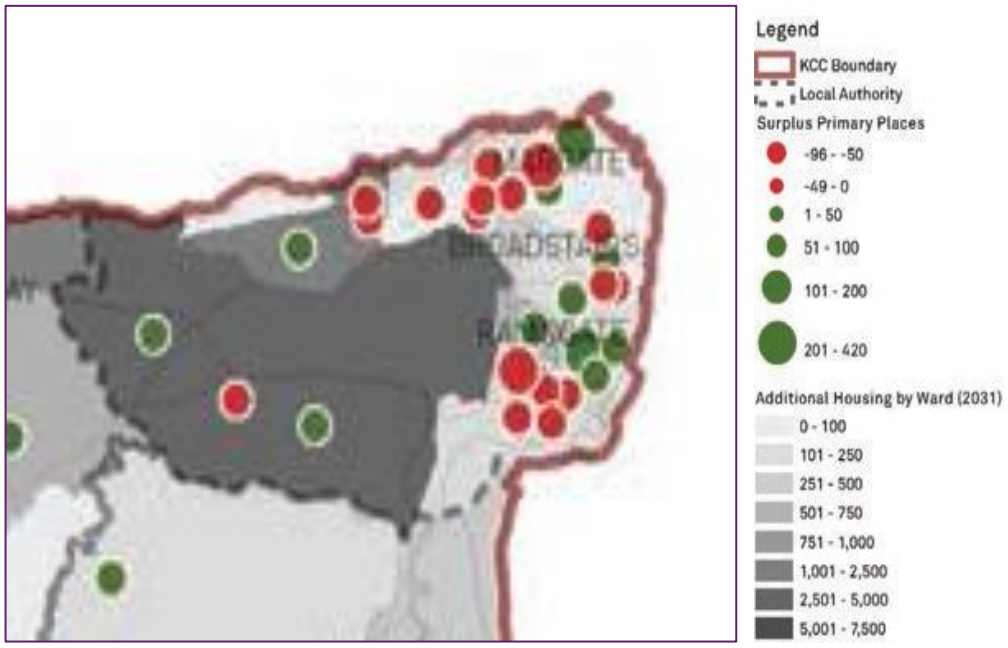
Source: Kent County Council Community Safety Portal

Community Resources

Primary Schools

13.4.12 In 2014 there was a net 6,483 surplus of places (+4.4% of capacity) across Kent and Medway. There was however a deficit of 215 places in reception years (-1% of capacity) across Kent and Medway as a whole reflecting a recent baby boom. The total surplus places are for all year groups in primary schools and hides the pressure on reception year places across the county. **Figure 13.5** illustrates the current balance of places across primary schools in Thanet.

Figure 13.5 Primary Schools in East Kent by Capacity

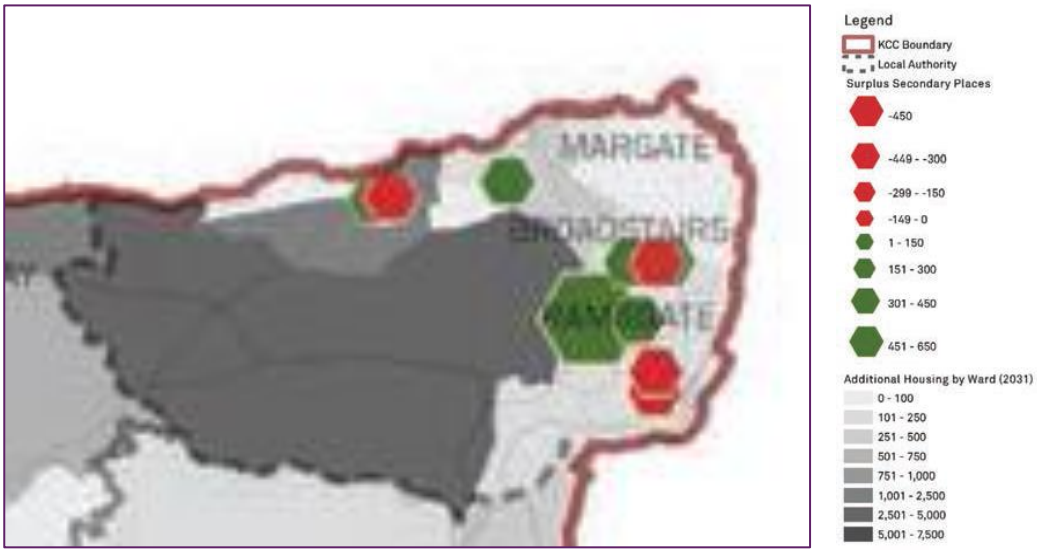


Source: https://www.kent.gov.uk/__data/assets/pdf_file/0012/50304/Education-infrastructure-needs-and-requirements-GIF.pdf#

Secondary schools

13.4.13 In 2014 there were 13,318 surplus places (12.1 % of capacity) across all secondary school years in Kent and Medway. Overall, every local authority in Kent is running at a positive surplus of more than one form of entry. The surplus capacity is the greatest in areas with less development pressure and often capacity in more peripheral locations masks shortages in urban areas. **Figure 13.6** illustrates the current balance of places across secondary schools in Thanet.

Figure 13.6 Secondary Schools in Thanet by Capacity



Source: https://www.kent.gov.uk/__data/assets/pdf_file/0012/50304/Education-infrastructure-needs-and-requirements-GIF.pdf#

Post-16 Education

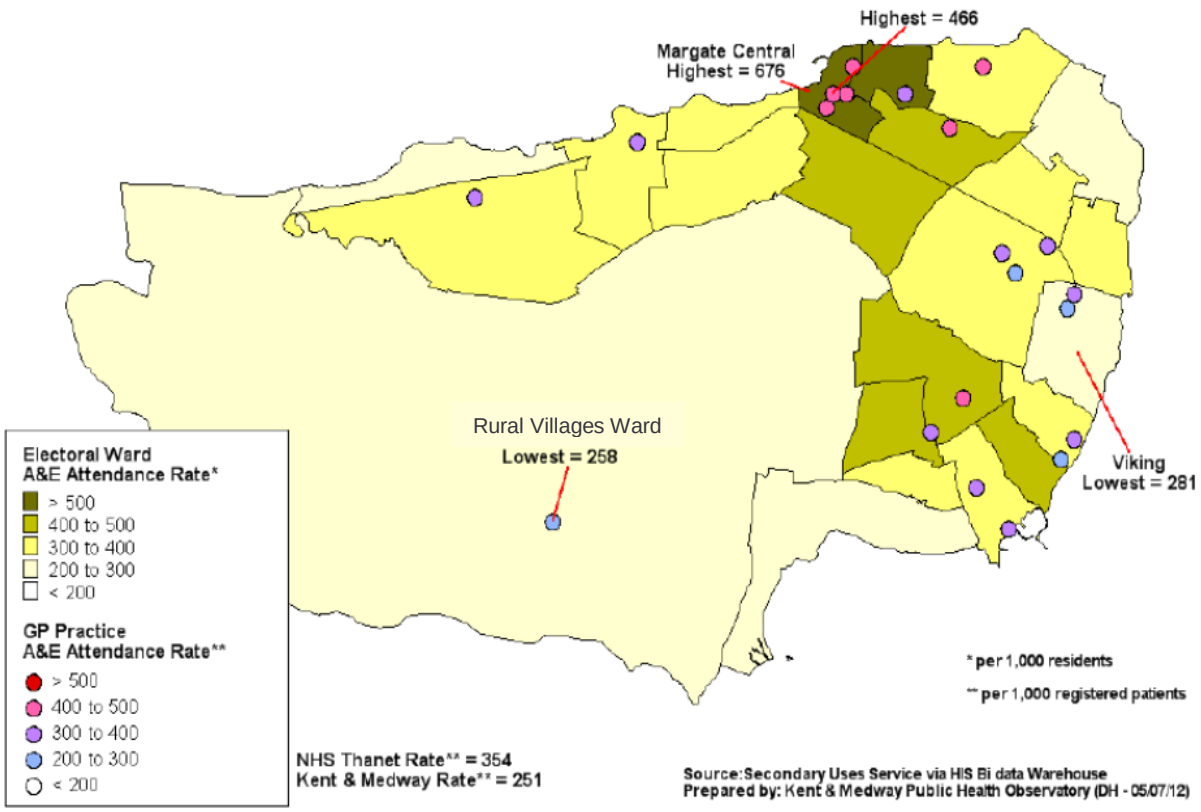
13.4.14 The following current projects and proposals relate to investment in post-16 education facilities in Thanet:

- East Kent College - Broadstairs Campus - Construction / Renewables / Engineering (2013)
- East Kent College - Broadstairs Campus - Nursery (2014)
- East Kent College - Broadstairs Campus - Classroom Modernisation (2014)
- East Kent College - Broadstairs Campus - Training Hotel (2015)
- East Kent College - Broadstairs Campus - Centre for Creative Industries (2015)
- East Kent College - Broadstairs Campus - Final Phase of Development (2019+)

Healthcare Facilities

13.4.15 In addition to the Queen Elizabeth the Queen Mother Hospital in Margate, there are twenty primary care surgeries across Thanet, one located in the Rural Villages Ward (containing Manston Airport) and which has the lowest GP Practice A&E attendance rate (**Figure 13.7**).

Figure 13.7 Primary Healthcare Facilities and A&E Attendance in Thanet



Source:
http://www.kpho.org.uk/__data/assets/pdf_file/0020/44660/ThanetCCGHealthNeedsAssessmentv2.compressed.pdf

Recreation Facilities

13.4.16 Reflecting the age structure and levels of deprivation in the District, participation in sport is lower than in Kent, the South East and nationally. The following summary of provision and quality of recreation facilities across Thanet[182] also suggests problems with investment:

- There are 33 play areas across the district. The current level of provision equates to 0.2 hectares per 1000 population (below the national recommended standard of 0.8 hectares per 1000 population).
- The quality of these play areas is 'below average'.
- Junior football pitches – insufficient supply.
- Outdoor tennis courts – poor quality sites, uneven distribution of facilities.
- Synthetic turf pitches – insufficient quantity and full size pitch is of poor quality, poor accessibility for residents in Margate, Broadstairs and villages.
- Five a side pitches – poor accessibility for Broadstairs residents.
- Skate parks – well-used but in need of some refurbishment/modernisation.
- Changing provision for football and cricket facilities – only 'average' standard and significant scope for improvement.
- A significant deficit of youth facilities locally to accommodate the need generated by housing development in Thanet.
- Existing level of provision 0.95 hectares per 1000 population of 'Natural/Semi-Natural' green space (below the recommended minimum standard set by Natural England of 2 hectares per 1000 population).

Business Profile

Working Age Population

13.4.17 Related to its population characteristics, Thanet has a relatively small population of working age compared to Kent and nationally (**Table 13.9**). However, the differences are relatively small (3 to 5%) and need to be placed in the context of the working age population forming the largest proportion of residents in Thanet (see **Table 13.2**).

Table 13.9 Working Age Population by Geography 2014

	Thanet		Kent		England & Wales	
	Number	%	Number	%	Number	%
Males	39,300	58.9%	458,400	61.9%	18,147,900	64.1%

[182] Source: https://www.thanet.gov.uk/publications/planning-policy/planning-obligations-and-developer-contributions/leisure-and-recreation/

	Thanet		Kent		England & Wales	
Females	41,700	58.3%	468,100	60.8%	18,249,900	62.7%
Total	81,000	58.6%	926,500	61.3%	46,558,400	63.4%

Source: ONS Mid Year Estimates

Employment

13.4.18 Unemployment is a problem in Thanet, with worklessness[183] at significantly higher levels than Kent or nationally (**Table 13.10**). Whilst concentrated in the coastal towns and associated with wider social issues (see IMD below), the issue is nevertheless of concern. As at February 2013 the following wards showed key out-of-work benefits over 20% of the working age population: Cliftonville West 41.6%; Margate Central 41.1%; Newington 26%; Eastcliff 23.8%; Dane Valley 21.5%; Ramsgate Central Harbour 21%; and Northwood 20.1%.

Table 13.10 Worklessness in People Aged 16 – 64, May 2015

	Thanet District		Kent		England & Wales	
	Number	**% of 16-64 age group**	**Number**	**% of 16-64 age group**	**Number**	**% of 16-64 age group**
Out of work benefits	**11,260**	**13.9%**	**74,980**	**8.1%**	**3,359,280**	**9.2%**
Jobseekers	2,370	2.9%	12,880	1.4%	609,330	1.7%
Those claiming incapacity benefits	7,290	9.0%	49,540	5.3%	2,242,470	6.2%
Lone parents	1,240	1.5%	10,300	1.1%	406,630	1.1%
Others on income related benefits	360	0.4%	2,260	0.2%	100,850	0.3%

Source: DWP Longitudinal Study

Table 13.11 Employment by Occupation 2011

	Thanet		Kent		England	
	Number	**% of all people 16-74 in employment**	**Number**	**% of all people 16-74 in employment**	**Number**	**% of all people 16-74 in employment**

[183] "Worklessness is difficult to define, but is often researched in terms of the unemployed and economically inactive. The unemployed population 'are people who are without a job, want a job, have actively sought work in the last four weeks and are available to start work in the next two weeks or are out of work, have found a job and are waiting to start it in the next two weeks'. The economically inactive population are 'those without a job who have not actively sought work in the last four weeks, and/or are not available to start work in the next two weeks'" source: http://www.neighbourhood.statistics.gov.uk/HTMLDocs/images/Worklessness%20topic%20profile_Final_tcm97-83621.pdf

	Thanet		Kent		England	
All Occupations	**55,200**		**688,434**		**25,162,721**	**100%**
Managers, directors and senior officials	5,489	9.9%	79,504	11.5%	2,734,900	10.9%
Professional occupations	7,794	14.1%	110,988	16.1%	4,400,375	17.5%
Associate professional and technical occupations	5,669	10.3%	87,041	12.6%	3,219,067	12.8%
Administrative and secretarial occupations	5,717	10.4%	80,621	11.7%	2,883,230	11.5%
Skilled trades occupations	7,174	13.0%	84,252	12.2%	2,858,680	11.4%
Caring, leisure and other service occupations	7,447	13.5%	67,451	9.8%	2,348,650	9.3%
Sales and customer service occupations	5,352	9.7%	58,242	8.5%	2,117,477	8.4%
Process, plant and machine operatives	3,970	7.2%	46,284	6.7%	1,808,024	7.2%
Elementary occupations	6,588	11.9%	74,051	10.8%	2,792,318	11.1%

Source: 2011 Census Table KS608EW

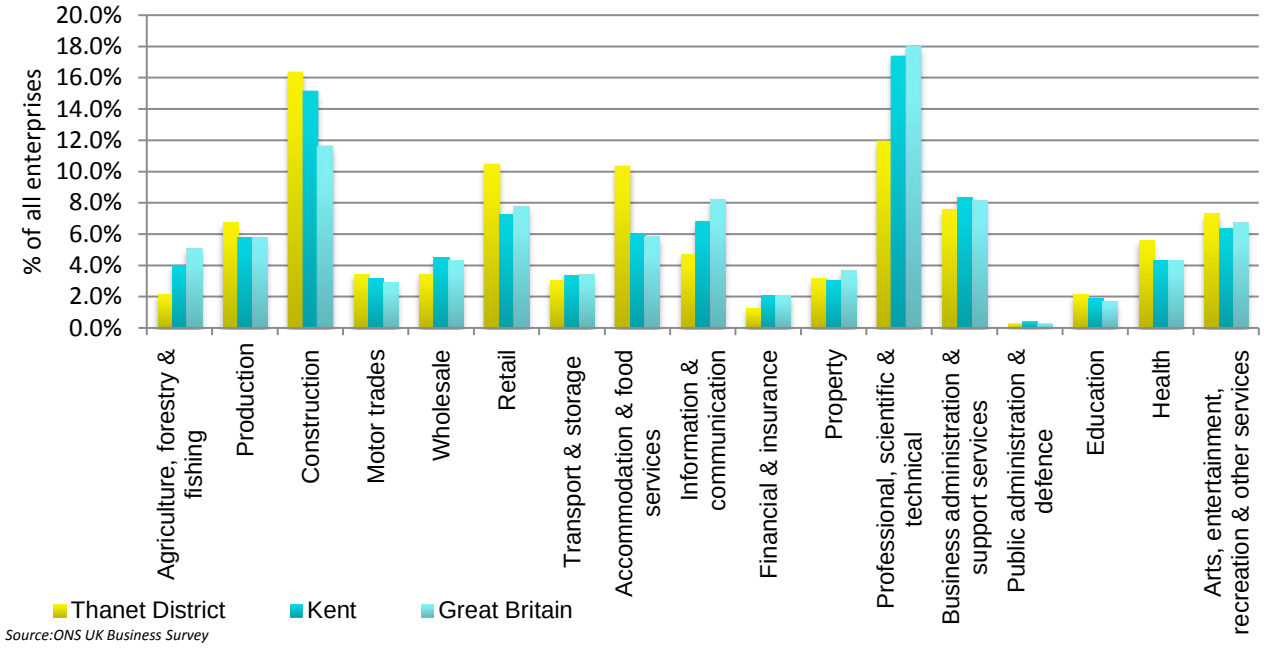
13.4.19 Thanet has 20% fewer managerial, administrative or professional households than the national average (**Table 13.11**) which translates into the lower proportions of social groups AB and C1 than Kent or nationally (**Table 13.12).** In turn, this is reflected in the profile of registered businesses (**Figure 13.8**).

Table 13.12 Proportion of Workers by Social Group and Geography

Social Group	Description	Thanet	Kent	England
AB	Higher & intermediate managerial, administrative, professional occupations	15.88%	22.42%	22.96%
C1	Supervisory, clerical & junior managerial, administrative, professional occupations	29.38%	31.89%	30.92%
C2	Skilled manual occupations	23.59%	22.46%	20.64%
DE	Semi-skilled & unskilled manual occupations, Unemployed and lowest grade occupations	31.14%	23.22%	25.49%

Source: Census 2011

Figure 13.8 Registered Businesses by Geography 2015



Source: www.kent.gov.uk/__data/assets/excel_doc/0007/.../District_Profile.xls

13.4.20 The profile shown in **Table 13.12** is also reflected in the average weekly earnings of the district (**Table 13.13**) which are notably lower than those for Kent and nationally.

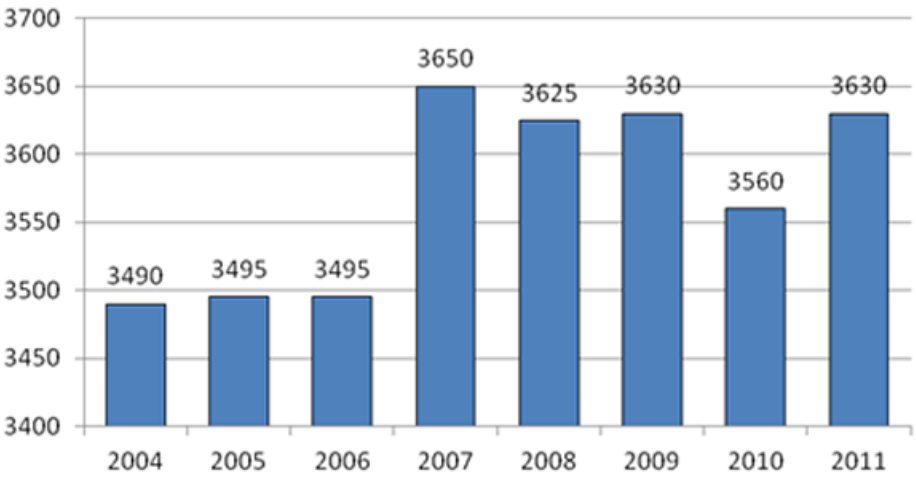
Table 13.13 Median weekly full-time earnings (£s) - workplace based (2015)

	Thanet District	Kent	Great Britain
Males	451.5	554.3	569.9
Females	374.5	424.3	471.5
Total	415.8	504.1	529.0

Source: NOMIS - Annual Survey of Hours & Earnings

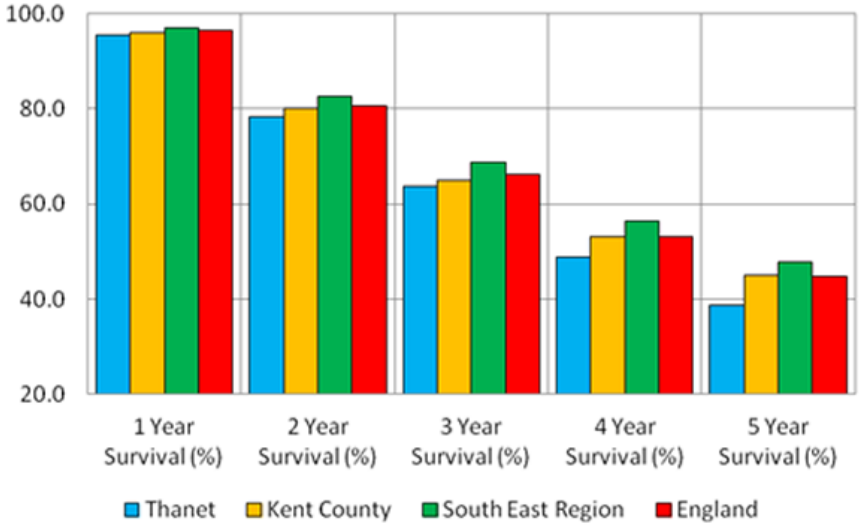
13.4.21 Office for National Statistics data suggests that Thanet has approximately 3,500 VAT-registered businesses, a figure which has remained broadly steady (**Figure 13.9**), although 5-year survival rates are lower than Kent and nationally (**Figure 13.10**).

Figure 13.9 Number of VAT-registered businesses in Thanet 2004 - 2011



Source: http://www.ons.gov.uk/ons/search/index.html?pageSize=50&sortBy=none&sortDirection=none&newquery=business+demography+release

Figure 13.10 Five- Year Survival Rates of Businesses by Geography



Source: http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcm%3A77-283124

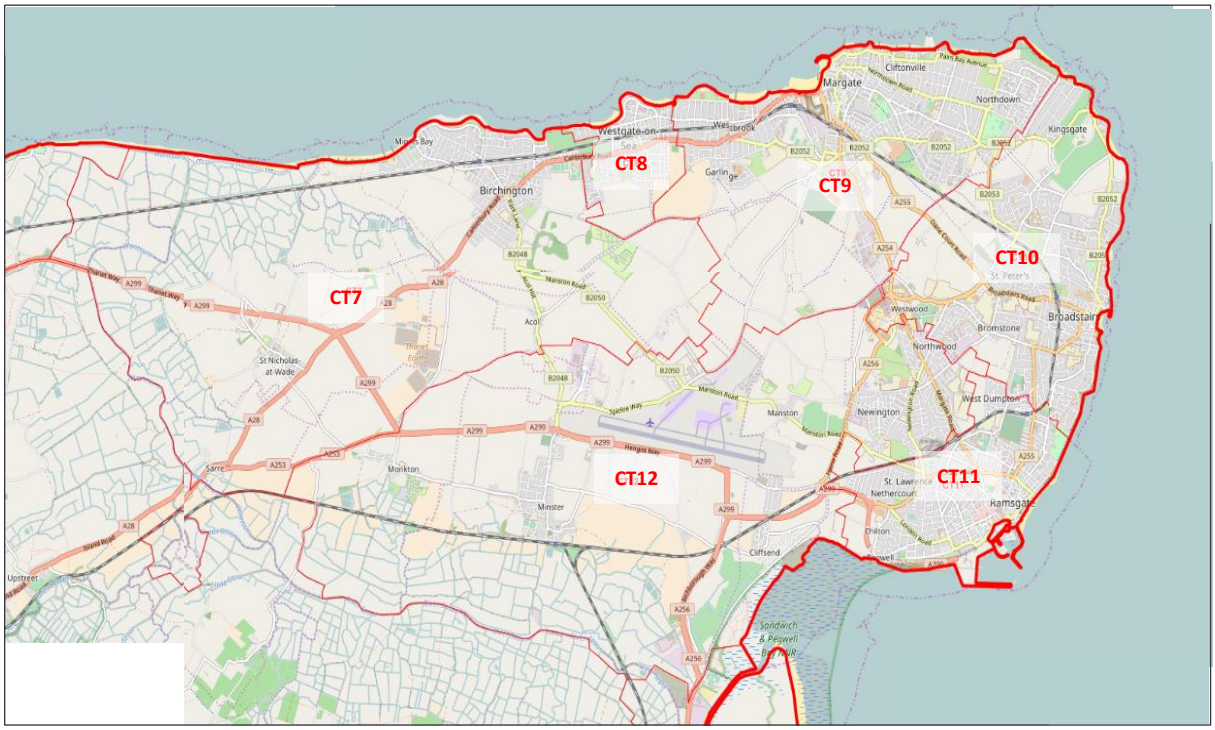
13.4.22 **Table 13.14** summarises the number and type of businesses by postcode, revealing that there a significant number of businesses (532) within the immediate vicinity of the Airport (postcode CT12) and more widely in the surrounding towns of Margate, Ramsgate and Broadstairs, notably in respect of manufacturing, construction, retail, accommodation and other service activities.

Table 13.14 Number of Business by SIC Section by Postcode

	Postcode District					
Standard Industrial Classification (SIC) 2007 Section	**CT08**	**CT09**	**CT10**	**CT11**	**CT12**	**Total**
SECTION A AGRICULTURE, FORESTRY AND FISHING	1	19	11	6	17	54
SECTION B MINING AND QUARRYING	0	0	0	0	2	2
SECTION C MANUFACTURING	9	81	55	48	55	248
SECTION D ELECTRICITY, GAS, STEAM AND AIR CONDITIONING SUPPLY	0	3	1	1	0	5
SECTION E WATER SUPPLY; SEWERAGE, WASTE MANAGEMENT AND REMEDIATION ACTIVITIES	0	4	7	0	2	13
SECTION F CONSTRUCTION	19	155	116	91	76	457
SECTION G WHOLESALE AND RETAIL TRADE; REPAIR OF MOTOR VEHICLES AND MOTORCYCLES	34	232	211	160	102	739
SECTION H TRANSPORTATION AND STORAGE	5	34	21	25	30	115
SECTION I ACCOMMODATION AND FOOD SERVICE ACTIVITIES	17	156	113	110	43	439
SECTION J INFORMATION AND COMMUNICATION	9	44	39	51	18	161
SECTION K FINANCIAL AND INSURANCE ACTIVITIES	4	21	14	11	8	58
SECTION L REAL ESTATE ACTIVITIES	11	43	36	30	5	125
SECTION M PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES	18	79	65	57	34	253
SECTION N ADMINISTRATIVE AND SUPPORT SERVICE ACTIVITIES	12	71	62	44	41	230
SECTION O PUBLIC ADMINISTRATION AND DEFENCE;COMPULSORY SOCIAL SECURITY	1	5	1	4	1	12
SECTION P EDUCATION	10	47	42	44	22	165
SECTION Q HUMAN HEALTH AND SOCIAL WORK ACTIVITIES	30	122	78	61	26	317
SECTION R ARTS, ENTERTAINMENT AND RECREATION	5	68	29	35	11	148
SECTION S OTHER SERVICE ACTIVITIES	12	109	79	93	36	329
SECTION T ACTIVITIES OF HOUSEHOLDS AS EMPLOYERS;UNDIFF GOODS-AND SERVICES	8	23	16	22	2	71
SECTION U ACTIVITIES OF EXTRATERRITORIAL ORGANISATIONS AND BODIES	0	1	0	0	1	2
Total	**205**	**1,317**	**996**	**893**	**532**	**3,943**

Source: Experian B2B Prospector

Figure 13.11 Postcodes within the study area



Thanet Economic and Employment Assessment – Headline Observations

13.4.23 The Assessment[184] summarises and assesses the implications for economic development of the various socio-economic characteristics of Thanet. Principal amongst these conclusions are:

a. *"Thanet's growth is currently below that of the South East and more in line with the UK as a whole*
Within Thanet, the sectors which comprised the greatest contribution to Gross Value Added (GVA) include education, real estate, health and construction of buildings. The greatest growth over the last five years in Thanet has been in the service sectors and particularly in sectors such as finance and real estate. The majority of manufacturing sectors have continued to decline during this time, as has agriculture forestry and fishing.

b. *Thanet's business base is largely located in urban areas*
There are some 5,000 businesses within Thanet. This figure is significantly higher than ONS data which suggests that there were 3,560 businesses in 2010. Around 80 per cent of the companies identified in Thanet are single site. Around 13 per cent are companies with headquarters in Thanet and multiple sites either in Thanet or elsewhere.

c. *Home-working is relatively high in the district and is particularly popular in Margate and Ramsgate*
A relatively high proportion of the businesses, particularly in 'urban wards' are home based. They account for over 5 per cent of businesses, ranking Thanet in third place in Kent only behind Canterbury and Tunbridge Wells. In addition around 9.4% of the working population in the district are home-based. In

[184] Thanet District Council (2012) Economic and Employment Assessment

particular Margate and Ramsgate have high proportions of home-based businesses.

d. *Key sectors within the business base include wholesale and retail and construction*
Wholesale and retail and construction business comprise a quarter of all businesses. The next largest sectors are other service activities, accommodation and food services, followed by professional, scientific and technical and admin and support services.

e. *Tourism & green sectors, comprise a sizeable proportion of total businesses*
There are over 530 businesses within the tourism sector representing 11% of the business base Around 80 businesses have been identified in the primary green sector and 280 businesses in the broader secondary green sector. Combined, they represent seven per cent of the business base. Green businesses are more likely to be located in rural areas than other sectors, particularly secondary green sector businesses.

f. *Businesses within the knowledge intensive sectors comprise a smaller proportion of the total than elsewhere*
Thanet, despite its low base, has experienced strong growth within the knowledge intensive sectors over the last decade. Proportionally however, there still remain fewer businesses within knowledge intensive sectors in the district than other areas of Kent. At 18%, the proportion of knowledge intensive businesses compares to the England average of 23% per cent and the South East as a whole of 27%. The local economy in Thanet has been shown to be dominated by manufacturing with this sector representing 50% of the key commercial sectors in Thanet which mainly include: Transport and Logistics, Retail and Wholesale and Engineering.

g. *Historically the district has had just above average proportion of growth firms, but growth potential is lower*
Within the UK growth firms which have experienced employment growth of five per cent or more over the last three years account for 7% of businesses, in Thanet they account for slightly more – 8%. The proportion of low growth or declining firms is however also higher at 8% compared to 7% within the UK. In terms of growth potential, Thanet is broadly in line with the UK, particularly for high growth potential.

h. *Exporting potential is much lower in Thanet than the UK*
Businesses that export make up only a small proportion of the UK economy yet are a key component of the growth strategy for the UK. Thanet is in line with the UK in terms of its current exports.

i. *A significant amount of land is available for development in Thanet but there is strong competition from elsewhere in Kent*
The Employment Land Review (2010) for Thanet revealed that the total amount of employment floorspace is the second lowest in the East Kent with only Shepway having less, however overall stock has been increasing particularly office and warehousing with the amount of factory space decreasing. In April 2008 there was approximately 100,000m^2 office floorspace, 335,000m^2 of factories and 155,000m^2 warehousing space. The total amount of employment

floorspace is the second lowest out of the East-Kent Districts, with only Shepway having less. The amount of Office floorspace in Thanet is also lower than the other districts, with office accounting for only 17% of the stock in the district. Factories account for 56% and warehouses 26%. The document also concludes that the age and quality of the employment building stock is highly dated with only 3% of the office stock being built post 1980.

j. *An additional 3,100 jobs are likely to be created over the next two decades in Thanet with continued growth in the service sectors and declines within manufacturing*
Net growth of £700 million in output over the next two decades is likely, taking the total to over £2 billion in 2031. The biggest growth will be in construction of buildings (net growth of £90 million), health (net growth of £90 million) and real estate (net growth of £70 million). The manufacturing sectors will experience the greatest losses, although these are not predicted to be as significant as the employment declines in these sectors pointing to enhanced productivity.

k. *Caring, leisure and other service occupations will grow strongly, alongside professional occupations in which Thanet is currently under-represented*
There will be a strong growth in the caring, leisure and other service occupations, as well as strong growth within the professional occupations. Based upon the existing occupation and skills profile this suggests that there could be challenges in ensuring that local residents are able to maximise the potential. This is particularly the case within professional services, in which Thanet is under-represented compared to the region and England."

Tourism Profile

13.4.24 Tourism currently accounts for around 3,800 jobs across Thanet, concentrated in the coastal towns of Margate, Broadstairs and Ramsgate, with over 530 businesses across the district, representing 11% of the business base and 9% of total employment (compared to around 8% for the South East as a whole)[185]. The tourism and leisure sector is identified as one a suite of opportunity sectors for Kent.[186]

13.4.25 The profile of visitors to Thanet is as follows[187]:

- 3.1 million p.a.
- 75% are day visitors
- 66% are adult-only couples & groups - higher in Ramsgate, lower in Broadstairs
- Most are from the UK – less than 10% come from overseas
- By far the strongest reason to visit is the seaside/beaches
- Most travel by car
- Most visit in the summer – with a significant peak in August

[185] Experian (2012) Economic and Employment Assessment – Thanet District Council
[186] South East LEP: Growth Deal and Strategic Economic Plan 2014
[187] Thanet Visitor Survey 2010 & Visit Kent DMP Research 2012

- New attractions include the Turner Gallery in Margate which between April 2011 and April 2014 received 1.2m visitors, contributing £30m to the local economy and supporting 130 jobs.

13.4.26 **Table 13.15** details the number of tourism-related business in postcodes within the vicinity of the airport (see also **Figure 13.11** for a map showing the postcode areas).

Table 13.15 Number of Tourism-Related Business by SIC Section by Postcode

	Postcode District					
Standard Industrial Classification (SIC) 2007 Section	CT08	CT09	CT10	CT11	CT12	Total
SECTION I ACCOMMODATION AND FOOD SERVICE ACTIVITIES	17	156	113	110	43	439
SECTION R ARTS, ENTERTAINMENT AND RECREATION	5	68	29	35	11	148
Total	**22**	**224**	**142**	**145**	**54**	**587**

Source: Experian B2B Prospector

13.4.27 Thanet's Draft Economic Growth Strategy[188] identifies the 'heritage, culture and visitor economy' as a sector with growth potential, with the ambition to "rebuild our reputation as the UK's favourite visitor destination" which might be achieved through[189]:

- "Support for the sector at a strategic level within local policy and planning is key to unlocking the growth opportunities
- Identification and targeting of those businesses which have real growth potential within the business base and providing them with the support and guidance required to grow further
- The expansion and development of transport infrastructure namely Manston Airport will further boost the tourism sector enhancing access to the area
- Positive Planning to unlock opportunities – identifying and supporting the development of key sites e.g. development of Dreamland to raise the quality of the tourism offer attracting a more affluent / active population. In line with this, there is also a need for quality accommodation and hotel provision."

13.4.28 These approaches sit within the county-wide strategy of the Kent & Medway Tourism Development Framework which seeks to:

- "Help existing businesses improve their performance and develop further, in line with evolving market requirements.

[188] https://www.thanet.gov.uk/media/3656760/Thanet-Economic-Growth-Strategy.pdf
[189] Experian (2012) Economic and Employment Assessment – Thanet District Council

- Identify, encourage and support additional visitor economy businesses and facilities that will enhance Kent's attractiveness as a destination and increase market penetration, particularly through generating more staying visits.
- Make the most of opportunities for visitor economy development afforded by on-going investment in regeneration programmes and projects.
- Focus on local distinctiveness to enable Kent and its individual destinations to stand out from the crowd but also combine to offer a range of complimentary offers to potential visitors.
- Ensure that key public and private sector players work together as effectively as possible towards achieving agreed tourism development priorities.
- Improve the skills of people who work in Kent's tourism industry and the quality of welcome and service received by visitors.
- Deliver and sustain a quality tourism product for visitors."

13.4.29 At the local level, the specific intention[190] is that there should be effort to:

- "Deliver quality experiences for existing markets, develop new experiences to grow market share and attract new higher spending visitors looking for short-breaks.
- Present the three towns more strongly together, playing to the strengths of each and making it easy for the visitor to explore along the coast and to get around.
- Invest in the experience of its beaches, Thanet's strongest natural assets – their development and management.
- Prioritise investment in new quality character accommodation to enable Thanet to grow the short break market - to achieve longer stays and higher spend.
- Make more of its location – the Isle, the big skies, the natural coastline and importantly its proximity to London by high-speed train and the market opportunities that bring.
- Stimulate the environment to encourage investment in new quality visitor attractions, visitor experiences and places to stay."

Future baseline

13.4.30 The data used to establish the baseline is from the 2011 Census; as part of ongoing monitoring of the effects from the Proposed Development the baseline could incorporate data collected for the 2021 Census and any future studies conducted for Thanet District Council and Kent County Council.

13.5 Environmental measures incorporated into the Proposed Development

13.5.1 This section lists the environmental measures relevant to socio-economics which have been incorporated into the proposed design of the Proposed Development.

[190] Thanet District Council (2013) Thanet Destination Management Plan

13.5.2 How these environmental measures influence the assessment of significance is discussed in **Section 13.6**. However the broad approach adopted is that where achievable and agreed environmental measures have been incorporated into the design, the effect that those environmental measures have on the significance of potential effects is taken into account during the assessment. In some cases a potential effect may require no further consideration following incorporation of appropriate environmental measures, and if this is the case this has been stated.

13.5.3 A summary of the environmental measures that have been incorporated into the proposals to date in order to avoid, reduce or compensate for potential adverse socio-economic effects is provided below in **Table 13.16**.

Table 13.16 Rationale for the incorporation of environmental measures

Potential receptor	Predicted changes and potential effects	Incorporated measures
Local population	• Disruption to the local road network during construction impacting on amenity and access to services. • Noise and dust during construction impacting on local amenity and health. • Aircraft noise and traffic during operation impacting on local amenity and health.	• Carefully designed programme of traffic management to minimise disruption. • Noise and dust control during construction. • Aircraft noise and traffic control during operation.
Local businesses	• Disruption to the local road network during construction impacting on employee and customer access. • Aircraft noise and traffic volumes during operation impacting on employees and customers.	• Carefully designed programme of traffic management during construction to minimise disruption. • Aircraft noise and traffic control during operation.
Tourism	• Disruption to the local road network during construction impacting on employee and visitor access. • Aircraft noise during operation impacting on amenity.	• Carefully designed programme of traffic management to minimise disruption. • Aircraft noise control during operation.

13.6 Scope of the assessment

13.6.1 This section sets out information on: the process whereby receptors are identified; the potential receptors that could be affected by the Proposed Development; and the potential effects on receptors that could be caused by the construction and operation of the Proposed Development.

13.6.2 The scope of assessment has been informed by: the scoping study; consultee responses to the Scoping Report; the results of the work detailed in **Section 13.4**; and the Proposed Development design.

Approach to identifying receptors

13.6.3 The identification of receptors is based on relevant guidance and the professional judgement of a qualified technical specialist who has undertaken a desk study for the site location.

13.6.4 In some cases, even without quantified information, it is reasonable to assume that some potential receptors will not experience significant effects. This is sometimes the result of tried and trusted mitigation measures that have been incorporated into the Proposed Development design, which might reasonably be expected to be effective (see Section 5.5).

13.6.5 The following considerations have been taken into account in identifying potential receptors:

- The extent to which the receptor will be affected by changes that are expected to result from the Proposed Development;
- The sensitivity of the receptors to the changes that are likely to occur;
- The likely magnitude, duration and other characteristics of the effects;
- The importance or value of the receptor at a local, regional and national level; and
- Relevant best practice and guidance where specialist methodologies have been developed as detailed below.

Potential receptors

13.6.6 This section identifies the potential receptors that have been identified based on the above factors and on the Scoping Opinion received from PINS. The receptors listed in **Table 13.17** are considered capable of being potentially significantly affected and will therefore be taken forward for further assessment.

Table 13.17 Potential receptors

Receptor	Distance from site boundary	Reason for selection
Local population	<5km	Effects on the local community such as through increased road traffic and/or disruption to the road network during construction and operation. Effects could also include noise and dust during construction and noise in operation. The approach to assessing such amenity effects will work closely with other environmental disciplines (such as landscape and visual, transport and noise) in order to draw conclusions.
Local businesses	<5km	Effects on local business (excluding those related to tourism) from construction activities (such as through noise and road traffic) and more permanent effects (such as noise from aircraft operations and road traffic arising from greater business activity at the airport).
Tourism	Thanet District	Effects on tourism receptors within the immediate vicinity of the airport and wider settlements, notably the coastal resorts of Ramsgate, Broadstairs and Margate. These could be direct (such as through noise) and indirect (such as through congestion) in nature.
Local and Regional Economies	Thanet District and Kent County	Effects on the local and regional economy resulting from construction employment, spend in construction materials, accommodation and specialist services. Also positive effects associated with the generation of permanent employment and wider supply chain opportunities.

Spatial and temporal scope

13.6.7 The assessment of socio-economic effects is defined spatially in terms of Thanet and Kent County and temporally by construction, operation and decommissioning phases.

Potentially significant effects

13.6.8 The potentially significant effects of the Proposed Development are summarised immediately below and further discussed throughout the remained of this chapter:

- Businesses: disruption (traffic) during construction and operation;
- Local communities: disruption (traffic) during construction and operation and ongoing amenity (noise and traffic) effects;
- Local communities: additional burden on local services (education, health and recreation);
- Tourism: ongoing amenity (noise and traffic) effects in specific localities; and
- Local and regional economies: job and training opportunities.

13.7 Assessment methodology

Methodology for predicted effects

13.7.1 There is no definitive guidance on significance criteria for socio-economic effects and accordingly the assessment will draw on existing good practice. The assessment methodology should be read in conjunction with the scope of the socio-economic assessment which is outlined in the previous section.

13.7.2 The significance of a socio-economic effect has been determined by assessing both the magnitude of the effect and the sensitivity of the receptor. The magnitude of an effect represents its severity with key factors to be considered include the extent (number of groups and/or people, households or businesses affected) and the value of the resource. **Table 13.18** details the guideline criteria for assessing the effect magnitude. Some receptors will experience direct effects (such as through the construction of the Proposed Development), but the majority are likely to experience indirect effects of various kinds.

13.7.3 There are no published socio-economic standards that define receptor sensitivity or magnitude. The definitions in Tables 13.18 and 13.19 have been developed and applied to the socio-economic assessment and are based on professional judgement and precedent assessments such as for Nationally Significant Infrastructure Projects.

Table 13.18 Magnitude of Effect

Magnitude of Effect	Criteria
High	An effect that will dominate over baseline conditions, and/or will be very likely to affect large numbers of businesses and/or people (number depending on the local context) and/or persists over many years.
Moderate	An effect that can be demonstrated to change the baseline conditions and likely to affect a moderate number of businesses and/or people (number depending on the local context) and/or of medium duration.
Low	An effect that will result in a perceptible difference from baseline conditions and is likely to or may affect a small number of businesses and/or people (number depending on the local context) and/or is of short duration.
Negligible	An effect that does not result in a variation beyond the baseline conditions and/or is unlikely to measurably affect the well-being of businesses and/or people.

13.7.4 The assessment will consider both economic and social resources. The framework set out in Table 13.18 is suitable for assessing direct effects such as an increase in job opportunities associated with activity at the Airport.

13.7.5 The sensitivity of a receptor relates to the potential for a receptor to resist or overcome an effect. The criteria for sensitivity are the same for both direct and indirect amenity effects, as set out in **Table 13.19**.

Table 13.19 Receptor Sensitivity

Receptor Sensitivity	Criteria
Very High	The receptor is of international importance and/or has little or no ability to absorb change and/or recover or adapt to the change and/or is used by sensitive groups such as older people, children, and people of poor health.
High	The receptor is of national importance and/or has little ability to absorb change and/or recover or adapt to the change and/or is used by sensitive groups such as older people, children, and people of poor health.
Moderate	The receptor is of regional or local importance and/or has medium ability to absorb change and/or recover or adapt to the change and/or is used by sensitive groups such as older people, children, and people of poor health.
Low	The receptor is of local importance and/or has some ability to absorb change and/or recover or adapt to the change and/or is used by sensitive groups such as older people, children, and people of poor health.
Very Low	The receptor is of local importance and/or is able to absorb change and/or recover or adapt to the change and is not specifically for the use by sensitive groups such as older people, children, and people of poor health.

13.7.6 Sensitivity is a key dimension to the assessment of amenity effects, and key receptors are likely to be community resources, tourism resources and specialised manufacturing which is sensitive to noise/vibration effects. When a resource is

considered to be sensitive to amenity effects and has a high or medium magnitude, the overall effect is considered to be significant.

Significance evaluation methodology

13.7.7 The likely significance of a socio-economic effect is determined by combining the magnitude of the effect with the sensitivity of the receptor. **Table 13.20** sets out the approach to determining significance.

13.7.8 All of the assessments below have been compiled for the purposes of the PEIR and provide a high level assessment of potential effects on the identified socio-economic receptor categories. Further detail will be provided in the Environmental Statement.

Table 13.20 Determining Significance

	Magnitude of Effect			
Sensitivity of Receptor	**High**	**Moderate**	**Low**	**Negligible**
Very High	Major adverse/ beneficial – significant	Major adverse/ beneficial - significant	Moderate adverse/ beneficial - significant	Minor adverse/beneficial – significant
High	Major adverse/ beneficial – significant	Major adverse/ beneficial - significant	Moderate adverse/beneficial - significant	Negligible – not significant
Moderate	Major adverse/ beneficial – significant	Moderate adverse/ beneficial - significant	Minor adverse/ beneficial – significant	Negligible adverse/beneficial - not significant
Low	Moderate adverse/ beneficial – significant	Minor adverse/beneficial – significant	Negligible adverse/beneficial - not significant	Negligible adverse/beneficial - not significant
Negligible	Minor adverse/beneficial – significant	Negligible adverse/beneficial - not significant	Negligible adverse/beneficial - not significant	Negligible adverse/beneficial - not significant

13.8 Assessment of effects on Businesses

Construction phase effects

13.8.1 Likely predicted effects are likely to be centred on: disruption to the local road network during construction, impacting on employee and customer access. Lorry traffic associated with earth moving operations during phase 1 construction activities are estimated[191] to be 120 movements/day with a total of 15,074 movements (each movement is one arrival or departure to/from site). Other construction traffic flow during construction phase 1 is estimated at 220

[191] PEIR Chapter 3 para 3.2.75 – 3.2.107. Construction Phase 1: Spring 2019-2020; Phase 2: Spring 2020-Spring 2023; Phase 3: Spring 2023-Spring 2030; Phase 4: Spring 2030-Spring 2036

movements per day. The exact number of construction traffic movements during construction phases 2-4 is not fully known at this stage, but there will be no earthwork operations during these phases. Therefore, based on these proposals it has been assumed as a worst-case scenario there will be 100 construction traffic movements per day during Construction Phases 2-4, more detail on these movements will be assessed within the ES. There may be potential effects on some businesses in some locations, related to construction traffic. Environmental measures will be incorporated to mitigate direct effects such as the pattern of lorry movements. The magnitude of this effect is considered to be low, and the sensitivity of the receptor also low with an overall negligible adverse effect - **Not Significant (Table 13.22)**.

13.8.2 Positive effects are likely to result from increased income generated from construction employees spend on accommodation and food, as well as potential income for local construction and supply companies, in turn providing employment opportunities. The magnitude of this effect is considered to be low, and the sensitivity of the receptor moderate with an overall effect of **moderate beneficial - Significant (Table 13.22)**.

Operational phase effects

13.8.3 Positive effects are related to income and employment generation, being direct, indirect, induced and catalytic in nature[192].

13.8.4 There will be direct economic effects associated with employment, income and GDP associated with the operation and management of activities at the airports, including activities by the airport operator, the airlines, airport air traffic control, general aviation, ground handlers, airport security, immigration and customs, aircraft maintenance, and other activities at the airport.

13.8.5 Indirect economic effects relate to the supply of goods and services to the airport such as wholesalers providing food for in-flight catering, oil refining activities for jet fuel, companies providing accounting and legal services to airlines, travel agents booking flights, etc.

13.8.6 Induced and catalytic effects are likely to result from spend by employees on goods and services in the locality and beyond, and the creation of wider business and therefore employment opportunities as a result of airport operations. The

[192] **Direct**: Employment associated with the operation and management of activities at the airport. This includes the jobs created by the airport operator as well as other airport-related businesses located elsewhere on or near the airport site. These other businesses include airlines, general aviation, handling agents, airport security, immigration and customs, retail and food concessions, aircraft maintenance, and a range of other activities at the airport. **Indirect**: Employment in the supply chain such as wholesalers providing food for inflight catering, aviation fuel supply, travel agents, cleaning and maintenance contractors, construction, and accounting and legal services. **Induced**: This category covers the employment created directly or indirectly as a result of those connected to the airport spending their income in the local or national economy. Induced employment therefore includes a wide range of jobs such as retail, entertainment, childcare, health care, building and home renovations for example. **Catalytic**: Catalytic impacts, also known as Wider Economic Benefits, are associated with the aviation sector. Air transportation facilitates employment and economic development in the local and national economy and jobs in this category therefore capture a wide range of opportunities. For example, air transport contributes to tourism and therefore impacts tourist spending in the economy. Air transport also impacts trade, facilitating the import and export of goods by air and therefore their manufacture and distribution, as well as productivity. Air transport also positively impacts location and business decisions by other organisations and stimulates innovation, thereby having a long run impact on productivity and GDP.
Source: Azimuth Associates (2017) **Manston Airport: A National and Regional Aviation Asset - Volume IV, The economic and social impacts of airport operations**

magnitude of this effect is considered to be high and the sensitivity of the receptor moderate high with an overall effect of **major beneficial - Significant (Table 13.22)**.

13.8.7 Likely predicted negative effects are likely to be centred on potential pressures on the local road network resulting from an increase in business-related traffic, impacting on employee and customer access which is assessed within **Chapter 14: Traffic and Transportation**. In addition aircraft noise, which is assessed within **Chapter 12: Noise and Vibration**, could impact on employees and customers, depending on the chosen flight paths. The magnitude of this effect on socio-economic business receptors is considered to be moderate, and the sensitivity of the receptor moderate; therefore it is considered that the significance of these effects will be **moderate adverse – Significant (Table 13.22)**.

Decommissioning phase effects

13.8.8 The type and scale of effects will be similar to those during construction, relating to works to remove and replace old airport equipment.

Combined Effects

13.8.9 These effects are likely to be centred on the synergies associated with greater economic activity, with businesses benefitting from both increased demand for their services and opportunities to diversify their services. Negative combined effects are likely to be centred on traffic and transport and the burden on existing infrastructure such as through congestion. More detail on likely effects are provided in the Traffic Assessment undertaken in support of **Chapter 14: Traffic and Transportation**.

13.9 Assessment of effects on Local Communities

Construction phase effects

13.9.1 The following communities lie within the immediate vicinity of the Airport (up to 1km): Manston, Monkton, Acol, Minster, Cliffsend, Alland Grange Lane and Woodchurch. In addition, there are small groups of residential properties and individual properties. These include:

- properties at Bell Davies Drive and Esmonde Drive to the north;
- properties at the southern end of Manston Court Road to the east of the airport;
- properties on the north side of the B2190 Spitfire Way;
- properties on the northwest side of Manston Road;
- properties along either side of Manston Court Road;
- properties at the southern end of Manston High Street; and
- those parts of Cliffsend adjacent to Canterbury Road West.

13.9.2 All of these properties are immediately adjacent to the site of the Proposed Development.

13.9.3 For local residents the following effects during construction are likely:

- Disruption to the local road network during construction impacting on amenity and access to services. As explained in paragraph 13.8.2 above, construction traffic movements associated with earth moving operations during construction phase 1 would total 120 movements/day with a total of 15,074 movements required for the earthworks during Construction Phase 1. Other construction traffic flow during Construction Phase 1 is estimated at 100 movements per day. Detailed consideration of likely road traffic effects is set out in **Chapter 14: Traffic and Transportation**.
- Noise and dust during construction impacting on local amenity and health, associated with construction traffic (on-site operations are unlikely to be significant in this respect, being contained within the existing airport boundary).

13.9.4 The magnitude of these effects is considered to be low, and the sensitivity of the receptor high; therefore it is considered that the significance will be **moderate adverse - Significant (Table 13.22).**

13.9.5 There may be additional burdens placed on local service provision (health and recreation, for example) by an influx of construction workers. Whilst the magnitude of these is likely to be low reflecting the relatively small projected workforce at construction stages, the sensitivity of the receptor is high, resulting in overall significance of **moderate adverse – Significant (Table 13.22)**.

Operational phase effects

13.9.6 For local residents the following effects during operation are likely:

- Noise and traffic during operation impacting on local amenity and health, which could be significant in proximity to key transport corridors likely to be used by road traffic (A299/Thanet Way (junction 7 of the M2), B2190/Minster Road (Minster Roundabout), and the B2190/Spitfire Way). As set out in paragraph 14.1.7 of the PEIR initially the passenger mode of transport is expected to be 3% bus (including shuttle bus from Ramsgate mainline train station), 7% taxi, 45% car (parking on site) and 45% car (drop off/pick up). Detailed consideration of likely road traffic effects is set out in **Chapter 14: Traffic and Transportation**, **Chapter 12: Noise and Vibration** and **Chapter 6: Air Quality.**
- Pressures on the local road network resulting from an increase in business-related traffic (see Local and Regional Economies below).

13.9.7 The significance of these effects is likely to vary considerably according to the precise location and sensitivity of the receptor (for example vulnerable groups and specific community receptors such as village halls and schools) and likely demands on, and changes to, the local property market. Specific surveys of the location and character of vulnerable groups and community facilities are required and further detail will be provided in the Environmental Statement. The magnitude of this effect is considered to be moderate, and the sensitivity of the receptor high; therefore it is considered that these effects will be **major adverse - Significant (Table 13.22)**.

13.9.8 There are likely to be additional pressures on local services (schools, health and recreation) associated with the operational workforce (and their dependents).These effects could be significant in particular localities depending on the current level of provision, the geography of additional housing provision and level of additional required expenditure on service provision. The magnitude of this effect is considered to be moderate, and the sensitivity of the receptor high; therefore it is considered that these effects will be **major adverse - Significant (Table 13.22)**.

Decommissioning phase effects

13.9.9 The type and scale of effects will be similar to those during construction, relating to works to remove and replace old airport equipment.

Combined Effects

13.9.10 These are likely to be centred principally on the effect of a significant uplift in the workforce and the resultant demand for housing and local service provision. The extent to which these demands can be absorbed by existing provision is uncertain at this stage.

13.9.11 Potential combined effects on socio-economic receptors also need to be judged in the context of the detailed findings of **Chapter 14: Traffic and Transportation**, **Chapter 12: Noise and Vibration** and **Chapter 6: Air Quality.**

13.10 Assessment of effects on Tourism

Construction phase effects

13.10.1 The likely predicted effects and their significance will vary according to the precise nature of construction and operational activity. Those receptors in the immediate vicinity of the Airport (up to 5km) are likely to experience construction-related effects associated with disruption to the local road network during construction impacting on employee and visitor access. The magnitude of this effect is considered to be low, and the sensitivity of the receptor low; therefore it is considered that these effects will be **negligible adverse - Not Significant (Table 13.22)**.

Operational phase effects

13.10.2 For businesses within the surrounding area (up to 5km), there could be operational effects (aircraft noise in particular, but also traffic movements) which impact on local amenity. These effects could be significant for some businesses and potential mitigation measures will be considered as part of ongoing work to support the EIA. More detail on likely noise and traffic and transport effects is contained in **Chapter 14: Traffic and Transportation** and **Chapter 12: Noise and Vibration**. The magnitude of this effect is considered to be moderate and the sensitivity of the receptor moderate; therefore it is considered that these effects will be **moderate adverse - Significant (Table 13.22)**.

13.10.3 There are potential beneficial effects associated with use of local accommodation, but these are likely to be diffuse and unpredictable in their geography. Whilst

passenger numbers are predicted to be substantial (662,768 in year 3 rising to 1,407,753 in year 20)[193], the proportion of these requiring accommodation and/or specifically visiting tourist attractions is uncertain at this stage, further assessment of the potential effect will provided as part of the Environmental Statement. The magnitude of this effect is considered to be low, and the sensitivity of the receptor moderate; therefore it is considered that these effects will be **minor beneficial - Significant (Table 13.22)**.

Decommissioning phase effects

13.10.4 The type and scale of effects will be similar to those during construction, relating to works to remove and replace old airport equipment.

Combined Effects

13.10.5 At this stage, no likely combined effects have been identified.

13.11 Assessment of effects on Local and Regional Economies

Construction phase effects

13.11.1 It is estimated that some 600 – 700 jobs[194] will be associated with each construction phase.[195] There will be direct economic effects through supply chain spending for construction materials and spend by construction workers, although the precise significance of this spending on the local and regional economy is uncertain at this stage. Construction phases 2 – 4 are likely to create further economic benefits over the longer term through employment opportunities and spending. A full assessment of these impacts will be prepared for the Environmental Statement. The magnitude of this effect is considered to be moderate, and the sensitivity of the receptor moderate; therefore it is considered that these effects will be **moderate beneficial - Significant (Table 13.22)**.

Operational phase effects

13.11.2 Job creation associated with airport operations has been estimated as follows[196] (**Table 13.21**).

Table 13.21 Forecast Direct and Indirect Job Creation (Years 2, 5, 10 and 20) associated with Airport Operations at Manston

	Direct jobs	Indirect/induced jobs	Catalytic jobs	Total job creation
Year 2	856	1,798	0	2,655

[193] Azimuth Associates (2017) **Manston Airport: A National and Regional Aviation Asset - Volume IV, The economic and social impacts of airport operations** p.18
[194] Azimuth Associates (2017) **Manston Airport: A National and Regional Aviation Asset - Volume IV, The economic and social impacts of airport operations** p.20
[195] the redevelopment project has been planned in four discontinuous phases - construction jobs will be recreated at each phase, in years 4, 10 and 15
[196] Azimuth Associates (2017) **Manston Airport: A National and Regional Aviation Asset - Volume IV, The economic and social impacts of airport operations** p.18

	Direct jobs	Indirect/induced jobs	Catalytic jobs	Total job creation
Year 5	2,150	4,515	8,601	15,266
Year 10	2,749	5,773	10,996	19,517
Year 20	4,271	8,970	17,085	30,326

Note: Direct jobs comprise airport-related activity. Indirect jobs comprises supply chain activities. Catalytic jobs comprise employment and economic development in the wider national economy. For full definitions and data for year 1 to 20, see: Azimuth Associates (2017) **Manston Airport: A National and Regional Aviation Asset - Volume IV, The economic and social impacts of airport operations**.

13.11.3 The implications of such growth are potentially significant over the medium (2 to 10 years) and long term (up to 20 years) as changes in employment opportunities (and commuting patterns) evolve and the provision of local services needs to be resolved in the context of an increased and differently distributed local population. The magnitude of this effect is considered to be moderate, and the sensitivity of the receptor moderate; therefore it is considered that these effects will be **moderate beneficial - Significant (Table 13.22)**.

Decommissioning phase effects

13.11.4 The type and scale of effects will be similar to those during construction, relating to works to remove and replace old airport equipment.

Combined Effects

13.11.5 The principal combined effects of construction and operational activity are likely to relate to potential negative effects on local communities associated with amenity, traffic congestion and service provision, and positive effects on local and regional economies associated with employment and training opportunities, and the resultant uplift in local economic vibrancy.

13.11.6 Potential combined effects on socio-economic receptors also need to be judged in the context of the detailed findings of **Chapter 14: Traffic and Transportation**, **Chapter 12: Noise and Vibration** and **Chapter 6: Air Quality.**

13.12 Conclusions on preliminary significance evaluation

13.12.1 The conclusions on the significance of all those effects that have been subject to assessment in **Sections 13.8** to **13.11** are summarised in **Table 13.22**. The assessment has been compiled for the purposes of the PEIR and identifies potential effects on the identified socio-economic receptor categories. Further detail will be provided in the Environmental Statement.

Table 13.22 Summary of significance of effects

Receptor and effects	Significance Level	Rationale
Local businesses: disruption during construction	Negligible adverse – Not significant	Possible effects on some businesses in some locations, related to construction traffic. Environmental measures to be incorporated to mitigate direct effects such as the pattern of lorry movements.
Local businesses: disruption during operation	Moderate adverse - Significant	Possible effects on some businesses in some locations related to road congestion, for example. Environmental measures to be incorporated to mitigate direct effects such as traffic movements and modal split.
Local businesses: economic effects during construction	Moderate beneficial – Significant	Likely beneficial effects associated with the spending associated with construction activity (both direct and indirect), where local business could provide goods and services, in turn providing some employment opportunities for residents across the study area (and further afield).
Local businesses: economic benefits during operation	Major beneficial – Significant	Likely effects associated with the spending associated with operational activity (both direct and indirect), where local business could provide goods and services, in turn providing employment opportunities for residents across the study area (and further afield).
Local Communities: disruption during construction	Moderate adverse - Significant	Likely effects on specific receptors (groups and facilities) in some locations. Environmental measures to be incorporated to mitigate direct effects e.g. through traffic management plans during construction.
Local Communities: disruption during operation	Major adverse - Significant	Likely effects on specific receptors (groups and facilities) in some locations. Environmental measures to be incorporated to mitigate direct effects e.g. through limiting night flights and aircraft flightpaths during operational activities.
Local Communities: additional burden on local services (education, health and recreation) during construction	Moderate adverse – Significant	Effects likely to be on specific facilities in some locations, dependent upon the residence of construction workers. Intervention in terms of capacity enhancement could be required.
Local Communities: additional burden on local services (education, health and recreation) during operation	Major adverse - Significant	Effects likely to be on specific facilities in some locations, dependent upon the residence of operational workers. Intervention in terms of capacity enhancement could be required.
Tourism: amenity effects during construction	Negligible adverse – Not significant	Possible effects associated with some construction activities (traffic movements) although these are likely to be isolated and can be mitigated e.g. through traffic management.

Receptor and effects	Significance Level	Rationale
Tourism: amenity effects during operation	Moderate adverse - Significant	Possible effects associated with operational activities (aircraft noise). Environmental measures to be incorporated to mitigate direct effects e.g. through limiting night flights and aircraft flightpaths.
Tourism: economic benefits during operation	Minor beneficial - Significant	Whilst the tourism sector could benefit from a general uplift in economic activity as a result of airport operations, establishing a specific connection between the tourism sector/attractions and airport activity is unclear.
Local and Regional Economies: job and training opportunities during construction	Moderate beneficial - Significant	Opportunities to capitalise on uplift in business activity, as well as direct job creation. Also through the co-ordination of training opportunities for those in deprived areas in the vicinity of the airport.
Local and Regional Economies: job and training opportunities during operation	Major beneficial - Significant	Opportunities to capitalise on uplift in business activity, as well as direct job creation, particularly over the long term. Also through the co-ordination of training opportunities for those in deprived areas in the vicinity of the airport, although much will depend on proactive schemes.

Contents

14. Traffic and Transport

14.1 Introduction

14.1.1 This chapter sets out the results of a preliminary assessment of the traffic and transport related environmental effects of the Proposed Development.

14.1.2 This chapter should be read in conjunction with the Description of the Proposed Development **(Chapter 3)**. Following a summary of the key traffic and transport aspects of the Proposed Development, and limitations of the PEIR, this chapter outlines the relevant policy, legislation and guidance that has informed the preliminary assessment, and the data gathering methodology that was adopted as part of the traffic and transportation preliminary assessment. This leads on to a description of the overall baseline conditions, the scope of the assessment, and the assessment methodology. The chapter concludes with a summary of the results of the assessment.

14.1.3 As detail in **Chapter 3: Description of the Proposed Development**, the Proposed Development would support ~17,000 air freight air transport movements (ATM) which can be equated to ~350,000 tonnes of air freight per year. It would also support ~10,000 passenger flight ATMs which can be equated to ~1.5 million passengers, and would provide some 119,000 sqm of business/industrial land use on the 'Northern Grass' area.

14.1.4 **Figure 14.1** shows the location of the Proposed Development in the context of the wider highway network with the Proposed Development shown in **Figures 3.4** and **3.5.**

Key Traffic and Transport Aspects of the Proposed Development

14.1.5 The site has good access to the surrounding highway network. It is expected that construction vehicles and operational HGV would access the site from the wider transport network via the A299, the B2190 Minster Road and the B2190 Spitfire Way. It is anticipated that staff vehicles and passenger terminal vehicles will use the full extent of the highway network. There will be route signage directing users of the passenger terminal from the A299 via the B2190 to discourage inappropriate routeing.

14.1.6 The current construction assumptions that relate to traffic and transport are as follows:

- There will be four construction phases with estimated completion dates of 2020, 2022, 2028 and 2033;
- The typical hours of operation for the construction activities will be 07:30 to 17:30, Monday to Friday and 07:30 to 13:00 on Saturdays if required;
- The number of construction employees anticipated on site at any one time will be between 85 and 100; and
- The number of construction HGV anticipated on site will vary within and across the various construction phases but will be within a range of between 128 and

226 two-way HGV movements per day (113 HGV in and 113 HGV out). This calculation assumes that there will be an unladen HGV trip with every laden one.

14.1.7 The current assumptions of the operational phase that relate to traffic and transport are as follows:

- The airport freight handling area will operate 24 hours a day, seven days a week, 365 days per year whilst the passenger terminal will be operational for 17 hours a day. It is likely that the vast majority of flights will occur between 07:00 and 23:00 hours. The operational hours of the northern grass area will depend on the occupant, however it has been assumed that typical business/industrial hours will be observed, that is, 07:00 to 19:00;
- It is anticipated that the number of direct staff employed at the airport in the air freight services, passenger services, airport operations and other aviation related industries will be some 4,300, however it can be expected that at peak times there will be some 1,500 employees on site at any one time. The number of employees in the northern grass area are expected to be typical of business/industrial land use;
- The typical tonnage of air freight carried by HGV is 10 tonnes, this allows for unladen arrivals/departures where appropriate;
- The current estimate of transport modal split for passengers is outlined below, and it is assumed that through travel plan measures, the percentage of travel by sustainable modes will increase:
  - Bus 3%;
  - Taxi 7%;
  - Car parked 45%; and
  - Car drop off 45%.

14.1.8 The physical transportation components that are a feature of the passenger terminal area of the Proposed Development are as follows:

- 1,686 public car parking spaces of which 826 will be newly constructed;
- Sufficient disabled parking spaces to meet the relevant design standards;
- Some 60 staff car parking spaces;
- A taxi drop off bay;
- A taxi waiting bay;
- Two bus stops; and
- Associated pedestrian and cycle infrastructure within the site.

14.1.9 The physical transportation components that are a feature of the cargo area of the Proposed Development are as follows:

- A new access from Spitfire Way;

- Some 700 staff and visitor car parking spaces;
- Sufficient disabled parking spaces to meet the relevant design standards;
- 57 HGV parking spaces, plus a number of trailer stands; and
- Associated pedestrian and cycle infrastructure within the site.

14.1.10 The physical transportation components that are a feature of the northern grass area of the Proposed Development are as follows:

- A new access from Manston Road;
- Improvements to the existing B2050 Manston Road access;
- An internal highway network;
- Sufficient staff and visitor parking spaces to meet the relevant design standards;
- Sufficient disabled parking spaces to meet the relevant design standards;
- Loading and turning areas for HGV; and
- Associated pedestrian and cycle infrastructure within the site.

Limitation of the PEIR

14.1.11 As outlined in **Section 1.3** the PEIR provides preliminary environmental information based on the Proposed Development to date and data gathered, which will subsequently be provided in a full and final form within the ES.

14.1.12 This chapter currently does not address the effects of this proposed development on aircraft travel or the effects of this proposed development on the rail network, as the appropriate data has not been gathered and analysed. These effects will be assessed in the full and final ES.

14.1.13 The assessment of effects in this chapter of the PEIR has been undertaken using the predicted number of construction and operational vehicles estimated by the wider project team and the project engineers. The highway authorities, Kent County Council (KCC) and Highways England (HghE), have responded to the Scoping Report for the PEIR (**Appendix 1.1**), and their comments are summarised in Section 14.3 of this chapter. Scoping agreement will be sought for the Transport Assessment (TA), which is currently an ongoing process with the highway authorities. The finalised scope of the TA will have implications for the traffic and transport chapter of the PEIR and will include agreement on the following:

- The study area and scope of off site assessment;
- The relevant local and national guidance;
- Any committed development to be considered;
- Any committed transport schemes that may have an influence on the existing transport network over the next 20 years;
- The approach taken to calculate the development traffic generation and distribution;

- The years of assessment (assuming a 2017 base year) and the methodology for calculating background growth rates; and
- The methodology for modelling future traffic flows.

14.1.14 Concurrent to the activities above, the trip generation and distribution assumptions of the construction phases and the development proposals will be finalised so that forecast future traffic flows can be confirmed.

14.1.15 The findings of these investigations will be presented within the final ES and TA documents along with the analysis and assessment appropriate for each document.

14.2 Policy and Legislative Context

14.2.1 A study of traffic and transport related planning policy, legislation and guidance at the national, regional and local level has been undertaken for the site and its locality in order to highlight any requirements which the Proposed Development needs to consider. It is always important that policies, legislation and guidance are taken into consideration as they help to define the scope of assessment and can inform the identification of particular local issues.

Policy and Guidance Context

14.2.2 Policy and guidance documents of relevance to the traffic and transport environmental effects of the Proposed Development are listed in **Table 14.1** below:

Table 14.1 National and Local Planning Policies relevant to Traffic and Transport

Policy Reference	Policy Information relevant to Traffic and Transportation
National Planning Policy Framework (March 2012);	States that, 'the purpose of the planning system is to contribute to the achievement of sustainable development.'
Kent Local Transport Plan 2011;	The Plan emphasises growth without gridlock, a safer and healthier county, supporting independence, tackling a changing climate and enjoying life in Kent.
Draft Kent Local Transport Plan 4: Delivering Growth without Gridlock (2016 – 2031)	The ambition of the LTP4 is to deliver safe and effective transport, ensuring that all Kent's communities and business benefit, the environment is enhanced and economic growth is supported. The key objectives of the policies are to support economic growth and minimise congestion, to promote affordable, accessible and connected transport, to provide safe travel, to enhance the environment and to promote active travel for better health and wellbeing.
Freight Action Plan (2012) – Objective 5	Aims to ensure that KCC continues to make effective use of planning and development control powers to reduce the impact of freight traffic.
Freight Action Plan for Kent (2012) – Objective 6	Encourages sustainable distribution that involves more efficient transport and warehousing
The Thanet Local Plan Saved Policies (2006) – Policy TR3 "Provision of Transport Infrastructure"	States that proper provision should be made for developments and transport infrastructure should be necessary and relevant to the development.
Draft Thanet Local Plan to 2031 Preferred Option Consultation Document	The Plan emphasises that the site of Manston Airport and the adjoining area will be designated as an "Opportunity Area" for the purposes of preparing the "Manston Airport Area Action Plan" Development Plan Document.

Policy Reference	Policy Information relevant to Traffic and Transportation
(2015) – Policy SP05 "Manston Airport"	
Draft Thanet Local Plan to 2031 Preferred Option Consultation Document (2015) – Policy SP34 "Safe and Sustainable Travel"	States that The Council will work with developers, transport service providers, and the local community to manage travel demand, by promoting and facilitating walking, cycling and use of public transport as safe and convenient means of transport.
Draft Thanet Local Plan to 2031 Preferred Option Consultation Document (2015) – Policy TP10 "Traffic Management"	States that "*Development required to implement traffic management measures designed to realise the best use of the highway network in terms of safety, traffic capacity and environmental conditions will be approved*."

14.2.3 A more detailed overview of applicable planning policies are provided in **Chapter 4: Planning Policy Context**.

Guidance Documents

14.2.4 The only document available which sets out a methodology for assessing potentially significant environmental effects is the 1993 Institute of Environmental Assessment (IEA) publication *Guidance Notes No. 1: Guidelines for the Environmental Assessment of Road Traffic* (hereafter referred to as GEART), and this has been used for this assessment.

14.3 Data Gathering Methodology

14.3.1 This section describes the desk study and surveys undertaken to inform the traffic and transport assessment. In order to establish the baseline situation, traffic and transport data was obtained from the sources listed in **Table 14.2** to identify existing data about the site and the surrounding area.

Table 14.2 Information used in the Preparation of the PEIR

Source	Data
KCC	Personal injury accident data for the five year 2011 to 2016
360TSL	Manual classified turning counts, automatic traffic counts and queue surveys commissioned on links and at junctions anticipated to be effected by the proposals
KCC	Public transport provision in the surrounding area
KCC	Public rights of way, pedestrian and cycle infrastructure in the surrounding area

Desk Study

Accident Data

14.3.2 The accident data included in this report comprises Personal Injury Accidents (PIAs) that have been recorded by the police. PIAs categorise whether the accident is slight, serious or fatal in nature and information on the location of the accident, the time it took place, the weather and light conditions, motorised and

non-motorised users involved and casualty numbers. The data also sets out the causation factors of the accidents which were given by the police.

14.3.3 Records of the PIAs have been obtained from KCC for a five year period, dating from June 2011 to June 2016. Full details of the accidents records are provided as **Appendix 14.1** to this PEIR. The accident data assessment area is shown in **Figure 14.2.**

Survey Work

14.3.4 In order to understand the existing traffic conditions within the area, Amec Foster Wheeler commissioned 360TSL, to undertake a series of traffic counts and queue survey. Traffic surveys were undertaken on 1, 2 and 9 March 2017 and included the following junctions:

- MCC1 – A256 Sandwich Road;
- MCC2 – A256 / A299;
- MCC3 – A299 / Canterbury Road W;
- MCC4 – A299 / B2190;
- MCC5 – B2190 / Minster Road;
- MCC6 – A253 / A299 / Willetts Hill;
- MCC7 – A299 / A28;
- MCC8 – A28 / Park Lane / Station Road;
- MCC9 – B2050 / Acol Hill / Park Lane;
- MCC10 – B2050 / Shottendane Road / Margate Hill;
- MCC11 – B2190 / Columbus Avenue;
- MCC12 – B2050 / Manston Road / Spitfire Way;
- MCC13 – B2050 / Manston Court Road;
- MCC14 – A28 / B2052;
- MCC15 – B2052 / Nash Road / Empire Terrace / Shottendane Road;
- MCC16 – A254 / B2052;
- MCC17 – Ramsgate Road / Star Lane / Margate Road / Poorhole Lane;
- MCC18 – Star Lane / Manston Court Road;
- MCC19 – A256 / New Cross Road;
- MCC20 – A256 / Manston Road;
- MCC21A – A256 / Canterbury Road W; and
- MCC21B – A299 / A256 / Sandwich Road / Canterbury Road E.

14.3.5 The turning counts are fully manual classified counts and cover the time period 06:00 - 24:00. This data has been supplemented by a series of Automatic Traffic Counts (ATC) within the area to better understand weekly traffic conditions. The ATC data has been collected for a period of one week starting 7 March 2017 and covering the times of the turning count data collection. The ATC locations are:

- ATC1 - A256 north of Sandwich;
- ATC2 – A299 near to Windermere Ave;
- ATC3 – Manston Road near to Princess Margaret Ave;
- ATC4 – A254 near Coxes Lane;
- ATC4A – A256 west of Northwood Road;
- ATC5 – A254 near Farley Road;
- ATC6 – A254 near Connaught Road;
- ATC7 – A28 near Westbrook Road;
- ATC8 – A28 near Domneva Road;
- ATC9 – A299 east of Grays;
- ATC10 – Canterbury Road east of Sarre;
- ATC11 – A253 east of Sarre;
- ATC12 – A299 near Site; and
- ATC13 – B2190 near Alland Grange Lane.

14.3.6 This information collected provides base network flows which have been used to inform the future year traffic flows. Full details of the traffic counts are provided as Appendix 14.2 to this PEIR.

Consultation

14.3.7 Since 2015 and throughout the undertaking of the survey and assessment work, RiverOak has engaged with consultees with an interest in potential traffic and transport effects. A Scoping Report (**Appendix 1.1**), including a chapter covering traffic and transport, was produced and submitted to PINS who provided a scoping opinion (**Appendix 1.2**).

14.3.8 Organisations that were consulted are listed in Appendix 2 of the scoping opinion (**Appendix 1.2**).

14.3.9 A summary of the transport related consultee comments and responses provided is presented in **Table 14.3** below:

Table 14.3 Consultee Comments

Consultee	Comments and Considerations	How addressed in this PEIR
Cliffsend Parish Council	The response from Cliffsend Parish Council related to the Stonehill Park proposals, however some of the comments and observations apply for the proposed development. They are as follows: The existing highway network is overcrowded and the proposals need to be adequate and delivered in a timely manner. There is concern over: • Canterbury Road West becoming a rat run; • Extra traffic on the Sandwich Road and Southern Lord of the Manor roundabout; • The inadequacy of Manston Road heading towards Haine Road & Westwood X; • The suitability of the highway network for Birchington bound traffic via Acol; • Construction haul routes; • The location of extra bus stops.	These comments are noted and will be considered in the development of the TA and ES. All roads mentioned are included in the study area.
Highways England (HghE)	There is concern about the potential impact of freight-related trips on the M2 and A2 and therefore traffic impacts on these roads should be assessed during the construction and operational phases; including where necessary junction modelling. Justification of assumptions should be provided to ensure a robust assessment. The EIA and TA should be mutually compatible.	The traffic impacts on the M2 and A2 will be considered and consultation with HghE will be ongoing throughout the DCO process. Traffic flows on the M2 and A2 will be requested from HghE. The TA and ES will include justification of all assumptions and methods.
Kent County Council	There will be a requirement for a full transport assessment using any strategic transport model that KCC may have developed. This will inform a requirement for more detailed modelling processes at individual junctions. Assessments should be made on existing Public Rights of Way; historic footpaths and public access; dog walking and recreation routes.	A TA will accompany the DCO application and if a strategic model is available it will be used to assess the wider traffic impacts followed by detailed junction models. The TA will include an assessment of all modes of transport including pedestrians, dog walkers and equestrians.
Minster Parish Council	1st response Consideration of improving the road infrastructure from the Minster roundabout to the main airport entrances. 2nd response Better definition of the local road network is required	These comments are noted and will be considered in the development of the TA and ES. The road in question is included in the study area. Once the site visit is undertaken and scoping meetings have been held with KCC and HghE a more defined local road network will be presented in the TA and ES.
National Grid	The construction and operation of the Richborough Connection Project (RCP) should be considered in the cumulative assessment.	A Cumulative Effects Assessment (CEA) will be undertaken as part of the ES, the methodology and list of other development for consideration as part of the CEA is included as **Section 5.8** of this PEIR. This includes identifying the other developments that will have the potential to result in cumulative effects, as well we the methodology that will be used in preparing the Cumulative Effects Assessment. The assessment will be completed as part of the ES.

Consultee	Comments and Considerations	How addressed in this PEIR
Royal Mail	Concerned with disruption to Royal Mail's road operations. More information on: • Construction phase length; • The extent and phasing of the proposed employment development; • Cumulative traffic impact during the construction and operation phases; • The disruption to major road users.	This PEIR provides information on the construction phase lengths and the extent and phasing of the proposed employment development. Further details of these will also be provided in the ES and TA. A Cumulative Effects Assessment (CEA) will be undertaken as part of the ES, the methodology and list of other development for consideration as part of the CEA is included as **Section 5.8** of this PEIR. This includes identifying the other developments that will have the potential to result in cumulative effects, as well we the methodology that will be used in preparing the Cumulative Effects Assessment. The assessment will be completed as part of the ES.
Thanet District Council	Would like the operational and junction capacity assessment to be included in the ES Chapter. A 5% threshold should be used for operational capacity of the highway.	An assessment of the operations of the proposed development will be provided in the ES. However, to provide the junction capacity assessment within the ES also would make the chapter unwieldy. The TA will be a public document and will be available for scrutiny. The threshold to be used for the operational capacity of the highway will be discussed and agreed with KCC prior to the submission of the TA and ES.
Police	The Police consider that the existing road infrastructure leading to and in the vicinity of the site require significant investment to allow for increased traffic volume and growth. Local roads can become congested, particularly those to the North and East of the site and a detailed road strategy and infrastructure plan would be required. Roads to the west and east would require significant work. The roads to the north of the site are wholly inappropriate for use in conjunction with a cargo hub. Traffic count locations are limited and may not present a reliable baseline at this time. Other data collection should be broadened in order to get a more accurate picture of what is required in this case. A broader, county view should be taken including the A2, M2, A256, A28 and future road infrastructure projects such as the proposed Lower Thames Crossing. A Transport Assessment, a Travel Plan, and a Traffic Management plan are essentials for this project from construction through to completion and daily business. Manston Airport is currently a contingency site for Operation Stack and the implications on this if the proposed development were to occur before Manston is no longer required.	These comments are noted and will be considered in the development of the TA and ES. All roads mentioned are included in the study area. The data collection methodology and locations will be discussed with KCC and HghE and an approach will be agreed. This may lead to further surveys being undertaken prior to the submission of the TA and ES. Until the quantity of development traffic, its distribution across the highway network and KCC and HghE thoughts are known the extent of the study area cannot be agreed. However, at this stage the A2, M2, A256 and A28 will be part of the study area. Any committed developments or future highway schemes will form part of the future baseline against which the proposed development will be assessed. A TA, TP and TMP will all be submitted as part of the DCO application. The effect on Operation Stack will be a direct question during the scoping meetings with KCC and HghE.

14.3.10 The scoping opinion by the Secretary of State drew on the consultee responses, summarised them and outlined the key transportation points. These key points are presented below with a commentary in italics as to how they will be addressed in this PEIR.

14.3.11 The Secretary of State drew particular attention to the plan to scope out 'potential noise, vibration, visual, dust, dirt, air pollution and ecological effects as a result of traffic and transport associated with the proposed development. It is the opinion of the Secretary of State that they should be assessed as part of the ES but is content for them to be presented within the relevant topic chapters. *These effects will be addressed in the PEIR and ES in their relevant chapters.*

14.3.12 The Secretary of State welcomes the proposed assessment of traffic related environmental effects based on the GEART as well as the preparation of a separate TA, Traffic Management Plan (TMP) and Travel Plan (TP). The study area and methodology for these assessments should be agreed with the local highways authority (KCC), TDC and Highways England, where appropriate. The assessment should include consideration of freight related trips on the strategic road network (e.g. M2 and A2). *This advice will be taken and forms part of the scoping discussions with KCC, TDC and HghE.*

14.3.13 The Secretary of State would expect on-going discussions and agreement, where possible, with the relevant authorities regarding transport and highways proposals. *This will be addressed throughout the development of the TA and associated documents with regular meetings and communications. These communications and the minutes of relevant meetings will be an integral part of the TA.*

14.3.14 The Secretary of State requires robust justification for the use of professional judgement in moderating any assessment of significant effects. *Where the assessment of effects is considered to differ from the theoretical, robust justification will be provided in Section 14.8 of the ES.*

14.3.15 The Secretary of State supports the principle of a proportionate EIA but requires that sufficient information is presented in the ES to justify the exclusion of effects that do not trigger the thresholds and are therefore considered not significant. *The ES will ensure that data gathered and analysed in addition to the assessment methodology will provide sufficient justification for exclusion or inclusion.*

14.3.16 The Applicant's attention is drawn to the comments, contained in Appendix 3 of this Opinion, of Highways England; of KCC, in relation to the revision of their Local Transport Plan, and potential impacts on Pegwell Bay; of TDC, particularly in relation to operational and junction capacity of the area road network; and of Royal Mail, particularly in relation to potential additional vehicle movements during the operational phase of the proposed development, and the need for thorough consultation. *See **Table 14.3** above.*

14.3.17 The Applicant should also take into account National Grid's and Royal Mail's comments, contained in Appendix 3, about potential cumulative effects on construction traffic routes of the proposed development together with the RCP. *See **Table 14.3** above.*

14.4 Overall Traffic and Transport Baseline

Current Baseline

Site Description

14.4.1 The site is located to the west of the conurbation of Ramsgate, Margate and Broadstairs in the District of Thanet and is bound by the A299 Hengist Way to the south, B2190 Spitfire Way to the west, arable farmland to the north and Manston Court Road and further farmland to the east. The site is bisected by the B2050 Manston Road which connects with Spitfire Way in the west and the A256 in the east. Manston Airport is located on the south side of the B2050 and the Northern Grass area is located to the north.

14.4.2 The site is a disused airfield with no aviation uses currently taking place, although it was an operational airport from 1916 to 2014. A small number of existing buildings are occupied by two Museums and others businesses and low levels of activity occur associated with these. These occupied buildings are located on Spitfire Way and the Airport access road within the site.

14.4.3 **Figure 14.1** illustrates the site location in relation to the local highway network, the main junctions and railway stations in the vicinity of the site.

Existing Highways Network

14.4.4 The current principal point of access to the existing site is via a priority junction located on Manston Road. This internal road provides access to the former terminal building, car park and a number of other existing buildings on the site. The B2050 Manston Road is a single carriageway road that runs between St Lawrence, Ramsgate, in the east and Birchington on Sea in the northwest. Approximately 150m east of the existing access, Manston Road forms a priority junction with Manston Court Road, which connects with Westwood Cross in the northeast. The village of Manston is situated some 800m further east of the site via Manston Road. Manston Road continues through the Village where it is traffic calmed and subject to a 30mph speed limit. Manston Road then continues east and forms a roundabout junction with the A256 Haine Road at Stanner Hill.

14.4.5 To the west of the airport access road Manston Road forms a priority staggered crossroads with the B2190 Spitfire Way (Spitfire Corner). In the vicinity of the airport site Manston Road is subject to a 40mph speed limit. Through the Spitfire junction Manston Road is subject to a 30mph, which then increases to the national speed limit towards Birchington on Sea. In the vicinity of the site the road is not street lit.

14.4.6 A further section of Manston Road runs northeast to southwest between Shottendane Road in the north and Spitfire Corner in the south. This road is single carriageway with one lane running in each direction. Near Shottendane Road, Manston Road is subject to a 30mph speed limit and is street lit. The road becomes national speed limit immediately south of the junction with Half Mile Road and continues until the northern extremity of the site where it becomes 30mph. The road is not street lit, bar through Margate.

14.4.7 Spitfire Way is a single carriageway road with one lane running in each direction between Spitfire Corner in the northeast and the A299 in the southwest. In the vicinity of Spitfire Corner the road is subject to a 30mph speed limit. This changes to the national speed limit (60mph) to the south of the junction with Bell Davies Drive. This section of Spitfire Way is not street lit. Towards the west of the site Spitfire Way forms a roundabout junction with Columbus Avenue. The road then continues west where it forms a further roundabout junction with Minster Road. Minster Road then continues south where it forms a roundabout junction with the A299 and Tothill Street (Minster Roundabout). The section of road between the Minster roundabout and Columbus Avenue roundabout is a dual-carriageway featuring two lanes in each direction, it is subject to a 50mph speed limit and is street lit.

14.4.8 A number of points of access to the site are located on Spitfire Way providing emergency access to the former runway and taxiway network in addition to a number of existing buildings.

14.4.9 The site is well located in terms of strategic vehicular access with the A299 skirting the southern boundary. The A299 was upgraded as part of the East Kent Access scheme which opened in May 2012 and provides strategic highway connections towards Sandwich, Deal and Dover to the south and towards Canterbury, Maidstone and London to the west. The A299 in the vicinity of the site is a dual carriageway featuring two lanes in each direction. With the exception of the junctions the road is not street lit and subject to national speed limit (70mph).

14.4.10 From the Minster roundabout the A299 continues east on an east-west alignment along the southern boundary of the site to where it forms a three arm roundabout with the A299 Hengist Way and Canterbury Road West (Cliffsend Roundabout). Canterbury Road West borders the site in the south east and is the former A299 before the East Kent Access scheme was introduced. The road is in places a wide single carriageway with one lane running in each direction but has been traffic calmed through the village of Cliffsend. Immediately to the east of the Cliffsend roundabout a set of traffic signals have been installed to calm traffic and encourage the use of the A299 Hengist Way. Through the village of Cliffsend Canterbury Road West is subject to a 30mph speed limit and is street lit. Either side of this the road is subject to national speed limit (60mph). Canterbury Road West continues east through Cliffsend where it forms a roundabout with the A256 Haine Road at Lord of the Manor.

14.4.11 To the south of the site the A299 forms a roundabout junction with the A256 and Cottington Link Road (Sevenscore Roundabout). The A256 then continues south towards Sandwich and ultimately Dover. The A299 continues east and forms a traffic signalised roundabout with Sandwich Road, Haine Road and Canterbury Road East at Lord of the Manor.

14.4.12 The A256 Haine Road runs in a north-south direction to the east of the site and links the Lord of the Manor junction and Sandwich Road in the south with Westwood Cross and the A254 Margate Road in the north. With the exception of the junctions the road is not street lit and subject to national speed limit (60mph) between Lord of the Manor and Stanner Hill junction. The most sections between Stanner Hill junction and A254 is subject to a 40mph speed limit and is street lit.

14.4.13 To the west of the Minster roundabout the A299 forms roundabout junctions with the A28 which provide connections towards Canterbury to the south and Margate to the north. The A299 continues west and provides connections towards Herne Bay, Whitstable and the A2/M2 at Brenley Corner. It is subject to a 50mph speed limit and is street lit.

14.4.14 There are a number of additional vehicular access points provided around the remainder of the site boundary. These access points were predominantly for providing servicing and emergency access to the former airport. The existing access points to the site are also shown on **Figure 14.1**.

Existing Baseline Traffic Flows

14.4.15 The traffic counts undertaken in March 2017 were analysed and entered onto a traffic flow network diagram of the local highways network. **Table 14.4** sets out the two-way average AM Peak (08:00-09:00), PM Peak (17:00–18:00) and 24-hour traffic flows for all vehicles and HGVs recorded at each receptor location currently considered as part of this assessment.

Table 14.4 Two Way AM Peak, PM Peak and 24-hour Traffic Flow (All Vehicles and HGVs) - 2017

ID	Road	AM Peak All Vehicles	AM Peak HGV	AM Peak %HGV	PM Peak All Vehicles	PM Peak HGV	PM Peak %HGV	24 Hour All vehicles	24 Hour HGV	24 Hour %HGV
1	A256 north of Sandwich	2782	511	18%	2660	193	7%	28006	3546	13%
2	A299 Hengist Way between Canterbury Road W and Minster Road	2306	705	31%	2396	296	12%	29465	1699	6%
3	A299 between B2190 and A253	2415	191	8%	2545	85	3%	32983	2089	6%
4	A299 between A253 and A28	Awaiting Data								
5	A299 between A28 and Grays	2994	864	29%	3146	378	12%	32981	5837	18%
6	B2190 between A299 and Minister Road	1437	64	4%	1437	23	2%	17391	571	3%
7	Minster Road and The St between B2190 and Acol	560	10	2%	685	6	1%	6214	79	1%
8	B2050 Manston Road between Spitfire Way and Shottendane Road	570	15	3%	466	4	1%	6829	129	2%
9	Spitfire Way between Minster Road and Manston Road	811	226	28%	789	92	12%	10392	423	4%

ID	Road	AM Peak All Vehicles	AM Peak HGV	AM Peak %HGV	PM Peak All Vehicles	PM Peak HGV	PM Peak %HGV	24 Hour All vehicles	24 Hour HGV	24 Hour %HGV
10	Manston Road between Spitfire Way and Manston Court Road	1009	25	2%	923	18	2%	12167	238	2%
11	Manston Road between Spitfire Way and Shottendane Road	404	41	10%	431	10	2%	6028	336	6%
12	Manston Court Road between Manston Road and Star Lane					Awaiting Data				
13	Manston Road between Manston Court Road and A256	615	26	4%	532	8	2%	7952	230	3%
14	Haine Road between Manston Road and Haine	2173	107	5%	2377	40	2%	30932	986	3%
15	Manston Road between Haine Road and the railway line	941	132	14%	864	44	5%	14875	343	2%
16	Haine Road between Canterbury Road W and Manston Road	1902	105	6%	2127	36	2%	26918	972	4%
17	Canterbury Road E between A256 and Royal Harbour Approach	2066	351	17%	2039	165	8%	22917	2578	11%
18	Hengist Way between Richborough Way and Sandwich Road					Awaiting Data				
19	Canterbury Road W between Haine Road and the Cliffsend Roundabout	321	8	2%	475	10	2%	5446	119	2%
20	M2 location to be agreed with Highway England					Awaiting Data				
21	A2 location to be agreed with Highay England					Awaiting Data				

Existing Accident Record

14.4.16 Records of all reported accidents have been obtained from KCC for the five year period from June 2011 to June 2016 for the local highway network. The area

covered in the PIA analysis is illustrated in **Figure 14.2** along with the accident locations and severity, whilst the full accident report is presented in **Appendix 14.1** of this PEIR.

14.4.17 The PIA data indicates that there were 568 accidents recorded within the wider study area over the five year period, of which 195 were on junctions/roads analysed below. Of those junctions/roads analysed, 169 were classified as slight in severity, 18 were classified as serious and four were classed as fatal. The accidents have been split into junctions and key links in order to present the data geographically. **Table 14.5** and **14.6** summarises the number of accidents and the severity over the assessment period.

Table 14.5 Summary of Accident Record 2011-2016 (Junctions)

Junctions	Total	Fatal	Serious	Slight
A299 / A28	9	1		8
A253 / A299 / Willetts Hill	10		1	9
A299 / B2190	6			6
B2050 / Manston Road / Spitfire Way	6			6
A299 / Canterbury Road W	8		1	7
A256 / A299	8		1	7
Cottington Link Road/Cottington Road	5			5
A256/Sandwich Road	5		1	4
Canterbury Road E/Sandwich Road/Hengist Way	6			6
Haine Road/Canterbury Road W	1			1
A256 / Manston Road	7			7
A256/Spratling Lane	3		1	2
New Haine Road/Marlowe Way	1			1
Haine Road/New Haine Road	4			
Haine Road /Star Lane Link	2			2
A254 / B2052	3			3
B2050 / Acol Hill / Park Lane	4			4
B2190 / Minster Road	1		1	
A256/Margate Road	4			4
B2050 / Shottendane Road / Margate Hill	7			7
B2050 / Manston Court Road	4		1	3

Table 14.6 Summary of Accident Record 2011-2016 (Links)

Links	Total	Fatal	Serious	Slight
A299 between A253 and A28	0			
A299 between B2190 and A253	3			3
A299 Hengist Way between Canterbury Road W and Minster Road	3		2	1
Canterbury Road W between Haine Road and the Cliffsend Roundabout	7		1	6
Hengist Way between Richborough Way and Sandwich Road	4	1		3
A256 between Sandwich Road and Cottington Road	2	1		1
Haine Road between Canterbury Road W and Manston Road	3			3
Haine Road between Spratling Road and Spratling Street	3			3
A256 between Star Lane Link Margate Road	6		1	5
Manston Court Road between Manston Road and Star Lane	5			5
B2050 Manston Road between Spitfire Way and Shottendane Road	19		3	16
Manston Road between Manston Court Road and A256	8			8
Manston Road between Spitfire Way and Manston Court Road	2			2
Manston Road between Spitfire Way and Shottendane Road	4			4
Spitfire Way between Minster Road and Manston Road	15	1	2	12
Minster Road and The St between B2190 and Acol	6		1	5
B2190 between A299 and Minister Road	1		1	

14.4.18 The ES will present a written analysis of the accident data that discusses causation and possible clusters. The section will also consider accidents involving HGV and vulnerable road users.

Future Baseline

14.4.19 As a worst case scenario, the possible years of assessment could include the following:

- 2019 – the year of Phase 1 construction;
- 2020 – the first year of operation;
- 2021 – the year of Phase 2 construction;

- 2022 – the year of Phase 2 operation;
- 2028 – the year of Phase 3 operation; and
- 2033 – the year of Phase 4 operation.

14.4.20 To establish the 2019, 2020, 2021, 2022, 2028 and 2033 future baselines, the 2017 baseline traffic flows will be factored by background traffic growth. The effects of any committed developments such as the Richborough Connection Project (RCP) and any committed transport schemes such as the Thanet Transport Strategy will be added once the scoping exercise with KCC and HghE has been completed.

14.4.21 The growth rates have been developed based on the National Trip End Model (NTEM) growth rates extracted from the DfT's Trip End Model Presentation Program (TEMPRO) 7.2 software for the Kent area. **Table 14.7** summaries the future background traffic growth rates:

Table 14.7 Future Growth Factors – TEMPRO 7.2

Year	Growth Factor - Daily	
	Light Vehicle	HGV
2019	1.02345	1.0276
2020	1.0351	1.0413
2021	1.04685	1.0573
2022	1.05365	1.0722
2028	1.09435	1.1391
2033	1.1291	1.1798

14.4.22 The ES will present the future baseline traffic flows at each receptor location for each assessment year. To do this, the effects of the committed developments, such as the RCP, and the committed transport schemes such as those contained within the Thanet Transport Strategy may need to be included. The committed developments and committed transport schemes will be discussed with KCC and HghE and an agreement will be reached outlining which developments/schemes to include in which future baselines.

14.5 Environmental Measures Incorporated into the Proposed Development

14.5.1 This section lists the environmental measures relevant to traffic and transport which have been incorporated into the proposed development.

14.5.2 How these environmental measures influence the assessment of significance is discussed in **Section 14.7**. However, the broad approach adopted is that where achievable and agreed environmental measures have been incorporated into the Proposed Development, the effect that those environmental measures have on the significance of potential effects is taken into account during the assessment. In

some cases a potential effect may require no further consideration following incorporation of appropriate environmental measures.

14.5.3 Until the assessment has been completed a summary of all the environmental measures that have been incorporated into the development proposals in order to avoid, reduce or compensate for potential adverse traffic and transport effects cannot be presented. However, there are some measures that have already been identified for incorporation into the development proposals these are presented in **Table 14.8**.

Table 14.8 Rationale for Incorporation of Environmental Measure

Potential receptors	Predicted changes and potential effects	Incorporated measure
Local roads and the users of those roads, including public transport users, pedestrians, cyclists and equestrians. Plus adjacent land uses and the relevant occupiers and users of those premises	Changes in traffic flows, as a result of the proposed construction, temporary traffic management and diversion routes during road closures could lead to the following effects: • Severance • Driver or road user delay • Pedestrian delay • Pedestrian amenity • Fear and intimidation • Accidents and safety	A Construction Traffic Management Plan will be prepared as part of the Construction Environment Management Plan. This may include the following measures: • Controls on construction routes and accesses • Controls on work hours and timings of deliveries • Construction staff travel plan including a staff shuttle • Temporary traffic signage and vehicle identification • Management of HGV emissions, noise and dust and debris • Highway condition survey before and after construction • Planned collections and deliveries to avoid unnecessary journeys
Local roads and the users of those roads, including public transport users, pedestrians, cyclists and equestrians. Plus adjacent land uses and the relevant occupiers and users of those premises	Changes in traffic flows, as a result of the proposed development could lead to the following effects: • Severance • Driver or road user delay • Pedestrian delay • Pedestrian amenity • Fear and intimidation • Accidents and safety	An Operational Traffic Management Plan will be prepared as part of the DCO application for adoption by the operator. This may include the following: • Controls of HGV routes once operational • Appropriate levels of car parking and parking charges; both staff and public • Traffic calming on less desirable routes A Travel Plan will be prepared as part of the DCO application for adoption by the operator. This may include the following: • Cycle storage, showers and lockers • Electric vehicle charging points • Measure to encourage and facilitate working from home including the provision of broadband internet connections • Measure to encourage and facilitate video/tele-conferencing • Car Share database • Personalised Travel Planning • Monitoring and review A Public Transport Access Strategy will be prepared as part of the DCO application. This may include the following: • Bus shuttle between the site and local railway station • Employee bus shuttle • Bus drop off adjacent to the terminal building • Additional public service bus stops • Public bus service frequency and routing changes • Promoting public transport with local rail and bus timetable information and a travel voucher scheme A Pedestrian, Cycle and Equestrian Access Strategy will be prepared as part of the DCO application. This may include the following: • A network of internal footpaths and cycle paths

Potential receptors	Predicted changes and potential effects	Incorporated measure
		• Upgrade and/or enhancement of existing pedestrian, cycle and equestrian provision • Pedestrian, cycle and equestrian crossing upgrades • Cycle discount schemes, maps, provision of a Dr. Bike service, cycle demonstrations on site by bicycle providers, establishment of a Bicycle User Group (BUG) • Promotion of walking and cycling event such as a Cycling Challenge or Pedometer Challenge, plus walk to work day etc.
		Highway capacity improvements will be prepared as part of the DCO application. These may include the following: • Junction widening • Route upgrades • Change of junction control • New accesses

14.6 Scope of the Assessment

14.6.1 This section sets out information on the process whereby receptors are identified; the potential receptors that could be affected by the development; and the potential effects on receptors that could be caused by the development.

14.6.2 The scope of assessment has been informed by the scoping study; consultee responses to the Scoping Report; the results of the work detailed in **Section 14.4**; and the finalised Proposed Development design.

Approach to Identifying Receptors

14.6.3 The identification of receptors is based on relevant guidance and the professional judgement of a qualified technical specialist who has undertaken a desk study of the site location.

14.6.4 In some cases, even without quantified information, it is reasonable to assume that some potential receptors will not experience significant effects. This is sometimes the result of tried and trusted mitigation measures that have been incorporated into the Proposed Development, which might reasonably be expected to be effective.

14.6.5 The following considerations have been taken into account in identifying potential receptors:

- The extent to which the receptor will be affected by changes that are expected to result from the development;
- The sensitivity of the receptors to the changes that are likely to occur;
- The likely magnitude, duration and other characteristics of the effects;
- The importance or value of the receptor at a local, regional and national level, and;
- Relevant best practice and guidance where specialist methodologies have been developed as detailed below.

Potential receptors

14.6.6 The identification of receptors is based on relevant guidance and the professional judgement of a qualified technical specialist who has undertaken a desk study for the site location.

14.6.7 This section identifies the potential receptors based on the above factors, on the scoping opinion received from PINS and the GEART. It is therefore recommended that the items listed below are the potential receptors for a proposed development:

- local roads and the users of those roads, including public transport users, pedestrians, cyclists and equestrians; and
- land uses and environmental resources fronting those roads, including the relevant occupiers and users.

14.6.8 To determine the sensitivity of each receptor the following groups, locations and areas, taken from GEART, may be found to be more sensitive to changes in traffic conditions and should therefore be considered during assessment. These potentially affected groups/locations and areas are listed below:

- people at home;
- people at work;
- sensitive groups including children, elderly and disabled;
- sensitive locations such as hospitals, churches, schools, and historical buildings;
- people walking;
- people cycling;
- open spaces, recreational areas, shopping areas;
- sites of ecological/nature conservation value; and
- sites of tourist/visitor attractions.

Spatial and Temporal Scope

14.6.9 The spatial scope of this assessment will be reviewed with KCC and HghE during the scoping discussions for the TA. It is likely that there will be a local study area extending to the A28 in the north, the A256 and A254 in the east, north of Sandwich in the south and to St Nicholas at Wade in the west. There may also be a study area that replicates the extents of any strategic traffic model maintained by KCC and thirdly HghE have requested analysis of the effects on the M2 and A2.

14.6.10 The temporal scope of this assessment will also need to be reviewed with KCC and HghE during the scoping discussions for the TA. It is likely that the effects of the estimated first phase of construction (2019) will be assessed as well as 2033 which is anticipated to be the completed operational phase. It may also be a requirement of KCC and HghE to assess interim phases.

Potentially significant effects

14.6.11 The types of effect that could be expected during the construction and operational phases of the Proposed Development are taken from the GEART and are presented below in **Table 14.9**. Those effects of relevance to this chapter are highlighted in bold text. The remaining issues are considered within the other chapters of this PEIR.

Table 14.9 Traffic Related Environment Effects

Types of Traffic Related Environmental Effects		
Noise	Fear and Intimidation	**Heritage and Conservation**
Vibration	**Accidents and Safety**	**Pedestrian Delay**
Visual Effects	**Hazardous Loads**	Ecological Effects
Severance	Air Pollution	**Pedestrian Amenity**
Driver Delay	Dust and Dirt	

14.6.12 The potentially significant effects from the proposed development, which are subject to further discussion in this chapter, are summarised below.

Severance

14.6.13 Severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery and is used to describe the factors that separate people from other people and places. For example, severance may result from the difficulty of crossing a heavily trafficked road or a physical barrier created by the road itself. It can also relate to quite minor traffic flows if they impede pedestrian access to essential facilities.

14.6.14 The effects of severance can be applied to motorists, pedestrians or residents but it is recognised that there are no predictive formulae which give simple relationships between traffic factors and levels of severance.

14.6.15 The GEART state that marginal changes in traffic flow are unlikely to create or remove severance, but that consideration in determining whether severance is likely to be an important issue should be given to factors such as road width, traffic flow and composition, traffic speeds, the availability of crossing facilities and the number of movements that are likely to cross the affected route. Consideration should also be given to different groups such as the elderly and young children.

Driver Delay

14.6.16 Delays to non-development traffic can occur at several points on the local highway network as a result of the additional traffic that would be generated by a development. The GEART state that delays are only likely to be significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system.

Pedestrian Delay

14.6.17 Changes in the volume, composition or speed of traffic may affect the ability of people to cross roads, and therefore, increases in traffic levels are likely to lead to greater increases in delay. Delays will also depend upon the general level of pedestrian activity, visibility and general physical conditions of the crossing location.

14.6.18 Given the range of local factors and conditions which can influence pedestrian delay, the GEART do not recommend that thresholds be used as a means to establish the significance of pedestrian delay, but recommend that reasoned judgements be made instead.

Pedestrian Amenity

14.6.19 Pedestrian amenity is broadly defined as the relative pleasantness of a journey and is considered to be affected by traffic flow, traffic composition and pavement width/separation from traffic.

Fear and Intimidation

14.6.20 The scale of fear and intimidation experienced by pedestrians is dependent on the volume of traffic, its HGV composition, its proximity to people or the lack of protection caused by such factors as narrow pavement widths, as well as factors such as the speed and size of vehicles.

14.6.21 The GEART also note that special consideration should be given to areas where there are likely to be particular problems, such as high speed sections of road, locations of turning points and accesses. Consideration should also be given to areas frequented by school children, the elderly and other vulnerable groups.

Accident and Safety

14.6.22 Where a development is expected to produce a change in the character of the traffic on the local road network, as a result of increased HGV movements for example, the GEART state the implications of local circumstances or factors which may elevate or lessen risks of accidents, such as junction conflicts, would require assessment in order to determine the potential significance of accident risk.

Hazardous Loads

14.6.23 Some developments may involve the transportation of dangerous or hazardous loads by road and this should be recognized within the assessment. The GEART note that the number of movements should be calculated and if it is considered to be significant then a risk analysis should be undertaken.

14.7 Assessment Methodology

Methodology for Screening

14.7.1 In order to define the scale and extent of this assessment, the GEART identify the following rules by which to undertake an assessment of potentially significant traffic and transport related environmental effects:

- Rule One: Include roads where traffic flows are predicted to increase by more than 30% (or where the number of HGVs are predicted to increase by more than 30%); and
- Rule Two: Include any specifically 'sensitive' areas where traffic flows are predicted to increase by 10% or more.

14.7.2 The 10% threshold in rule two considers daily variations in traffic levels which are typically around 10% meaning that an increase in traffic levels of less than 10% is not likely to have an undesirable effect and would not require assessment.

14.7.3 The GEART identify general thresholds for traffic flow increases as identified above. Where the predicted increase in traffic flows is lower than the thresholds, the guidelines suggest the significance of effects can be stated to be low or insignificant and further detailed assessments are not required. **Table 14.10** below summarises the significance criteria based on Rule One and Rule Two above.

Table 14.10 Screening Criteria

Parameter of Assessment	Significance
Change in traffic flows and HGV over 30%	Significant
Change in traffic flows over 10% in sensitive areas	Significant
Change in traffic flows and HGV below 30%	Not significant
Change in traffic flows less than 10% in sensitive areas	Not significant

14.7.4 In terms of defining 'sensitive' areas according to the GEART, some highway links assessed are considered to be 'sensitive' due to the fact that they have residential properties fronting the link or pedestrian activity. Therefore, a change of 10% or more in the total traffic flows or a change of 30% in the number of HGVs would trigger a detailed evaluation of the effects.

14.7.5 All other receptors, which are not considered sensitive, are predominantly non-residential in nature, have low pedestrian footfall, have a high percentage of HGV traffic or have a road environment suited to the proposed activity and its associated traffic.

14.7.6 **Table 14.11** summarises the receptors found on each highway link and the resultant sensitivity as identified by GEART and use of professional judgement. These suggested potential receptors and the corresponding highway links are also presented in **Figure 14.3.**

Table 14.11 Sensitivity of Highway Links where Receptors have been Identified

Suggested Potential Receptors	ID	Highway Link	Comments	Sensitivity
Users of the roads or uses fronting the roads such as:	1	A256 north of Sandwich	Commercial or agricultural area, few pedestrians and high percentage of HGV	Not considered sensitive

Suggested Potential Receptors	ID	Highway Link	Comments	Sensitivity
• **people at work** • **people walking** • **people cycling** • **sensitive locations**				
Users of the roads or uses fronting the roads such as: • **people at work** • **people walking**	2	A299 Hengist Way between Canterbury Road W and Minster Road	Airport or agricultural area, few pedestrians and high percentage of HGV	Not considered sensitive
Users of the roads or uses fronting the roads	3	A299 between B2190 and A253	No potential receptors found	N/A
Users of the roads or uses fronting the roads such as: • **open spaces, recreational areas, shopping areas**	4	A299 between A253 and A28	Agricultural area, few pedestrians and high percentage of HGV	Not considered sensitive
Users of the roads or uses fronting the roads such as: • **people at work** • **sensitive locations**	5	A299 between A28 and Grays	Commercial or agricultural area, few pedestrians and high percentage of HGV	Not considered sensitive
Users of the roads or uses fronting the roads such as: • **people at home** • **people walking**	6	B2190 between A299 and Minister Road	Airport or agricultural area, few pedestrians and high percentage of HGV	Not considered sensitive
Users of the roads or uses fronting the roads such as: • **people at home** • **people at work** • **sites of tourist/visitor attractions**	7	Minster Road and The St between B2190 and Acol	Agricultural and village area, possibly pedestrians and a low percentage of HGV	Sensitive
Users of the roads or uses fronting the roads such as: • **people at home** • **people at work** • **people walking**	8	B2050 Manston Road between Spitfire Way and Shottendane Road	Agriculture area or residences well set back	Not considered sensitive
Users of the roads or uses fronting the roads such as: • **people at home** • **people at work** • **people walking** • **people cycling**	9	Spitfire Way between Minster Road and Manston Road	Airport or agriculture area any residences are well set back with few pedestrians	Not considered sensitive
Users of the roads or uses fronting the roads	10	Manston Road between Spitfire Way and Manston Court Road	No potential receptors found	N/A
Users of the roads or uses fronting the roads such as: • **people at home** • **people at work** • **people walking**	11	Manston Road between Spitfire Way and Shottendane Road	Predominantly an agricultural area, possibly pedestrians and some frontage properties	Sensitive
Users of the roads or uses fronting the roads such as: • **people at home** • **people at work** • **sites of tourist/visitor attractions**	12	Manston Court Road between Manston Road and Star Lane	Predominantly a commercial or agricultural area, possibly pedestrians and some frontage properties	Sensitive

Suggested Potential Receptors	ID	Highway Link	Comments	Sensitivity
Users of the roads or uses fronting the roads such as: • **people at home** • **sensitive locations** • **people walking** • **sites of tourist/visitor attractions**	13	Manston Road between Manston Court Road and A256	Agricultural and village area, possibly pedestrians	Sensitive
Users of the roads or uses fronting the roads such as: • **people at home** • **people at work** • **sensitive locations** • **people walking** • **people cycling** • **open spaces, recreational areas, shopping areas**	14	Haine Road between Manston Road and Haine	Predominantly an agricultural area, possibly pedestrians and some frontage properties	Sensitive
Users of the roads or uses fronting the roads such as: • **people at home** • **people at work** • **people walking** • **people cycling**	15	Manston Road between Haine Road and the railway line	Predominantly a commercial area, likely pedestrians and some frontage properties	Sensitive
Users of the roads or uses fronting the roads	16	Haine Road between Canterbury Road W and Manston Road	No potential receptors found	N/A
Users of the roads or uses fronting the roads such as: • **people at home** • **people walking**	17	Canterbury Road E between A256 and Royal Harbour Approach	Agriculture area or residences well set back on a service lane and high percentage of HGV	Not considered sensitive
Users of the roads or uses fronting the roads	18	Hengist Way between Richborough Way and Sandwich Road	No potential receptors found	N/A
Users of the roads or uses fronting the roads such as: • **people at home** • **people at work** • **sensitive locations** • **people walking**	19	Canterbury Road W between Haine Road and the Cliffsend Roundabout	Predominantly an agricultural area, possibly pedestrians and some frontage properties	Sensitive
Users of the roads or uses fronting the roads such as: • **people walking** • **people cycling**	20	M2 location to be agreed with Highway England	Strategic highway network, no pedestrians and high percentage of HGV.	Not considered sensitive
Users of the roads or uses fronting the roads such as: • **people at home** • **sensitive locations** • **people walking**	21	A2 location to be agreed with Highway England	Strategic highway network, few pedestrians and high percentage of HGV.	Not considered sensitive

Methodology for Predicted Effects

14.7.7 Subsequent to identifying the locations where the receptors may be impacted (**Table 14.11**), the next level of assessment has been undertaken to determine the potential effects of the Proposed Development and their magnitude. This will be done by quantifying the sensitivity of each receptor and the magnitude of each effect and combining them in a matrix.

Receptor sensitivity

14.7.8 **Table 14.12** summarises the sensitivity criteria, based upon professional judgement, used to assess each of the receptors. The most severe sensitivity of all receptors at a particular location will then be taken forward to the level of effect matrix.

Table 14.12 Receptor Sensitivity Criteria

Receptor	Major	Moderate	Minor	Negligible
Users of the roads	Residents/workers travelling to and from work on foot and by vehicle, school children, leisure walkers	Residents/workers travelling to and from work on foot and by vehicle, school children, leisure walkers, people visiting shops etc.	Residents/workers travelling to these places	Residents/workers travelling by foot or by vehicle
Uses fronting the roads	Traffic flows on highway network near schools, colleges, playgrounds, accident blackspots, retirements homes and roads without footway that are used by pedestrians	Traffic flows at congested junctions and on highway network near doctors' surgeries, hospitals, shopping areas with roadside frontages, roads with narrow footways, unsegregated cycleways, community centres, parks, recreation facilities	Traffic flows: places of worship, public open spaces, nature conservation areas, listed buildings, tourist attractions and residential areas with adequate footway provision.	Receptors with low sensitivity to traffic flows and those sufficiently distant from affected roads and junctions

Significance evaluation methodology

Magnitude of Impact

14.7.9 **Table 14.13** summarises the magnitude of impact criteria based upon GEART and is applied using professional judgement. The most severe magnitude of impact at a particular location will then be taken forward to the level of effect matrix (Table 14.14).

Severance

14.7.10 The GEART suggest that changes of traffic flow of 30%, 60% and 90% are regarded as producing 'slight', 'moderate' and 'substantial' changes in severance respectively and that marginal changes in traffic flow are unlikely to create or remove severance. Therefore, these bands have been directly transposed into the Major, Moderate, Minor and Negligible criteria.

Driver Delay

14.7.11 In the absence of any threshold guidance relating to driver delay within GEART, it is considered appropriate to use the same criteria as those defined for severance.

Pedestrian Delay

14.7.12 The GEART note that when existing traffic flows are low, increases in traffic of around 30% can double the delay experienced by pedestrians attempting to cross

a road. Therefore, 30% has been selected as the threshold between the Minor and Moderate criteria, the other criteria have been allocated accordingly.

Pedestrian Amenity

14.7.13 The GEART note that changes in pedestrian amenity may be considered significant where the traffic flow is halved or doubled, with the former leading to a beneficial effect and the latter an adverse effect. Therefore, 50% has been selected as the threshold between the Minor and Moderate criteria, the other criteria have been allocated accordingly.

Fear and Intimidation

14.7.14 There are no commonly agreed thresholds by which to determine the significance of the effect. However, the GEART note previous work that has been undertaken which puts forward three thresholds for the degree of hazard to pedestrians (Moderate, Great and Extreme). These are estimated by the average traffic flow and 18 hour/day heavy vehicle flow.

14.7.15 The magnitude within this assessment is governed by the change in threshold between the future baseline and the future baseline plus proposed development. So that, no change in threshold is Negligible or Minor (depending on the percentage change in traffic flows), a change between adjacent thresholds is Moderate and a change between two or more thresholds is Major.

Accidents and Safety

14.7.16 In the absence of any threshold guidance relating to accident and safety within GEART, it is considered appropriate to use the same criteria as those defined for severance.

Hazardous Loads

14.7.17 The IEMA guidelines state that a risk assessment should be prepared to illustrate the potential of an accident to happen and the effect of such an event. It suggests that the number of accidents per million vehicle kilometres should be calculated. If the probability of an event exceeds 0.5 or 50% over the life of the development then further investigation is required with the HSE and the effects of a spillage are required.

14.7.18 Therefore, 50% has been selected as the threshold between the Minor and Moderate criteria, the other criteria have been allocated accordingly.

Summary of Magnitude of impact

14.7.19 **Table 14.13** provides the magnitude of impact for each of the potentially significant effects presented in **Table 14.9** and paragraphs 14.6.13 to 14.6.23.

Table 14.13 Magnitude of Impact Criteria

Effects	Major	Moderate	Minor	Negligible
Severance	Change in total traffic or HGV flows 90% or over	Change in total traffic or HGV of between 60% and 90%	Change in total traffic or HGV of between 30% and 60%	Change in total traffic or HGV of 30% or less
Driver Delay	Change in total traffic or HGV flows 90% or over	Change in total traffic or HGV flows of between 60 and 90%	Change in total traffic or HGV flows of between 30 and 60%	Change in total traffic or HGV of 30% or less
Pedestrian Delay	Change in total traffic or HGV 60% or over	Change in total traffic or HGV of between 30% and 60%	Change in total traffic or HGV of between 15% and 30%	Change in total traffic or HGV of 15% or less
Pedestrian Amenity	Change in total traffic or HGV 70% or over	Change in total traffic or HGV of between 50% and 70%	Change in total traffic or HGV of between 30% and 50%	Change in total traffic or HGV of 30% or less
Fear and Intimidation	Change in the degree of hazard to pedestrians from Moderate to Extreme	Change in the degree of hazard to pedestrians from Moderate to Great or from Great to Extreme	There is no change to the degree of hazard to pedestrians but traffic flows change by greater than 10%	There is no change to the traffic flow or the 18hr HGV flow and traffic flows change by 10% or less
Accidents and Safety	Change in total traffic or HGV flows 90% or over	Change in total traffic or HGV of between 60% and 90%	Change in total traffic or HGV of between 30% and 60%	Change in total traffic or HGV of 30% or less
Hazardous Loads	Probability of a hazardous event exceeds 60% over the life of the development	Probability of a hazardous event is between 50% and 60% over the life of the development	Probability of a hazardous event is between 10% and 50% over the life of the development	Probability of a hazardous event is 10% or less over the life of the development

Matrix for significance of impacts

Level and Significance of Effect

14.7.20 The criteria for evaluating the value and the significance of change are as follows:

- The worst case receptor sensitivity ranking according to **Table 14.12**
- The magnitude of impact, the outcome of the assessment in **Table 14.13**.

14.7.21 The matrix of outcomes in **Table 14.14** defines the significance.

Table 14.14 Establishing the Level of Effect

	Receptor Sensitivity			
Magnitude of Impact	**Major**	**Moderate**	**Minor**	**Negligible**
Major	Significant	Significant	Significant	Not Significant
Moderate	Significant	Significant	Not Significant	Not Significant
Minor	Significant	Not Significant	Not Significant	Not Significant

	Receptor Sensitivity			
Negligible	Not Significant	Not Significant	Not Significant	Not Significant

14.8 Screening Assessments

14.8.1 To undertake the assessment of effects for the construction and operational phases, the development traffic flows need to be estimated and these trips need to be distributed on to the highway network. This will require data relating to the construction and operation of the proposed development and agreement will be sought with KCC on the methodology. These development trips will then be added to the future traffic baseline and the percentage change between the two will be calculated. It is at this stage that the significance will be predicted using the rules in **Table 14.11.** For those receptors where the change is considered significant, further assessment will be made using the criteria in **Section 14.7.**

14.8.2 A description of the daily potential effects that are being considered are presented in the section below based on the information that is available. The full assessment will be presented in the ES for each assessment year on which agreement will be sought with KCC and HghE; whether during a construction or operational phase. The findings will be summarised in a table.

Screening Assessment for the Construction Phase

Table 14.15 Two Way 24-hour Traffic Flow (All Vehicles and HGVs) – 2019 Future Baseline compared with 2019 Future Baseline plus construction traffic

ID	Road	Sensitivity	2019 Future Baseline		2019 Future Baseline plus Construction		% Change		To Be Assessed	
			24 Hour All Vehs	24 Hour HGV	24 Hour All Vehs	24 Hour HGV	24 Hour All Vehs	24 Hour HGV	24 Hour All Vehs	24 Hour HGV
1	A256 north of Sandwich	Not considered sensitive	28678	3644	28864	3802	0.6%	4.3%	No	No
2	A299 Hengist Way between Canterbury Rd W and Minster Rd	Not considered sensitive	30163	1746	30451	1993	1.0%	14.2%	No	No
3	N/A									
4	A299 between A253 and A28	Not considered sensitive				Awaiting Data				
5	A299 between A28 and Grays	Not considered sensitive	33779	5998	34004	6200	0.7%	3.4%	No	No
6	B2190 between A299 and Minister Road	Not considered sensitive	17802	586	18335	1036	3.0%	76.8%	No	Yes

ID	Road	Sensitivity	2019 Future Baseline		2019 Future Baseline plus Construction		% Change		To Be Assessed	
			24 Hour All Vehs	24 Hour HGV	24 Hour All Vehs	24 Hour HGV	24 Hour All Vehs	24 Hour HGV	24 Hour All Vehs	24 Hour HGV
7	Minster Road and The St between B2190 and Acol	Sensitive	6360	82	6360	82	0.0%	0.0%	No	No
8	B2050 Manston Road between Spitfire Way and Shottendane Rd	Not considered sensitive	6990	132	7023	132	0.5%	0.0%	No	No
9	Spitfire Way between Minster Road and Manston Road	Not considered sensitive	10637	435	11171	885	5.0%	103.5%	No	Yes
10	N/A									
11	Manston Road between Spitfire Way and Shottendane Road	Sensitive	6170	346	6184	346	0.2%	0.0%	No	No
12	Manston Court Road between Manston Road and Star Lane	Sensitive				Awaiting Data				
13	Manston Road between Manston Court Road and A256	Sensitive	8139	236	8174	236	0.4%	0.0%	No	No
14	Haine Road between Manston Road and Haine	Sensitive	31661	1014	31696	1014	0.1%	0.0%	No	No
15	Manston Road between Haine Road and the railway line	Sensitive	15225	352	15243	352	0.1%	0.0%	No	No
16	N/A									
17	Canterbury Road E between A256 and Royal Harbour Approach	Not considered sensitive	23465	2649	23560	2739	0.4%	3.4%	No	No
18	N/A									
19	Canterbury Road W between Haine Road and the Cliffsend Rbt	Sensitive	5574	122	5577	122	0.1%	0.0%	No	No
20	M2 location to be agreed with Highway England	Not considered sensitive				Awaiting Data				
21	A2 location to be agreed with Highway England	Not considered sensitive				Awaiting Data				

14.8.3 Comparing the % change analysis presented above with the relevant screening criteria in Table 14.11, demonstrates that the environmental effects on receptors at locations 6 and 9 require further assessment.

Screening Assessment for the Operational Phase

Table 14.16 Two Way 24-hour Traffic Flow (All Vehicles and HGVs) – 2020 Future Baseline compared with 2020 Future Baseline plus the year of opening traffic

ID	Road	Sensitivity	2020 Future Baseline		2020 Future Baseline plus Year Opening		% Change		To Be Assessed	
			24 Hour All Vehs	24 Hour HGV	24 Hour All Vehs	24 Hour HGV	24 Hour All Vehs	24 Hour HGV	24 Hour All Vehs	24 Hour HGV
1	A256 north of Sandwich	Not considered sensitive	29011	3693	30162	3693	4.0%	0.0%	No	No
2	A299 Hengist Way between Canterbury Rd W and Minster Rd	Not considered sensitive	30510	1769	32188	1769	5.5%	0.0%	No	No
3	N/A									
4	A299 between A253 and A28	Not considered sensitive				Awaiting Data				
5	A299 between A28 and Grays	Not considered sensitive	34175	6078	35946	6124	5.2%	0.8%	No	No
6	B2190 between A299 and Minister Road	Not considered sensitive	18005	594	22347	641	24.1%	7.9%	No	No
7	Minster Road and The St between B2190 and Acol	Sensitive	6433	83	6458	83	0.4%	0.0%	No	No
8	B2050 Manston Road between Spitfire Way and Shottendane Rd	Not considered sensitive	7069	134	8324	134	17.7%	0.1%	No	No
9	Spitfire Way between Minster Road and Manston Road	Not considered sensitive	10759	441	15151	488	40.8%	10.6%	Yes	No
10	N/A									
11	Manston Road between Spitfire Way and Shottendane Road	Sensitive	6241	350	6966	350	11.6%	0.0%	Yes	No
12	Manston Court Road between Manston Road and Star Lane	Sensitive				Awaiting Data				
13	Manston Road between Manston Court Road and A256	Sensitive	8232	239	9668	240	17.4%	0.1%	Yes	No
14	Haine Road between Manston Road and Haine	Sensitive	32024	1027	33459	1027	4.5%	0.0%	No	No
15	Manston Road between Haine Road and the railway line	Sensitive	15399	357	16229	357	5.4%	0.0%	No	No

ID	Road	Sensitivity	2020 Future Baseline		2020 Future Baseline plus Year Opening		% Change		To Be Assessed	
			24 Hour All Vehs	24 Hour HGV	24 Hour All Vehs	24 Hour HGV	24 Hour All Vehs	24 Hour HGV	24 Hour All Vehs	24 Hour HGV
16	N/A									
17	Canterbury Road E between A256 and Royal Harbour Approach	Not considered sensitive	23738	2684	23991	2685	1.1%	0.0%	No	No
18	N/A									
19	Canterbury Road W between Haine Road and the Cliffsend Rbt	Sensitive	5637	124	5748	124	2.0%	0.0%	No	No
20	M2 location to be agreed with Highway England	Not considered sensitive				Awaiting Data				
21	A2 location to be agreed with Highway England	Not considered sensitive				Awaiting Data				

14.8.4 Comparing the % change analysis presented above with the relevant screening criteria in Table 14.11, demonstrates that the environmental effects on receptors at the following locations require further assessment: 9, 11 and 13.

Screening Assessment for the Maximum Operational Phase

Table 14.17 Two Way 24-hour Traffic Flow (All Vehicles and HGVs) – 2033 Future Baseline compared with 2033 Future Baseline plus the year of max operations

ID	Road	Sensitivity	2033 Future Baseline		2033 Future Baseline plus Max Year		% Change		To Be Assessed	
			24 Hour All Vehs	24 Hour HGV	24 Hour All Vehs	24 Hour HGV	24 Hour All Vehs	24 Hour HGV	24 Hour All Vehs	24 Hour HGV
1	A256 north of Sandwich	Not considered sensitive	31802	4184	35355	4300	11.2%	2.8%	No	No
2	A299 Hengist Way between Canterbury Rd W and Minster Rd	Not considered sensitive	33355	2004	38272	2314	14.7%	15.5%	No	No
3	N/A									
4	A299 between A253 and A28	Not considered sensitive				Awaiting Data				
5	A299 between A28 and Grays	Not considered sensitive	37535	6886	42607	7144	13.5%	3.7%	No	No
6	B2190 between A299 and Minister Road	Not considered sensitive	19666	673	32622	1321	65.9%	96.2%	Yes	Yes

ID	Road	Sensitivity	2033 Future Baseline		2033 Future Baseline plus Max Year		% Change		To Be Assessed	
			24 Hour All Vehs	24 Hour HGV	24 Hour All Vehs	24 Hour HGV	24 Hour All Vehs	24 Hour HGV	24 Hour All Vehs	24 Hour HGV
7	Minster Road and The St between B2190 and Acol	Sensitive	7020	94	7079	94	0.8%	0.0%	No	No
8	B2050 Manston Road between Spitfire Way and Shottendane Rd	Not considered sensitive	7717	152	11404	293	47.8%	93.0%	Yes	Yes
9	Spitfire Way between Minster Road and Manston Road	Not considered sensitive	11755	499	24828	1147	111.2%	129.7%	Yes	Yes
10	N/A									
11	Manston Road between Spitfire Way and Shottendane Road	Sensitive	6823	397	10516	596	54.1%	50.2%	Yes	Yes
12	Manston Court Road between Manston Road and Star Lane	Sensitive				Awaiting Data				
13	Manston Road between Manston Court Road and A256	Sensitive	8990	271	13610	272	51.4%	0.3%	Yes	No
14	Haine Road between Manston Road and Haine	Sensitive	34975	1164	39341	1307	12.5%	12.3%	Yes	No
15	Manston Road between Haine Road and the railway line	Sensitive	16813	404	19503	476	16.0%	17.7%	Yes	No
16	N/A									
17	Canterbury Road E between A256 and Royal Harbour Approach	Not considered sensitive	26007	3042	26843	3062	3.2%	0.7%	No	No
18	N/A									
19	Canterbury Road W between Haine Road and the Cliffsend Rbt	Sensitive	6155	141	6467	153	5.1%	8.8%	No	No
20	M2 location to be agreed with Highway England	Not considered sensitive				Awaiting Data				
21	A2 location to be agreed with Highway England	Not considered sensitive				Awaiting Data				

14.8.5 Comparing the % change analysis presented above with the relevant screening criteria in **Table 14.11**, demonstrates that the environmental effects on receptors at the following locations require further assessment: 6, 8, 9, 11, 13, 14 and 15. These locations requiring further assessment are shown in **Figure 14.4**

14.8.6 Further assessment is undertaken below for the receptors, where the predicted change in traffic flows is considered to be significant. Further assessment is only undertaken for those phases of the proposed development that are predicted to generate likely significant effects.

14.8.7 The forecast Proposed Development traffic flows (construction and operational) have been estimated based on the assumption that following mitigation measures are provided and are effective:

- A Construction Traffic Management Plan;
- An Operational Traffic Management Plan;
- A Travel Plan;
- A Public Transport Access Strategy; and
- A Pedestrian, Cycle and Equestrian Access Strategy.

14.9 Assessment of effects on receptors - location 6; B2190 between A299 and Minister Road

Table 14.18 Predicted effects and their significance near location 6

	Construction	Year of Max Operation
Severance	In this location there are residential properties to the west of the B2190 Minster Road and a southbound bus stop on the opposite side of the road. Therefore, pedestrians may wish to cross the road and may be impeded by the presence of the construction traffic or the Proposed Development traffic and so the effect is potentially significant. This may need to be addressed by mitigation such as the provision of pedestrian crossing facilities.	
Driver Delay	In this location the B2190 has been designed for high traffic flows and a higher than average percentage of HGV, as it is a dual carriageway with two lanes in each direction and as such it is unlikely that this area of the network is at, or close to, the capacity of the system. Therefore, the sensitivity to change is low. Further investigation will be presented within the TA. At this stage, under this set of circumstances, in this location, it is considered that the increase in traffic due to either the construction traffic or the maximum operations at the Proposed Development is not significant.	
Pedestrian Delay	In this location there are residential properties to the west of the B2190 Minster Road and a southbound bus stop on the opposite side of the road. Therefore, pedestrians crossing the road are likely to experience this additional delay due to the presence of the construction traffic and the Proposed Development traffic and so the effect is significant. This may need to be addressed by mitigation such as the provision of pedestrian crossing facilities.	
Pedestrian Amenity	In this location the B2190 has been designed for high traffic flows and a higher than average percentage of HGV, the highway pavement is already wide (dual carriageway with two lanes in each direction) and there is separation from traffic in the form of a grassed verge. Consequently, under this set of circumstances in this location, it is considered that the increase construction HGV and the increase in traffic due to the maximum operations at the Proposed Development is not significant.	
Fear and Intimidation	The degree of hazard to pedestrians changes from unclassified to Moderate with the addition of the construction traffic or the max operation traffic. However, in this location the B2190 has been designed for high traffic flows and a higher than average percentage of HGV, the highway pavement is already wide (dual carriageway with two lanes in each direction) and there is separation from traffic in the form of a grassed verge. Consequently, under this set of circumstances in this location, it is considered that the increase in construction HGV or the increase in traffic due to the maximum operations at the Proposed Development is not significant.	
Accidents and Safety	In this location the B2190 has been designed for high traffic flows and a higher than average percentage of HGV. There has been only one serious accident recorded in the last five year and it is unlikely that this area of the network is at, or close to, the capacity of the system. Therefore sensitivity to change is low. Consequently, under this set of circumstances in this location, it is considered that the temporary increase in construction HGV or the increase in traffic due to the maximum operations at the Proposed Development is not significant.	

	Construction	Year of Max Operation
Hazardous Loads	Details of hazardous loads, including types and quantity of load, number of movements and access route, are yet to be finalised. The assessment of any affects associated with hazardous loads, if required, will be undertaken within the ES.	

14.10 Assessment of effects on receptors - location 8; B2050 Manston Road between Spitfire Way and Shottendane Road

Table 14.19 Predicted effects and their significance near location 8

	Year of Max Operation
Severance	In this location there are two distinct sections of highway: • a rural aspect with an unrestricted speed limit (in this case 60mph) and occasional residential properties directly fronting the highway; and • a village aspect with a 30mph speed limit, a footway segregated by a wide grass verge and bus stops on both sides of the road. It is considered, therefore, that in the rural aspect there will be little desire to cross the highway but in the village aspect pedestrians may wish to cross the road. Therefore, it is possible that pedestrians may be impeded by the presence of the Proposed Development traffic and so the effect is potentially significant. This may need to be addressed by mitigation such as the provision of pedestrian crossing facilities.
Driver Delay	According to the DMRB the capacity of the B2050 Manston Road in this location is likely to be between 1800 and 2040 2-way vehicles per hour and as such it is unlikely that this area of the network is at, or close to, the capacity of the system. Therefore, sensitivity to change is low. Further investigation will be presented within the TA. At this stage, under this set of circumstances, in this location, it is considered that the increase in traffic due to the maximum operations at the Proposed Development is not significant.
Pedestrian Delay	In the village aspect pedestrians may wish to cross the road between residential properties, the footway and bus stops. As such pedestrians may be impeded by the presence of the Proposed Development traffic and so the effect is potentially significant. This may need to be addressed by mitigation such as the provision of pedestrian crossing facilities.
Pedestrian Amenity	In the village aspect the footway is well segregated from the highway, through elevation and a wide grass verge and behind occasional tree planting. Consequently, under this set of circumstances in this location, it is considered that the increase in traffic due to the Proposed Development is not significant.
Fear and Intimidation	The degree of hazard to pedestrians does not change category with the addition of the Proposed Development traffic. Consequently, it is considered that the increase in traffic due to the maximum operations at the Proposed Development is not significant.
Accidents and Safety	In this location the B2050 has had three serious accidents and 16 slight accidents recorded in the last five year. This volume of recorded incidents requires further analysis to determine any trends or common causes. Consequently, at this stage, as a worst case scenario it is considered that the increase in traffic due to the Proposed Development is potentially significant and may need to be addressed by mitigation. Any matters arising would be addressed by the OTMP or highway capacity improvements
Hazardous Loads	Details of hazardous loads, including types and quantity of load, number of movements and access route, are yet to be finalised. The assessment of any affects associated with hazardous loads, if required, will be undertaken within the ES.

14.11 Assessment of effects on receptors - location 9; Spitfire Way between Minster Road and Manston Road

Table 14.20 Predicted effects and their significance near location 9

	Construction	Year of Opening	Year of Max Operation
Severance	In this location there are three distinct sections of highway: • a village aspect with a 30mph speed limit, a footway and bus stops on both sides of the road. • a rural aspect with an unrestricted speed limit (in this case 60mph) and occasional business properties setback from the highway on the northern side; and • a business aspect (at the western end) with a dual carriageway, 50mph speed limit, a footway/cycleway on the northern side only and business properties setback from the highway also on the northern side.		
	It is considered, therefore, that in the rural and business aspects there will be little desire to cross the highway, leaving only pedestrians in the village aspect to experience the effects of severance. However, the construction access for the Proposed Development will be situated west of the village edge and as a result no HGV construction traffic will pass through the village thereby removing any possibility of increased severance. Consequently, it is considered that the temporary increase in construction HGV in this location is not significant.	Based on the village, rural and business aspects described in the previous column, it is considered, that in the village aspect pedestrians may wish to cross the road. Therefore, it is possible that pedestrians may be impeded by the presence of the Proposed Development traffic and so the effect is potentially significant. This may need to be addressed by mitigation such as the provision of pedestrian crossing facilities.	
Driver Delay	Through the business and rural aspects where the construction HGV will be present, it is unlikely that the network is at, or close to, the capacity of the system. Therefore sensitivity to change is low. Consequently, under this set of circumstances in this location, it is considered that the temporary increase in construction HGV is not significant.	According to the DMRB the capacity of the village aspect of the B2190 is likely to be between 1800 and 2040 2-way vehicles per hour and as such it is unlikely that this area of the network is at, or close to, the capacity of the system. Therefore sensitivity to change is low. The capacity of the rural and business aspects could be expected to be higher. Further investigation will be presented within the TA. At this stage, under this set of circumstances, in this location, it is considered that the increase in traffic due to the Proposed Development is not significant.	It is possible that the village and rural aspects of the highway network may be at, or close to, the capacity in the future and therefore sensitive to change. Consequently, further investigation will be presented within the TA. At this stage, as a worst case scenario, it is considered that the increase in traffic due to the Proposed Development is significant and may need to be addressed by mitigation. Any matters arising would be addressed by the OTMP or highway capacity improvements
Pedestrian Delay	Through the business and rural aspects where the construction HGV will be present, there will be little desire to cross the highway. Therefore, under this set of circumstances in this location, it is considered that the temporary increase in construction HGV is not significant.	Through the village aspect where pedestrian crossing is likely, it is considered that there will be ample capacity in the highway and therefore ample crossing opportunities. Consequently, under this set of circumstances, in this location, it is considered that the increase in traffic due to the Proposed Development is not significant.	Through the village aspect where pedestrian crossing is likely, it is likely that crossing opportunities will be restricted. Consequently, under this set of circumstances, in this location, the effects on pedestrian delay as a result of the increase in traffic due to the Proposed Development is significant. This may need to be addressed by mitigation such as the provision of pedestrian crossing facilities.
Pedestrian Amenity	through the business aspect where the construction HGV will be present, the footway/cycleway is setback from the carriageway by a narrow verge and the B2190 has been designed for high traffic flows and a higher than average percentage of HGV. Consequently, under this set of circumstances in this	With the expected percentage increases in traffic and the circumstances in this location, it is considered that the increase in total traffic as a result of the Proposed Development is not significant.	With the expected percentage increase as a result of the Proposed Development traffic the effect is considered significant. This may need to be addressed by mitigation such as the provision of improved pedestrian facilities.

	Construction	Year of Opening	Year of Max Operation
	location, it is considered that the temporary increase in construction HGV is not significant.		
Fear and Intimidation	The degree of hazard to pedestrians does not change category with the addition of the Proposed Development construction traffic. Consequently, it is considered that the increase in traffic due to the construction of the Proposed Development is not significant.	The degree of hazard to pedestrians changes from unclassified to Moderate with the addition of the Proposed Development traffic. The change in classification is due solely to the total traffic change suggesting that quantity of HGV in the future is acceptable, the footway width is reasonable, and there are no sensitive locations adjacent. Consequently, it is considered that the increase in fear and intimidation due to the Proposed Development is not significant.	The degree of hazard to pedestrians changes from Moderate to Great with the addition of the Proposed Development traffic. The percentage change in HGV flows is higher than in the year of opening scenario, suggesting that the composition of traffic changes as well as the volume. Therefore, it is considered that the increase in fear and intimidation due to the Proposed Development is significant. This may need to be addressed by mitigation such as the provision of improved pedestrian facilities.
Accidents and Safety	In this location the B2190 had 15 accidents recorded in the last five year; with one fatal, two serious and 12 slight injuries. This volume of recorded incidents requires further analysis to determine any trends or common causes. Consequently, at this stage, as a worst case scenario it is considered that the increase in traffic due to the Proposed Development is significant. Any matters arising would be addressed by the CTMP or the OTMP		
Hazardous Loads	Details of hazardous loads, including types and quantity of load, number of movements and access route, are yet to be finalised. The assessment of any affects associated with hazardous loads, if required, will be undertaken within the ES.		

14.12 Assessment of effects on receptors - location 11; Manston Road between Spitfire Way and Shottendane Road

Table 14.21 Predicted effects and their significance near location 11

	Year of Opening	Year of Max Operation
Severance	In this location there are three distinct sections of highway: • a rural aspect with an unrestricted speed limit (in this case 60mph) and occasional residential or business properties fronting the highway; • a village aspect with a 30mph speed limit, properties on both sides of the road and a footway to the northern side; and • a town aspect with a 30mph speed limit and properties and footways on both sides. It is considered, therefore, that in the rural aspect there will be little desire to cross the highway but in the village and town aspects pedestrians may wish to cross the road. However, in these locations it is still likely that the highway will have ample spare capacity and so crossing opportunities will be numerous, and traffic speeds will remain low. Therefore, in this location and in these circumstances the effects of the Proposed Development traffic on severance are considered to be not significant.	
Driver Delay	According to the DMRB the capacity of Manston Road in this location is likely to be between 1800 and 2040 2-way vehicles per hour and as such it is unlikely that this area of the network is at, or close to, the capacity of the system. Therefore sensitivity to change is low. Further investigation will be presented within the Transport Assessment. At this stage, under this set of circumstances, in this location, it is considered that the increase in traffic due to operations at the Proposed Development is not significant.	
Pedestrian Delay	In the village and town aspects pedestrians may wish to cross the road as there are properties and footways on both sides. In these locations it is likely that the highway will have ample spare capacity and so crossing opportunities will be numerous and traffic speeds will remain low. Therefore, in this location and in these circumstances the effects of the Proposed Development traffic on severance are considered to be not significant.	

	Year of Opening	Year of Max Operation
Pedestrian Amenity	In the village aspect where pedestrian will be located, the footway is well segregated from the highway by a wide grass verge. Consequently, under this set of circumstances in this location, it is considered that the increase in traffic due to the Proposed Development is not significant.	
Fear and Intimidation	The degree of hazard to pedestrians does not change category with the addition of the Proposed Development traffic. Consequently, it is considered that the increase in traffic due to the year of opening operations at the Proposed Development is not significant.	The degree of hazard to pedestrians changes from unclassified to Moderate with the addition of the Proposed Development traffic. The change in classification is due solely to the total traffic change, suggesting that quantity of HGV in the future is acceptable, the footway width is reasonable, and there are no sensitive locations adjacent. Consequently, it is considered that the increase in fear and intimidation due to the Proposed Development is not significant.
Accidents and Safety	In this location Manston Road has had two slight accidents recorded in the last five year which suggests that there are no trends or common causes. Therefore, it is considered that the increase in traffic due to the Proposed Development is not significant.	
Hazardous Loads	Details of hazardous loads, including types and quantity of load, number of movements and access route, are yet to be finalised. The assessment of any affects associated with hazardous loads, if required, will be undertaken within the ES.	

14.13 Assessment of effects on receptors - location 13; Manston Road between Manston Court Road and A256

Table 14.22 Predicted effects and their significance near location 13

	Year of Opening	Year of Max Operation
Severance	In this location there are two distinct sections of highway: • a rural aspect with an unrestricted speed limit (in this case 60mph); and • a village aspect with a 30mph speed limit, properties and bus stops on both sides of the road and a footway to the northern side.	
	It is considered, therefore, that in the rural aspect there will be little desire to cross the highway but in the village aspect pedestrians may wish to cross the road. However, the percentage change in traffic is considered to be low, in these locations traffic speeds will also be low and it is likely that the highway will have ample space capacity and so crossing opportunities will be numerous. Therefore, in this location and in these circumstances the effects of the Proposed Development traffic on severance are considered to be not significant.	It is considered, therefore, that in the rural aspect there will be little desire to cross the highway but in the village aspect pedestrians may wish to cross the road. Therefore, it is possible that pedestrians may be impeded by the presence of the Proposed Development traffic and so the effect is significant.. This may need to be addressed by mitigation such as the provision of pedestrian crossing facilities.
Driver Delay	According to the DMRB the capacity of the B2050 Manston Road in this location is likely to be between 1800 and 2040 2-way vehicles per hour, however there is a traffic calming scheme currently in place which would restrict the capacity of the network. Therefore, further investigation will be presented within the TA. At this stage, as a worst case scenario, it is considered that the increase in traffic due to the Proposed Development is significant and may need to be addressed by mitigation. Any matters arising would be addressed by the OTMP or highway capacity improvements	
Pedestrian Delay	In the village aspects pedestrians may wish to cross the road but it is considered that there will be ample opportunity. As such pedestrians are unlikely be impeded by the presence of the Proposed Development traffic and so the effect is considered to be not significant.	In the village aspect pedestrians may wish to cross the road as there are residential properties, bus stops and amenities on both sides of the road. As such pedestrians may be impeded by the presence of the Proposed Development traffic and so the effect is significant. This may need to be addressed by mitigation such as the provision of improved pedestrian facilities.

	Year of Opening	Year of Max Operation
Pedestrian Amenity	With the expected percentage increases in traffic and the circumstances in this location, it is considered that the increase in total traffic as a result of the Proposed Development is not significant.	
Fear and Intimidation	The degree of hazard to pedestrians does not change category with the addition of the Proposed Development traffic. Consequently, it is considered that the increase in traffic due to the year of opening at the Proposed Development is not significant.	The degree of hazard to pedestrians changes from unclassified to Moderate with the addition of the Proposed Development traffic. The change in classification is due solely to the total traffic change suggesting that quantity of HGV in the future is acceptable, the footway width is reasonable, and there are no sensitive locations adjacent. Consequently, it is considered that the increase in fear and intimidation due to the Proposed Development is not significant.
Accidents and Safety	In this location the B2050 Manston Road has had eight slight accidents recorded in the last five year which suggests that there are no trends or common causes. Therefore, it is considered that the increase in traffic due to the Proposed Development is not significant.	
Hazardous Loads	Details of hazardous loads, including types and quantity of load, number of movements and access route, are yet to be finalised. The assessment of any affects associated with hazardous loads, if required, will be undertaken within the ES.	

14.14 Assessment of effects on receptors - location 14; Haine Road between Manston Road and Haine

Table 14.23 Predicted effects and their significance near location 14

	Year of Max Operation
Severance	This location is urban in nature with residential properties, footways, bus stops and business premises on both sides of the road, the speed limit is 40mph and there is a signalised pedestrian crossing. It can be assumed therefore that there is an existing demand to cross the A256 and this may be impeded by the presence of the Proposed Development traffic and so the effect is significant. This may need to be addressed by mitigation such as the provision of pedestrian crossing facilities.
Driver Delay	Although the percentage change in total vehicles is small, it may have an effect on delay to other road users, as it will exacerbate an already congested part of the highway network. According to the DMRB the capacity of A256 in this location is likely to be between 2,600 2-way vehicles per hour and future traffic flows suggest that the link will be over capacity with or without the Proposed Development. Consequently, it is considered that the increase in traffic due to the year of maximum operations at the Proposed Development is significant and may need to be addressed by mitigation from this Proposed Development or third parties, such as KCC.
Pedestrian Delay	It is likely that the A256 will be congested in the future with or without the Proposed Development and therefore crossing opportunities will be limited. As such pedestrians are likely be impeded by the presence of the Proposed Development traffic and so the effect is considered to be significant and may need to be addressed by mitigation from this Proposed Development or third parties, such as KCC.
Pedestrian Amenity	With the expected percentage increases in traffic and the circumstances in this location, it is considered that the increase in total traffic as a result of the Proposed Development is not significant.
Fear and Intimidation	The degree of hazard to pedestrians does not change category with the addition of the Proposed Development traffic. Consequently, it is considered that the increase in traffic due to the year of maximum operations at the Proposed Development is not significant.
Accidents and Safety	In this location A256 has had three slight accidents recorded in the last five year which suggests that there are no trends or common causes. Therefore, it is considered that the increase in traffic due to the Proposed Development is not significant.
Hazardous Loads	Details of hazardous loads, including types and quantity of load, number of movements and access route, are yet to be finalised. The assessment of any affects associated with hazardous loads, if required, will be undertaken within the ES.

14.15 Assessment of effects on people at home, people at work, people walking and people cycling near location 15; Manston Road between Haine Road and the railway line

Table 14.24 Predicted effects and their significance near location 15

	Year of Max Operation
Severance	This location is urban in nature with residential properties, footways/cycleway, bus stops and business premises on both sides of the road, the speed limit is 30mph and there is a signalised pedestrian crossing. It can be assumed therefore that there is an existing demand to cross the B2050. It is likely that there is spare capacity on the highway and this, in conjunction with the slow traffic speeds (30mph) and small increase in traffic as a result of the Proposed Development suggests that the effect on severance will be not significant.
Driver Delay	According to the DMRB the capacity of the B2050 Manston Road in this location is likely to be between 2,600 2-way vehicles per hour and as such it is unlikely that this area of the network is at, or close to, the capacity of the system. Therefore sensitivity to change is low. Consequently, it is considered that the increase in traffic due to the year of maximum operations at the Proposed Development is not significant.
Pedestrian Delay	It is likely that there is spare capacity on the highway and this, in conjunction with the slow traffic speeds (30mph) and small increase in traffic as a result of the Proposed Development suggests that pedestrians are unlikely be impeded by the presence of the Proposed Development traffic. Therefore, the effect is considered to be not significant.
Pedestrian Amenity	With the expected percentage increases in traffic and the circumstances in this location, it is considered that the increase in total traffic as a result of the Proposed Development is not significant.
Fear and Intimidation	The degree of hazard to pedestrians does not change category with the addition of the Proposed Development traffic. Consequently, it is considered that the increase in traffic due to the year of maximum operations at the Proposed Development is not significant.
Accidents and Safety	At the junction between the A256 and the B2050 Manston Road seven slight accidents were recorded in the last five year which suggests that there are no trends or common causes. Therefore, it is considered that the increase in traffic due to the Proposed Development is not significant.
Hazardous Loads	Details of hazardous loads, including types and quantity of load, number of movements and access route, are yet to be finalised. The assessment of any affects associated with hazardous loads, if required, will be undertaken within the ES.

14.16 Conclusions of preliminary significance evaluation

14.16.1 The conclusions on the significance of all those effects that have been subject to assessment in **Sections 14.8 to 14.15** are summarised in **Table 14.25 to 14.27**.

Table 14.25 Summary of significance of effects during Construction

Receptor	**Percentage Based Significance Level**			**Technical Judgement - Rationale**	**Revised Significance Level**
	Sensitivity	**Magnitude of Impact**	**Significance Level**		
Users of the roads or uses fronting the roads - Location 6	Moderate	Major	Significant	severance and pedestrian delay mitigation is needed such as improved pedestrian crossing facilities	Significant

Receptor	Percentage Based Significance Level			Technical Judgement - Rationale	Revised Significance Level
	Sensitivity	Magnitude of Impact	Significance Level		
Users of the roads or uses fronting the roads - Location 9	Major	Minor	Significant	accident analysis required which may result in further CTMP mitigation	Significant

Table 14.26 Summary of significance of effects during year of opening

Receptor	Percentage Based Significance Level			Technical Judgement - Rationale	Revised Significance Level
	Sensitivity	Magnitude of Impact	Significance Level		
Users of the roads or uses fronting the roads - Location 9	Major	Moderate	Significant	severance mitigation is needed such as improved pedestrian crossing facilities accident analysis required which may result in mitigation Any matters arising would be addressed by the OTMP	Significant
Users of the roads or uses fronting the roads - Location 11	Moderate	Minor	Not Significant	See Table 14.21 above	Not Significant
Users of the roads or uses fronting the roads - Location 13	Major	Minor	Significant	Driver delay requires further investigation and mitigation may be needed. Any matters arising would be addressed by the OTMP or highway capacity improvements	Significant

Table 14.27 Summary of significance of effects during year of maximum operations

Receptor	Percentage Based Significance Level			Technical Judgement - Rationale	Revised Significance Level
	Sensitivity	Magnitude of Impact	Significance Level		
Users of the roads or uses fronting	Moderate	Major	Significant	severance and pedestrian delay mitigation is needed such as	Significant

Receptor	Percentage Based Significance Level			Technical Judgement - Rationale	Revised Significance Level
	Sensitivity	Magnitude of Impact	Significance Level		
the roads - Location 6				improved pedestrian crossing facilities	
Users of the roads or uses fronting the roads - Location 8	Major	Major	Significant	severance and pedestrian delay mitigation is needed such as improved pedestrian crossing facilities accident analysis required which may result in mitigation. Any matters arising would be addressed by the OTMP	Significant
Users of the roads or uses fronting the roads - Location 9	Major	Major	Significant	Severance, pedestrian delay, pedestrian amenity and fear and intimidation mitigation is needed such as improved pedestrian facilities driver delay requires further investigation and mitigation may be needed. Any matters arising would be addressed by the OTMP or highway capacity improvements accident analysis required which may result in mitigation. Any matters arising would be addressed by the OTMP	Significant
Users of the roads or uses fronting the roads - Location 11	Moderate	Moderate	Significant	See Table 14.21 above	Not Significant
Users of the roads or uses fronting the roads - Location 13	Major	Moderate	Significant	severance and pedestrian delay mitigation is needed such as improved pedestrian crossing facilities driver delay requires further investigation and mitigation may be needed. Any matters arising would be addressed by the OTMP or highway capacity improvements	Significant
Users of the roads or uses fronting the roads - Location 14	Major	Minor	Significant	Depending on KCC proposed transport schemes severance and pedestrian delay mitigation is needed such as improved pedestrian crossing facilities driver delay requires further investigation and mitigation may be needed. Any matters arising would be addressed by the OTMP or highway capacity improvements	Worst case scenario Significant

Receptor	Percentage Based Significance Level			Technical Judgement - Rationale	Revised Significance Level
	Sensitivity	Magnitude of Impact	Significance Level		
Users of the roads or uses fronting the roads - Location 15	Minor	Moderate	Not Significant	See Table 14.24 above	Not Significant

14.17 Mitigation, Next Steps

14.17.1 After this PEIR is submitted, the traffic generation, distribution and assignment will be verified and this, plus other assumptions will be discussed with KCC and HghE. Once a methodology and study area have been agreed where possible, the development of the Transport Assessment (TA) can commence. This assessment will consider all aspects of transportation including sustainable transport modes, access strategies and the suitability of the highway network to accommodate the construction traffic and operational traffic. The conclusion of the TA will include a package of mitigation measures that will minimise the effects on the transport network to an acceptable degree. Once the TA is complete, the ES chapter will be updated to incorporate these mitigation measures thereby reducing all effects to “not significant”.