11 LANDSCAPE AND VISUAL IMPACT

11.1 Introduction

11.1.1 Tyler Grange LLP has been appointed by applicant Carlyle Land Ltd and Commercial Estates Group (CEG) to undertake an assessment of the potential landscape and visual effects associated with the proposals for the development of land to the south and east of Adastral Park, near Martlesham Heath, Ipswich (hereby referred to as 'the site') This Landscape and Visual Impact Assessment (LVIA) has been prepared to support an outline planning application and forms part of an Environmental Statement (ES).

11.1.2 Carlyle Land Ltd and CEG are seeking to develop a proposed urban extension of up to 2,000 dwellings and associated infrastructure to the south and east of Adastral Park, near Martlesham Heath, Ipswich.

11.1.3 The site covers approximately 113ha and currently comprises a science and business park, and agricultural land. The site lies to the east of Martlesham Heath and is separated from the village by the A12. The site is approximately 8.5km east of Ipswich city centre.

11.1.4 The development of 2,000 new homes at Adastral Park is identified in Suffolk Coastal District Local Plan, Core Strategy and Development Management Policies, Development Plan Document, July 2013.

11.1.5 This chapter analyses landscape character and the visual amenity, introduces the principle of development, identifies and describes the effects that are likely to occur as a result, including whether they are adverse or beneficial, in accordance with Guidelines for Landscape and Visual Impact Assessment 3rd edition (GLVIA3)[1].

11.1.6 The LVIA will determine the ability of the landscape setting and visual context to accommodate such change within the framework of planning policy.

11.1.7 To assist the reader in understanding the purpose for undertaking landscape assessment work, the definition of 'landscape' as defined by the European Landscape Convention (ELC, 2000) is set out below.

11.1.8 "Landscape" means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors.

11.1.9 This definition applies to all urban, semi-urban landscapes, towns, villages and rural areas. It applies to ordinary or degraded landscape as well as those that are outstanding or protected.

11.1.10 In the context of this definition the assessment process seeks to consider the effects in an objective and systematic manner whilst recognising the perceptual and therefore subjective response to the landscape. Whilst subjectivity can never be removed from the assessment process, by following a systematic and structured framework of assessment, a more robust assessment can be performed and more rational and transparent conclusions drawn.

[1] Guidelines for Landscape and Visual Impact Assessment', Landscape Institute (LI) and Institute of Environmental Management and Assessment (IEMA) 2013. Known as the GLVIA3

11.1.11 Furthermore, the Landscape and Visual Impact Assessment (LVIA) process deals with the separate but interlinked issues of:

- **Landscape Character:** The effects of the proposed development upon discrete character areas and/or character types comprising features possessing a particular quality or merit; and
- **Visual Context:** The effects of the proposed development on views from visual receptors, and upon the amenity value of the views.

11.1.12 Landscape character is defined in the Landscape Institute's guidance (GLVIA3) and Institute of Environmental Management and Assessment (IEMA) 2013 as:

> "*A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.*"

11.1.13 Changes to the landscape character can arise as a result of:

- Changes to the fabric of the landscape including either the loss of key elements or introduction of new features which alter the distinct character of the landscape; and
- Changes which alter the way in which the landscape is perceived or appreciated.

11.1.14 Changes to views will occur where there is:

- Alteration of the view in terms of elements present and the overall composition;
- A change to the skyline; and/or
- There is a change to the distribution or dominance of features.

11.1.15 Such changes may or may not result in effects on the visual amenity of identified visual receptors that are of importance when considering the acceptability of development in planning terms.

Context

11.1.16 This assessment has been prepared taking into consideration pre application advice received from SCDC and the Suffolk Coast and Heaths Area of Outstanding Natural Beauty (AONB) Partnership. Consultation responses from Natural England and Waldringfield Parish Council have also been received, as well as feedback from public consultation that is of particular relevance to landscape and visual matters.

11.1.17 This report has been prepared following the consideration of all known opportunities and constraints to identify the key landscape and visual issues of the site arising from the proposed development. This process has guided the masterplanning and design process in order to ensure that any adverse landscape and visual effects were identified and mitigated within the initial design stage and continued through iteration.

11.1.18 The assessment has reviewed the provisions of National Policy, as well as relevant adopted Polices within the Suffolk Coastal District Local Plan 'Core Strategy and Development Management Policies' DPD and adopted Supplementary Planning Guidance (SPG) and Supplementary Planning Documents (SPD). These include the AONB Management Plan and Suffolk Landscape Character Assessment.

11.1.19 The assessment contained in this report has been prepared by a Chartered Member of the Landscape Institute (CMLI).

11.2 Scope and methodology

11.2.1 The methodology and guidelines used in the preparation of this assessment have been developed from the following:

- An Approach to Landscape Character Assessment, Natural England, 2014; and
- Guidelines for Landscape and Visual Impact Assessment (GLVIA), Third Edition, Landscape Institute and IEMA, 2013.

11.2.2 The assessment process is set out in further detail below but involves the following steps:

- Baseline Appraisal;
- Classification of Resources; and
- Assessment of Effects.

11.2.3 The methodology employed within this Chapter has been set-out within the Scoping Report, with the scope of the assessment further detailed within a letter to Ben Woolnough, Case Officer at Suffolk Coastal District Council (ref 10317_R02_RH_HJM). The letter sets-out the following:

- Study Area;
- Viewpoints and Visual Receptors;
- Photomontages; and
- Cumulative Schemes

11.2.4 A copy of the letter and associated plans is contained in Appendix H2. The scope of the LVIA and matters considered are detailed below. The scope of the assessment has been informed by a review of the Planning Context, baseline landscape and visual context and consultation with the Council, AONB, Natural England and local consultees including Waldringfield Parish Council and local residents.

Study Area

11.2.5 The Study Area for this LVIA extends to cover that shown on Figure 11.1: Landscape Related Planning Policy and Designations and includes the area from which the site and proposed development may be visible and the extent of the local landscape which may have the potential to be influenced by the proposals.

11.2.6 The Study Area has been defined through both desk based and fieldwork undertaken as part of the surveys to establish the landscape and visual baseline conditions, including viewshed analysis to determine the potential visibility of the proposals (see below in relation to the 'Baseline Appraisal').

Landscape Effects

11.2.7 The area includes those landscape character areas and landscape resources within and surrounding the site which may be either directly or indirectly affected by the proposed development. Although the Study Area extends beyond those areas from which the site may be visible, it allows for consideration of the wider character of the area including both developed and undeveloped landscapes when identifying the situation of the site in relation to the adjacent built edge and development at Adastral Park and the transition with the wider landscape and AONB.

11.2.8 This is in accordance with paragraph 5.2 of GLVIA3 which states that:

"The study area should include the site itself and the full extent of the wider landscape around it which the proposed development may influence in a significant manner. This will usually be based on the extent of Landscape Character Areas likely to be significantly affected either directly or indirectly."

11.2.9 The site and adjacent landscape is contained within the Estate Sandlands Landscape Character Area as identified by the 2008 Suffolk Landscape Character Assessment. This area extends to cover a wide area beyond the site, including localised variations in character, landcover and features that are not characteristic of the site or its situation adjacent to Adastral Park and associated land uses.

11.2.10 In order to allow for a focused assessment of the landscape, the LVIA has therefore undertaken a detailed site-specific assessment of the landscape character of the site and its local environs within the wider Study Area. The extents of this are shown on Figure 11.2: **Site Specific Context Plan**.

11.2.11 In accordance with published guidance set-out within GLVIA3 (paragraph 5.2) the Study Area for the landscape character assessment has been agreed with the Council (Appendix H3)

Visual Effects

11.2.12 When considering the Study Area for visual effects, GLVIA3 states at paragraph 6.2 that:

"The emphasis must be on a reasonable approach which is proportional to the scale and nature of the proposed development."

11.2.13 Within the wider Study Area, the site and proposed development will only be visible from a smaller area, as recognised by the proposed viewpoints. This reflects the containment of the site by built form and vegetation within the predominantly flat, low-lying landscape.

11.2.14 As with the landscape effects, the area within which the site and proposed development may be discernible within the landscape, and have the potential to affect the composition of views is illustrated on the **Site Specific Context Plan** at Figure 11.2.

Baseline Appraisal

11.2.15 The purpose of the baseline study is to provide an understanding of the landscape in terms of its constituent elements/features and character, its condition, how it is experienced and the value attached to it. This stage also determines the area over which the proposals may be visible and those groups of people who may experience views of the development.

11.2.16 This analysis is informed by the following:

- An overview of statutory plans and other data regarding relevant designations and landscape and visual related planning policies for the area (See 'Statutory and Planning Context' section below);
- An assessment of the landscape character of the site and that of the surrounding landscape context (Study Area) with reference to published works and checked and verified through fieldwork. This includes the classification of the landscape into units of distinct and recognisable character and land use at

the site-specific level. Perceptual qualities of the landscape are also identified at a site specific and local level, including landscape value;

- Field work to determine the extent to which the site can be seen from the wider area, taking into account any significant vegetation or built form which restricts or limits the extent of visibility; and
- Identification of representative viewpoints and determination of likely visual receptors.

11.2.17 Visual appraisals of the site and its surroundings were carried out in October and November 2016 in order to establish the local and site specific landscape context, features and visibility of the site.

11.2.18 Representative views from a variety of receptors in the local area are determined on the basis of the first sieve GIS mapping and subsequent fieldwork. A Zone of Theoretical Visibility (ZTV) has been produced in order to provide a "first sieve" of the potential maximum visibility of the proposed development for a 5km radius. The Zone of Theoretical Visibility (ZTV) has been generated for development of up to 13m ridge height across those general areas of the site that are proposed for development.

11.2.19 The assumption of 13m ridge height assumes development of up to three storeys across the site in order to test the area of theoretical visibility associated with the maximum height parameters of development of nature and scale proposed.

11.2.20 The ZTV assumes bare earth modelling using Ordnance Survey Terrain 5 data, and does not take into account earthworks / bunding bounding the site and existing quarrying activities, built form and vegetation that limit views towards the site. Whilst details of the finished ground levels for development were not known at this stage, the ZTV has been generated assuming that those areas that are quarries have been levelled to 25m AOD to reflect the surrounding landform.

11.2.21 The topography and first sieve visual analysis / ZTV are illustrated on Figure 11.3: **Topography** and Figure 11.4: **Zone of Theoretical Visibility**. It is considered that, given the nature and scale of the proposals and the containment of the site within the receiving landscape, there would be no significant landscape or visual impacts arising from the development beyond 5km.

11.2.22 The ZTV was used to identify the potential extent of visibility and inform subsequent preliminary fieldwork to ascertain the extent of visibility of the site and identify a number of proposed viewpoints. The location of the viewpoints are illustrated on Figure 11.5: **Visual Context**. As detailed above, the ZTV is generated using bare earth modelling, and does not take into account the screening effect of built form, trees and vegetation and how this may influence the visibility of the site and development upon it. The visibility of the site has therefore been verified in the field and used when identifying viewpoints to inform the assessment.

11.2.23 In accordance with published guidance set-out within GLVIA3 (paragraph 6.18), the viewpoints used to inform the assessment have been agreed with the Council's Landscape Officer (Appendix H3). Subsequent to the agreement of the Study Area and viewpoints with the Council, (Appendix H2), further fieldwork was carried out in January 2017 to record a set of views for inclusion within the assessment. At the time of the surveys, deciduous trees and hedgerows were out of leaf, providing a 'worst case' scenario with regard to visibility. This has allowed for the consideration of how the site is seen from within the wider landscape during the winter months.

11.2.24 The viewpoints have been selected in order to provide a range of views to represent the experience of different types of visual receptors, as well as specific viewpoints to allow consideration of the recognised visual characteristics of the local landscape. The viewpoints include those from a range of orientations and distances, as well as those from a range of Public Rights of Way, local roads and specific viewpoints to allow for the consideration of views from the AONB.

11.2.25 The assessment is limited to that made from fieldwork within the public realm and from within the site, and has not involved visiting private property. However, where notable views from private dwellings are possible these have been recorded.

11.2.26 The photographs have been taken using an SLR digital camera with a focal length lens of 50mm. They are intended to provide an indication of the view and extent of visibility. It is recognised that such views are best experienced in the field.

Consideration of Night time Visual Context

11.2.27 Within GLVIA3 at paragraph 6.12, it is considered that:

"For some types of development the visual effects of lighting may be an issue. In these cases it may be important to carry out night-time 'darkness' surveys of the existing conditions in order to assess the potential effects of lighting…"

11.2.28 Consultation responses received from Waldringfield Parish Council and pre-application discussions held with the AONB have raised the potential for the proposed development to impact upon night time views and dark skies/tranquillity of the AONB. Sources of light pollution that have been specifically mentioned during pre-application consultation include those associated with the lighting of formal sports areas.

11.2.29 In order to inform the assessment, views from the following locations have been selected to represent night-time views and visual amenity. These represent a range of receptors including the following, as illustrated on Figure 11.3: Visual Context.

- Views from the western edge of the AONB, residents of Waldringfield Heath and users of Ipswich Road and Newbourne Road approaching the site area from the east (**Photoviewpoint N5**);
- Viewpoints from within which the site can be seen within its context on the edge of Martlesham Heath and Adastral Park and associated existing light pollution within the wider landscape context. Representative view from Ipswich Road to the south (north west of Newbourne) (**Photoviewpoint N6**); and
- Neighbouring residents of Martlesham Heath, workers at Adastral Park and motorists on the A12 passing to the west of the site (**Photoviewpoint N10**).

11.2.30 The guidance document: 'Lighting in the Countryside: Towards Good Practice' Countryside Commission (1997), which has been replaced as a guidance document by the Planning Practice Guidance (PPG), defines the following sources of light pollution:

- Sky Glow - "the glow…. caused by a scattering of artificial light by dust particles and water droplets in the sky". This is closely related to upward reflected light, which results from misaligned lights and is reflected from surface treatments;
- Glare - "the uncomfortable brightness of a light source when viewed against a darker background". This can be worsened if the light flashes. Flashing can either result directly from the light or can be caused by trees in the foreground moving and causing the light to appear and disappear; and

- Light Trespass / Light Spill - "the spill of light beyond the boundary of the property on which a light is located". This can also be defined as light that trespasses beyond the area of need.

11.2.31 The degree to which the various forms of light pollution currently affect both the visual amenity and landscape character baseline are broadly considered from these key visual receptors, using night-time photoviews to illustrate the context.

Classification of Resources

11.2.32 This stage seeks to classify the landscape and visual resources in terms of their individual or collective sensitivity to change. For landscape receptors, this is dependent on:

- The susceptibility of the landscape to the type of change proposed; and
- The value placed on the landscape.

11.2.33 As a general rule those landscape resources which make a notable contribution to the character and cannot be replaced or substituted will be of a high sensitivity, those resources which are replaceable or contribute little to the overall character of the landscape will be of low sensitivity.

11.2.34 The classification of people who may experience a change to views and visual amenity arising from the proposed development, with reference to the representative viewpoints, in terms of their sensitivity to change. The sensitivity of the visual receptors will be dependent on:

- The location and context of the viewers/viewpoint;
- The expectations and occupation or activity of the receptors; and
- The importance of the view.

11.2.35 Those receptors which are classified as being of high sensitivity to change may include users of public rights of way or nearby residents. Those of low sensitivity to change may include people in their place of work or travelling through the landscape in cars, trains or other modes of transport.

11.2.36 In order to assist in understanding the application of sensitivity to landscape and visual receptors, the tables at Appendix H1 set-out a number of Assessment Criteria. These allow for the separate consideration of both value and susceptibility factors in order to establish a balanced assessment. The assessment of the landscape and visual resources is undertaken in Section 11.8.

Assessment of Effects

11.2.37 The assessment of effects is undertaken in the knowledge of the scheme proposals and the existing baseline situation. The landscape and visual baseline conditions are examined in more detail in Section 11.5 of this Chapter.

11.2.38 When describing the scheme proposals and associated mitigation within this Chapter (Sections 11.6: Predicted Impacts and Section 11.7: Mitigation), reference is made to the description of the scheme proposals as detailed in Chapter 2 of this ES and in the information prepared to support the application, including the following:

- Parameter Plan;
- Illustrative Framework Masterplan;

- Masterplan Framework Document;
- Design and Access Statement; and
- Landscape Strategy Plan.

11.2.39 The significance of any landscape and visual effect is a function of the sensitivity of the affected landscape resources and visual receptors (see above) against the magnitude of change that they would experience.

11.2.40 The magnitude of effect lies along a continuum from high, where there is a prominent and notable change to the landscape character or view to low where the change is barely perceptible.

11.2.41 The consideration of further mitigation with the aim where possible, of avoiding, reducing or offsetting significant adverse landscape or visual effects is determined during the course of the assessment where this can be addressed through a suitably worded condition.

11.2.42 The assessment of the nature of the landscape and visual effects depends on the degree to which the development:

- Complements, respects and fits into the existing scale, landform and pattern of the landscape context;
- Enables enhancement, restoration or retention of the landscape character and visual amenity and delivers policy aspirations; and
- Affects strategic and important views in addition to the visual context of receptors.

11.2.43 For the purposes of this report, the term 'impact' refers to the causation of change and 'effects: are the results of the changes on the landscape and visual context.

Indicative Photomontages

11.2.44 The Assessment of Effects has been informed by a number of Photomontages (Figure 11.10). These have been taken from five key views in order to illustrate the potential landscape and visual impacts upon those receptors that have been identified as being of a higher sensitivity to the proposed changes and/or which may be likely to experience a high magnitude of change.

11.2.45 The location of the photomontage viewpoints are illustrated on Figure 11.5: Visual Context. Details of the locations and level of detail for each montage are listed in the table below:

Table 11.1 Photomontage viewpoint and level of detail

Photomontage Viewpoint	Location	AVR Level for Montage
5	Intersection of Ipswich Road and Newbourne Road, Bridleway 35 and Footpath 7A and 27, east of the site	AVR2 (block model) To include an indication of materials and finishes to dwellings.
6	Public Footpath 14 and 14A to the south of the site	AVR1 (wireframe): For areas of the development screened

		by intervening vegetation and landform. AVR2 (block model): Where development blocks visible
10	A12 at junction with bridleway 6, west of the site	AVR1 (wireframe): For areas of development screened by intervening landform. AVR2 (block model) where development blocks visible.

11.2.46 Planting is shown at Years 1 and 15 for each photomontage. This allows for consideration of short, medium and long term effects of the proposals.

11.2.47 The planting shown on the photomontages assumes advance planting of strategic landscape buffers and structural planting to site edges to be implemented within phase 1 where possible. This is to provide mitigation that would be more established once construction of development was completed.

11.2.48 The methodology employed for the production of the photomontages is included at Appendix H4.

Significance Criteria

11.2.49 Best practice guidelines stipulate that the significance of any landscape related impact should be evaluated, both during the construction works and following completion of the development. As such, the assessment of potential and residual effects is based upon the following thresholds:

11.2.50 **High beneficial**: The development would fit well with the scale, landform and pattern of the landscape, and enhance the existing landscape character. The development would create a highly improved change in the view;

11.2.51 **Moderate beneficial:** The development would fit well with the scale, landform and pattern of the landscape, maintain and/or enhance the existing landscape character. The development would create a noticeable but improved change in the view;

11.2.52 **Minor beneficial:** The development would complement the scale, landform and pattern of the landscape, whilst maintaining the existing character. The development would result in minor improvements to the existing views;

11.2.53 **Negligible:** The development would cause very limited changes to the landscape and/or views;

11.2.54 **Minor adverse:** The development would cause minor permanent and/or temporary loss or alteration to one or more elements or features of the landscape, to include the introduction of elements that may not be uncharacteristic of the surrounding landscape. The development would cause limited visual change;

11.2.55 **Moderate adverse:** The development would result in permanent loss or alteration to one or more key elements of the landscape, to include the introduction of elements that are apparent but may not be substantially uncharacteristic with the surrounding landscape. The development would be clearly visible; and

11.2.56 **High adverse:** The development would cause total permanent loss or major alteration to key elements and features of the landscape, to include the introduction of elements

totally uncharacteristic of the surrounding landscape. The development would be clearly evident in views and would disrupt fine and valued views both into and across the area.

11.2.57 There are instances where the impact results in an effect which is neither adverse nor beneficial. These effects are considered to be neutral. Negligible and minor effects are not considered to be of particular importance when considering whether a proposal is acceptable in landscape and visual terms. Effects that are assessed as being Moderate and High may need to be considered in the planning balance.

11.2.58 For clarity, criteria that relate to receptor sensitivity and magnitude of change have been set out in more detail and contained at Appendix H1. These will be referenced as part of the assessment process. It is also important to note that GLVIA3 places greater emphasis on professional judgement and less emphasis on a formulaic approach; however, a transparent assessment process should still be evident.

Cumulative Landscape and Visual Effects

11.2.59 As part of the scoping and consultation exercise, a number of potential cumulative schemes for development that are subject to planning permission, applications or allocations (and therefore “reasonably foreseeable”) were proposed by the Council and Waldringfield Parish Council.

11.2.60 As detailed within the Scoping letter to Suffolk Coastal District Council (Appendix H2) and Summary of Responses to Consultation Feedback (Appendix B3), the potential cumulative schemes proposed have been scoped out of this assessment. It has been agreed with the Council that the only cumulative scheme that the LVIA is to consider is that relating to the redevelopment of land within the Northern Quadrant at Adastral Park adjacent to the site (Appendix H3).

11.2.61 This cumulative landscape and visual assessment has been carried out in accordance with guidelines contained within the GLVA3. GLVIA3 places an emphasis on the need for cumulative assessments to be 'reasonable and proportionate’ and to focus on likely significant effects.

Definition of combined and sequential views

11.2.62 When considering potential cumulative visual effects, there are two types of cumulative views that need to be considered; Combined and Sequential. These are summarised at Table 7.1 of GLVIA3 (page 131).

11.2.63 Combined views are defined in GLVIA3 as: *"Occurs where the observer is able to see two or more developments from one viewpoint."*

11.2.64 Sequential Views are defined in GLVIA 3 as: *"Occurs when the observer has to move to another viewpoint to see the same or different development. Sequential effects may be assessed for travel along regularly used routes such as major roads or popular paths”.*

Landscape and Visual: Cumulative Schemes

Northern Quadrant at Adastral Park

11.2.65 The cumulative landscape and visual effects of the proposed development of the Northern Quadrant at Adastral Park to include for the redevelopment of B1(b)

development arranged in buildings of between 1 and 5 storeys to the northwest of the application-site will be considered within the Cumulative Effects chapter of the ES.

Potential Cumulative Schemes scoped-out of LVIA

11.2.66 The following cumulative schemes have been identified by SCDC as "foreseeable development" which may have the potential for cumulative landscape and / or visual effects. It is therefore proposed that none are regarded as having the potential to result in significant cumulative landscape or visual effects and it is therefore proposed that they are scoped out of the Cumulative Effects assessment within the ES, this has been agreed with SCDC, Appendices H2 and H3.

11.2.67 In addition, the Felixstowe Peninsula Area Action Plan and the SCDC Site Allocations DPD have been reviewed, and there are no additional allocation-sites identified that may have any significant cumulative landscape and visual effects.

11.2.68 Further details of the justifications for the scoping out of potential cumulative schemes is included in Chapter 15 of this ES. The cumulative landscape and visual effects of the proposed development at Adastral Park and the Northern Quadrant are fully assessed at Chapter 15.

- **DC/15/4672/OUT - Bell Lane, Kesgrave** – Phased development of 300 dwellings, provision of land for primary school and associated landscaping and open space with all matters reserved apart from access.

  Whilst the proposed development at Bell Lane would not be intervisible with the Adastral Park proposals due to intervening vegetation and built form, there may be the potential for some limited occasional sequential views of both developments as part of the visual experience for users of Public Rights of Way to the west of the A12. Given the landscape context and nature of the proposed developments, it is anticipated that there would not be any cumulative landscape and visual effects with the Bell Lane development and the scheme has therefore been scoped out of the assessment.

- **C/10/1906 - Land South of Main Road, Martlesham**: Residential development south of Main Road, Martlesham would not be intervisible with the Adastral proposals due to intervening woodland and development at Adastral Park. The containment of development south of Main Road would also limit the potential for there to be any cumulative landscape effects.

  Although the two sites may be seen sequentially as part of walks along the local Public Right of Way network, they would be seen in context with existing development, including the intervening development at Adastral Park and supermarket that lie between the two sites. It is therefore considered that the proposed development on land south of Main Road, Martlesham can be scoped out of the cumulative landscape and visual assessment.

- **DC/15/4788/OUT - Land and Buildings to the East of Bridge Farm, Top Street, Martlesham**: Given the distance and intervening built form and woodland between the sites, there would be no intervisibility between them. The separation of the sites and relationship to different settlements and landscapes also serves to limit the potential for any cumulative landscape effects.

- **Melton Hill – Former SCDC Council Offices**: The intervening distance, urban context and lack of intervisibility between developments combine to limit any cumulative landscape and visual effects with Adastral Park.
- **DC/15/1128/OUT - Land at Candlet Road, Felixstowe**: Given the distance between Adastral Park and Felixstowe, there would be no intervisibility of cumulative landscape effects resulting from the proposed development at Candlet Road.
- **C/12/1930 - Western Part of Land at Trinity Park and Land at White House Farm, Felixstowe Road, Purdis Farm**: Intervening woodland and tree belts within the wider landscape limits intervisibility between Adastral Park and development at Warren Heath and Trinity Park. Combined with the distance between the sites and relationship to separate settlements, there would be no cumulative landscape or visual effects between n the two proposed schemes.
- **DC/14/0991/OUT - Land off Woods Lane, Melton**: The proposed development off Woods Lane is physically and visually separated from Adastral Park by woodland and the built form of Woodbridge. This combined with the distance between the sites limit the potential for there to be any cumulative landscape and visual effects.
- **DC/16/1919/FUL - Land at High Road, Trimley St Martin**: Due to the distance between sites, there would be no potential cumulative landscape and visual effects between the proposed developments at Adastral Park and Trimley St Martin.

11.2.69 The above proposed cumulative schemes put forward by the Council have been scoped out of the assessment as they would not likely result in potential significant cumulative landscape or visual effects. This is due to the distance and/or lack of intervisibility and location along sequential routes between sites.

11.3 Consultation undertaken

11.3.1 As set-out within Chapter 3 of this ES, Tyler Grange and the project team have consulted with the Council, Suffolk Coast and Heaths AONB Partnership and members of the local community in order to ensure that the proposals have been developed to comply with expectations of Officers relating to local policy, designations and respect the sensitivities of the local environment and views of local residents where possible.

11.3.2 The scope and methodology of the LVIA contained within this Chapter has been agreed with the Council. The AONB Partnership has also been consulted and the approach to the design and mitigation measures employed has been approved in respect of the situation of the site in close proximity to, but outwith the AONB.

11.3.3 Details of the correspondence and matters discussed and agreed are contained at Appendices H2 and H3 and detailed above.

11.4 Statutory and planning context

11.4.1 Planning Policy and Designations within the Study Area are illustrated on Figure 11.1 Landscape Related Planning Policy and Designations. National and Local planning policy and Designations that are of relevance to landscape and visual matters are examined below.

The National Planning Policy Framework (NPPF)

11.4.2 The National Planning Policy Framework (NPPF) outlines the Government's planning policies for England, setting out how these are expected to be applied. The NPPF is a material consideration in planning decisions and any development would need to accord with the following planning provisions.

11.4.3 At the heart of the NPPF is a presumption in favour of sustainable development. The NPPF sets out three dimensions to sustainable development: economic, social and environmental. For plan making, this means that local planning authorities "*should positively seek opportunities to meet the development needs for their area*", with "*sufficient flexibility to adapt to rapid change unless any adverse impact of doing so would significantly and demonstrably outweigh the benefits when assessed against NPPF policies.*"

11.4.4 For decision making, development that accords with a current development plan should be approved without delay; and, where the development plan is absent, silent or relevant policies are out-of-date, permission should be granted unless any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in the NPPF as a whole.

11.4.5 The NPPF policies relevant to landscape and green infrastructure matters in the context of the proposed development are as follows:

- Achieving sustainable development;
- Delivering a wide choice of high quality homes;
- Promoting healthy communities;
- Requiring good design;
- Valued Landscapes; and
- Conserving and enhancing the natural environment.

11.4.6 Particular attention will be given to issues relating to Valued Landscapes, Landscape character and Visual Amenity. These include consideration of the *Suffolk Coast & Heaths Area of Outstanding Natural Beauty* which is situated approximately 90m to the east of the application-site at its closest point. The NPPF affords great weight to the conserving landscape and natural beauty of AONBs, which have the *"highest status of protection in relation to landscape and scenic beauty*" (paragraph 115)

11.4.7 Whilst not situated within the AONB, the proposals have the potential to affect the setting of the AONB and views towards and from within the designated landscape.

11.4.8 At paragraph 17, the NPPF outlines twelve Core Planning Principles including an aim to "*always seek to secure high quality design and a good standard of amenity for all existing and future occupants of land and buildings*" and to "*take account of the different roles and character of different areas, promoting the vitality of our main urban areas, recognising the intrinsic character and beauty of the countryside and supporting thriving rural communities within it.*" Another aim is to contribute to "*conserving and enhancing the natural environment.*"

11.4.9 Section 7, Paragraph 58 of the NPPF relates to delivering high quality design. Of relevance to this assessment is the fourth bullet point:

"…respond to local character and history, and reflect the identity of local surroundings and materials, while not preventing or discouraging appropriate innovation…"

11.4.10 Paragraph 60 states the need to promote or reinforce "local distinctiveness", whilst paragraph 64 adds that "*permission should be refused for development of poor design that fails to take the opportunities available for improving the character and quality of an area and the way it functions.*"

11.4.11 Paragraph 69 states that planning policies and decisions should aim to achieve places that promote:

"Safe and accessible developments, containing clear and legible pedestrian routes, and high quality public spaces which encourage the active and continued use of public areas."

11.4.12 Paragraph 75 considers the importance of public rights of way stating that "*planning policies should protect and enhance public rights of way and access. Local authorities should seek opportunities to provide better facilities for users, for example by adding links to existing rights of way networks including National Trails.*"

11.4.13 Paragraph 109 references the need to protect and enhance "valued landscapes". No definition of a valued landscape is provided in the NPPF or PPG. The value of the landscape is considered in relation to the sensitivity of the landscape and features within Section 11.5 of this report.

11.4.14 Attention is drawn to the difference between international, national and local landscape designations at paragraph 113 with regards to the criteria based policies against which development proposals should be judged where it states:

"Distinctions should be made between the hierarchy of international, national and locally designated sites, so that protection is commensurate with their status and gives appropriate weight to their importance and the contribution that they make to wider ecological network."

Planning Practice Guidance

11.4.15 On 6th March 2014, the Government released the Planning Practice Guidance, paragraph 001 reference 8-001-20140306 reiterates that "*one of the core principles in the National Planning Policy Framework is that planning should recognise the intrinsic character and beauty of the countryside.*"

11.4.16 The Guidance does not preclude development and considers that the creation of the new residential neighbourhoods can, through sensitive design, be deemed acceptable even where it results in a loss of open countryside.

Suffolk Coastal District Local Plan: Core Strategy & Development Management Policies DPD, July 2013

Objective 1 - Sustainability

Strategic Policy SP1 – Sustainable Development

11.4.17 Strategic Policy SP1 seeks to achieve sustainable development, including to conserve and enhance the area's natural, historic and built environment and maintain and enhance a sense of place.

Objective 11 – Protecting and Enhancing the Physical Environment

Strategic Policy SP15 – Landscape and Townscape

11.4.18 Strategic Policy SP15 seeks to protect and enhance the various landscape character areas within the district, through opportunities linked to development, or through other strategies.

11.4.19 Reference is made within the supporting text to the Suffolk Landscape Character Assessment, which identifies a number of landscape types across the district. The supporting text states that the Council considers it important to conserve and enhance the different character areas, whilst recognising that this must be integrated with the need to accommodate change, whilst minimising harm to the environment and seeking opportunities to bring about improvements where possible.

11.4.20 The Policy identifies the protected landscape of the AONB as being of significance, with the supporting text recognising the designated landscape as being of national importance, and stating that the AONB will be protected for its visual qualities, as well as tranquillity and ambience.

11.4.21 The Policy also states that the Council will seek to enhance and preserve the distinctive historical and architectural value, as well as landscape value and character of towns and villages, and the quality of life in the generality of urban areas. The supporting text states that the setting of settlements within their wider landscape context as being an important function in defining and maintaining the quality of place and identity.

Objective 12 - Design

11.4.22 Although there is no specific Strategic Policy relating to design, the DPD considers the design and housing density, citing the use of appropriate development management policies and Supplementary Planning Guidance to ensure that development is of high quality, with local distinctiveness being important in making development fit the place.

11.4.23 In relation to housing density, the DPD states that the Council will adopt a flexible approach to density, with proposals responding to existing distinctive character. It is expected that large scale developments deliver a range of densities.

Objective 14 – Green Infrastructure

11.4.24 The importance of Green Infrastructure (GI) as an environmental resource and its role in reducing pressure on sensitive high quality landscapes and wildlife areas to reduce recreation pressure upon them is recognised within the DPD and related policies.

Strategic Policy SP17 – Green Space

11.4.25 This Policy seeks to ensure that communities have access to Green Space that provides heath, community cohesion and a greater understanding of the environment, without detriment to wildlife and landscape character.

Strategic Policy SP20 – Eastern Ipswich Plan Area

11.4.26 The DPD identifies an allocation of 2,000 new homes on land to the south and east of Adastral Park, including the application-site area. The Council identify the area as having ‘positive significant advantages’ with the justification for the area including that:

- The development would utilise land that is to be the subject of mineral extraction (some parts already being worked) and consists of gently undulating land that is very much self-contained within the landscape.
- The ability to properly mitigate the impact on the AONB through the provision of strategic landscaping at an early stage of the development and properly plan an appropriate layout and phasing requirements;
- Access to and impact upon the countryside can be improved through mitigation measures including new open spaces as part of the overall development.

11.4.27 Within Strategic Policy SP20, the strategy for the Martlesham, Newbourne & Waldringfield Area Action Plan includes the following provisions:

- A planned direction of growth eastwards of the A12, to the south and east of Adastral Park;
- Creation of its own distinctive identity with smaller readily distinguishable villages, neighbourhoods and communities within the larger area;
- Provision of advanced planting and landscaping to create new settlement boundaries that blend with the surrounding landscape and contribute to biodiversity and the ecological network; and
- Maximises opportunities to achieve access to greenspace, including the countryside.

'Saved' policies from the previously adopted Suffolk Coastal Local Plan

11.4.28 A number of policies have been saved from the former Suffolk Coastal Local Plan, including those relating to Special Landscape Areas (saved Policy AP13), Parks and Gardens of historic of Landscape Interest (saved Policy AP4) and Conservation Areas (saved Policy AP1).

11.4.29 The application-site does not lie within or in close proximity to areas covered by any of these designations.

Supplementary Planning Documents and Guidance

11.4.30 Other documents for consideration include the following Supplementary Planning Guidance and published documents that form part of the evidence base and are of relevance to landscape and visual issues.

SPG 9 - Suffolk Design Guide for Residential Areas

11.4.31 SPG 9 provides advice relating to the design of residential development, including the shape of development, material and design of individual dwellings. Section 3 includes advice relating to the landscaping of housing schemes and highlighting the importance of ensuring that the guiding principles of landscaping are discussed and agreed with the LPA early-on in the development process to ensure the landscape scheme has the best scope for positive design.

11.4.32 The use of pre-development planting and making alterations to topography to increase the effectiveness of planting, as well as providing variety are identified.

Local Plan Evidence Base

11.4.33 The Local Plan Evidence Base includes the following documents that are of relevance when considering the baseline conditions and potential effects of development:

- Suffolk Landscape Character Assessment, 2008;
- Suffolk Historic Landscape Characterisation, 2009; and
- Suffolk Coast and Heaths Area of Outstanding Natural Beauty Management Plan 2013-2018.

11.4.34 A summary of the Landscape Character Areas from the Landscape Character Assessment is available on the Landscape East website: http://landscape-east.org.uk/

Designations

11.4.35 The site itself is not subject to any national or local landscape designations, however, Suffolk Coastal and Heaths AONB lies to the east of the site, at approximately 90m to the east at the closest point. Further to the south of the site lies a Special Landscape Area which lies approximately 450m to the south at the closest point. These are assessed separately within Section 11.8

Suffolk Coast and Heaths Area of Outstanding Natural Beauty

11.4.36 The AONB Management Plan and Position Statements produced and published by the AONB are considered further below.

Suffolk Coast and Heaths Area of Outstanding Natural Beauty: Management Plan 2013 - 2018

11.4.37 The AONB Management Plan is a material consideration when determining planning applications, and has a role in supporting the Local Plans of various LPAs through the identification of issues, aims, objectives and actions that are relevant to the AONB and can be underpinned by planning policy.

11.4.38 The plan identifies the character that makes up the special qualities of the AONB, as well as a number of social and environmental policy context and issues. The plan sets-out an Action Plan that includes a number of aims objectives and actions, based on the character, special qualities and the social and environmental context and issues. Those aims of relevance to landscape character and the situation of the application adjacent to, but outside the AONB, include the following:

- Aim 3: Conserve landscape character and enhance the distinctive nature of the AONB; and
- Aim 7: Retain the tranquillity of the area.

11.4.39 To the east of the application-site, the AONB is identified within the Management Plan as falling within the 'Estate Sandlands' Landscape Character Type, which comprises large areas of lowland heath, with the western edge including ancient woodlands and historic parklands. Settlements within the Estate Sandlands comprise small villages and scattered estate farms.

Development in the setting of the Suffolk Coast & Heaths Area of Outstanding Natural Beauty, December 2015

11.4.40 This position statement that has been prepared by the AONB Partnership defines the setting of the AONB as:

"… including the views into and out of the AONB, to be the area within which development and land management proposals, by their nature; size; scale; siting, materials or design can be considered to have an impact, positive or negative, on the natural beauty and special qualities of the nationally designated landscape.

11.4.41 The position statement states that the AONB Partnership considers development in the setting of the AONB that would have a significant adverse impact on the natural beauty and special qualities of the area should not be supported. Whether a development affects the natural beauty and special qualities of the AONB will depend on the character, location, scale, material and design. Examples of adverse impacts identified by the position statement include the following:

- *Development not appropriate to the landscape setting of the AONB;*
- *Blocking or interference of views out of the AONB particularly from public viewpoints;*
- *Locating or interference of views of the AONB from public viewpoints outside the AONB;*
- *Loss of tranquillity through the introduction of lighting, noise, or traffic movement;*
- *Introduction of an abrupt change of landscape character; and*
- *Reduction in public access to or within the AONB.*

Suffolk Coast and Heaths Area of Outstanding Natural Beauty (AONB): Natural Beauty and Special Qualities Indicators, November 2016

11.4.42 This document was prepared to establish what constitutes the natural beauty and special qualities of the Suffolk Coastal and Heaths AONB and forms part of the baseline to inform the proposed development at Sizewell. It includes several Natural Beauty and Special Qualities Indicators that cover the whole of the AONB and provides information against which to judge the effects of proposed development on the protected landscape. It also assists in defining and articulating what is characteristic and special about the AONB landscape.

11.4.43 A copy of the document, which includes tables that set-out the various criteria and indicators is contained at Appendix H6. These have been used to inform the assessment of the potential impact of the proposed development upon the AONB landscape and its setting.

Other Designations

11.4.44 The site contains a Bowl Barrow/Pill Box scheduled monument (SM) located to the north west of the site and a Site of Special Scientific interest (SSSI) located to the centre of the site, the SSSI is a geological feature which under the existing mineral operations is permitted to be relocated. These are shown on the **Site Features Plan 31677/06/B** included within the DAS (that occupies the application). Due to the nature of these features there are no associated views of the site..

11.5 Existing environment

11.5.1 A desk based review of policy, guidance and published landscape character assessments (as detailed above) and initial fieldwork has been undertaken in order to gain an understanding of landscape and visual issues relating to the site and surrounding area and to inform the development of the masterplan and design of the proposals.

Landscape Character

11.5.2 The characterisation process is a non-value judgement process; therefore, classifying landscapes into distinct areas does not suggest that one character is more sensitive than another or valued by people more or less.

11.5.3 The landscape character appraisal process reviews the wider landscape character type at a national level and then explores more detail character features at a district/local level, before analysis site-specific land use that informs local distinctiveness and sense of place. This report sets out the context to each of the published character assessments and the need to consider the character at a scale appropriate to the proposals.

11.5.4 This section in accordance with policy and professional guidance considers the existing landscape character of the site and its environs and should be read in conjunction with Figures 11.6: Landscape Character (Published), 11.2 Site Specific Context, and 11.7: Local Landscape Character Assessment**.** A set of Local Landscape Character Area Assessment Sheets contained at Appendix H5 provide further details relating to landscape character, features, factors and value indicators.

11.5.5 This assessment considers the local, site specific character, features and context as identified by Tyler Grange through fieldwork, and informed by a review of published assessments and designations to inform an understanding of the value and susceptibility of the landscape to accommodate change associated with residential development when identifying the sensitivity of the site and associated features to the proposals. This sets out the context at a scale appropriate to the proposals.

Published Landscape Character

11.5.6 At a national level the site lies within Suffolk Coasts and Heath (No 82), and at a local level the site is assessed within the Suffolk Landscape Character Assessment 2010 as falling within Estate Sandlands, at a more local level the landscape character area Forested Estate Sandland as defined by the Landscape East Landscape Character Assessments (2009-2011). http://landscape-east.org.uk/.

11.5.7 Key characteristics and features of the Forested Estate Sandlands LCA include the following:

- gently rolling landform, predominantly comprising open arable farmland;
- extensive areas of conifer plantations, shelterbelt plantings and pine lines;
- remnant heaths;
- medium to large scale field pattern, with rectilinear field patterns resulting from planned enclosures;
- settlement comprising nucleated villages surrounded by estate farmlands;

- 18th and 19th-century parks, ringed by shelterbelts;
- strong sense of isolation resulting from nucleated settlement, open heath and extensive plantation woodland; and
- blocky landscape structure creating strong visual contrast between containment in forested areas and wide expansive farmland.

11.5.8 As described above, the majority of the application-site does not share these characteristics, comprising predominantly mineral extraction/quarrying and associated earth works. Given its location to the south and east of Adastral Park, the site is well related to the developed edge and urbanising features, as well as the busy A12 corridor to the west.

11.5.9 The containment of the site by shelterbelts and woodland, contrasting with the open arable fieldscape and nucleated villages within the wider landscape to the east are typical features of the wider landscape beyond the eastern edge of Ipswich and Martlesham.

11.5.10 The Suffolk Coastal Heath AONB Management Plan identifies the local landscape character as Estate Sandlands which lies to the east and south of the site. The plan goes onto outline the importance of this landscape character type in terms of:

- Ecological heritage: to include lowland heath, mixed deciduous woodland and notable bird species;
- Economic interests: Former heath planted with conifers has economic returns and recreational use;
- Social values: Popular walking areas and location of WWII airfields; and
- Special Qualities: Rare lowland heath, Coniferous forest meeting multiple needs, good walking, cycling and riding opportunities.

11.5.11 The site has the potential to relate to the wider landscape character and either establish or re-establish lost habitat across the site. At present the landscape character of the site is defined by mineral extraction, testing facilities with peripheral arable activity. The landscape could address how the site and both perform as a transition between the large industrial/commercial landscape of Adastral Park to the north, Martlesham Heath residential development to the west transitions with the wider rural landscape to the east and south of the site.

Local Landscape Character

11.5.12 As described above, the landscape character of the site is varied and includes areas of degraded landscape, such as the mineral extraction workings and man-made earthwork features to site boundaries. The site and the surrounding landscape is also heavily influenced by the development at Adastral Park, which includes the dominant form of the distinctive BT Orion building and Pegasus Tower, as well as an array of large white satellites, industrial, commercial and office building development that bounds the site. The busy A12 corridor to the west also reduces the tranquillity of the area.

Local Landscape Character Types (LLCT)

11.5.13 Given the broad scale of which the Landscape East and AONB Character Assessments consider LCAs, there is no published assessment that has considered the landscape character of the local context within which the site is situated in detail. Tyler Grange has therefore undertaken a detailed assessment of the site and the local landscape context

within which it is situated. This has enabled the identification of those factors (features, elements and characteristics) that are of particular relevance when considering development of the nature and scale being proposed. In order to identify the localised differences in character between areas, a number of Local Landscape Character Types (LLCTs) have been identified. These are illustrated on Figure 11.6 Local Landscape Character Assessment and include the following areas:

- Adastral Park - Industrial / Commercial;
- Martlesham Heath – Residential;
- Wooded arable farmlands;
- Amenity; and
- Mineral extraction.

11.5.14 The LLCTs have been defined in recognition of their distinct character. This is a combination of factors, including, but not limited to: topography, field pattern, land cover, land use and relationship with the settlement edge and local infrastructure.

11.5.15 For each LLCT, an overall description and key characteristics has been identified, as well as measures that may be implemented in order to enhance the character. The key characteristics for each of the LLCTs are set-out below. The sheets include photographs to illustrate the key characteristics and features and landscape context for each of the LLCTs.

11.5.16 Tables are also included that analyse a variety of Landscape Factors[2] and Value Indicators[3] for all of the LLCTs. These have been included in order to allow for the identification of those specific elements, features and characteristics that make-up each of the areas, as well as the value attached to these to enable a transparent assessment of the value and susceptibility of the landscape to accommodate change. This information has then been used when identifying the sensitivity of the landscape to development of the nature and scale proposed on the site.

11.5.17 The detailed landscape assessment of the Local Landscape Character Types identifies the landscape elements, character and condition found within the site area, as well as giving consideration to a number of value indicators as set out within GLVIA3. A summary of the key characteristics of each LLCT is listed below:

Local Landscape Character Type A – Industrial / Commercial

- Medium to large scale industrial and commercial units;
- Extensive areas of hardstanding and road ways;
- Remnant landscape features from former Martlesham Heath WWII Airfield, to include section of runway;
- Blocky landscape structural planting within internal green spaces;

[2] The range of factors include those within 'An Approach to Landscape Character Assessment, 'Natural England (October 2014) - Table 1: Factors likely to be considered at the Desk Study

[3] Analysis and consideration of Value Indicators, as set-out in 'Guidelines for Landscape and Visual Impact Assessment, Third Edition', LI & IEMA (2013)- Box 5.1: Range of factors that can help in the identification of valued landscapes

- Industrial and Commercial properties predominantly of grey or white. A variety of styles of units, including single storey to the north with an increase in height within the southern section to a maximum height of 14 storeys;
- Individual trees, small clumps and areas of woodland within Adastral Park soften the developed landscape;
- Enclosed landscape, the combination of built development and vegetation cover restricts views of the wider landscape, with views over the site limited to the periphery;
- High security fence running along the boundary forms a defined boundary to the character area; and
- The BT Orion Building and Pegasus Tower is prominent in views from the surrounding landscape and is a local landmark.

Local Landscape Character Type B – Residential

- Gently sloping landform;
- Residential development arranged in informal blocks;
- Development includes a mixed housing stock to include bungalows, terraces and semi and detached dwellings. Materials include both bricks and render;
- Development located along cul-de-sacs via access of Eagle Way which forms a loop road off the A12;
- Clipped hedgerows, closed board fencing and brick walls define property boundaries;
- Mature woodland crosses the area, linking with the A12 to the east and an area of access land to the west, providing a treed backdrop and structure to the southern section of the LLCT; and
- The relatively flat landform, informal layout of development and woodland both within and to the boundary of the LLCT soften the appearance.

Local Landscape Character Type C – Wooded Arable Farmland

- Flat landscape of light loams and sandy earths;
- Large scale rectilinear field pattern;
- Network of tree belts and coverts;
- Large areas of enclosed former heathland;
- 18th- 19th & 20th century landscape parks;
- Clustered villages with a scattering of farmsteads around them;
- Former airfields;
- Vernacular architecture is often 19th century estate type of brick and tile;
- There is scattered woodland cover, mostly in the form of rectangular plantations and coverts;
- Strong sense of isolation resulting from nucleated settlement, open heath and extensive plantation woodland; and
- Settlement comprising nucleated villages surrounded by estate farmlands.

Local Landscape Character Type D – Amenity

- Holiday / residential developments;
- Small business units;

- Hardstanding; and
- Well treed boundaries to development.

Local Landscape Character Type E – Mineral Extraction

- Undulating landform;
- Mineral extraction and associated earth workings;
- Acoustic bunding associated with mitigation and earth storage;
- Bare ground with settlement lagoons;
- Partial regeneration of landscape;
- Man-made waterbodies;
- Mature coniferous woodland belts;
- Historic features of interest; and
- Sound testing area.

Site Features

11.5.18 The site consists of a mosaic of different land uses and areas with distinct character. These include areas of agricultural land, gravel and sand extraction, quarry operations and associated infrastructure, as well as areas of restored landscape to include a large central waterbody.

11.5.19 The site has undergone substantial alterations due to the ongoing mineral extraction, during the fieldwork undertaken to inform the assessment a range of activities were observed across the site, these include the following:

- Sand and Gravel Extraction Operations;
- Active Plant;
- Storage and stockpiling with frequent transport movement;
- Frequent haulage activity within the site and along Ipswich Road;
- Compound area to include porta cabins, silos and car parking; and
- Settlement lagoons.

11.5.20 For the purpose of this assessment these activities are referred to as 'Mineral Extraction Operations' within the remainder of the chapter.

11.5.21 The site lies to the immediate south and east of Adastral Park Innovation Centre. The A12 bounds the site to the west, with the Suffolk Coast and Heaths AONB in close proximity to the east.

11.5.22 The site landform has been altered due to the mineral extraction operations which have resulted in a landscape containing large man-made engineered features, of note are the peripheral earth bunds to the north / north-eastern site boundary and the southern and western boundaries.

11.5.23 The site boundary contains mature tree belts with woodland to the east and southern boundaries. A large coniferous tree belt runs adjacent to the southern boundary and heavily screens the site from the wider landscape. Mature woodland defines the majority of the eastern boundary and is associated with existing development to include the Moon and Sixpence Caravan Park and Seven Acre Business Park. This woodland heavily screens the site from the wider landscape to the north and east. These features

along with other tree plantations and woodland located in the wider landscape to the south and south west offer a level of containment and screening to the majority of the site.

11.5.24 The northern and western areas of the site are influenced by the urbanising effects of Adastral Park Innovation Centre, including the dominant monolithic structure of the BT Orion Building and Pegasus Tower and array of large satellite dishes to the western site boundary. The dishes and BT tower are prominent features and focal points in the local landscape.

11.5.25 The site is crossed by two Public Rights of Way, which run north-south from the southern boundary of Adastral Park to Ipswich Road. Further Public Rights of Way run around the periphery of the site and create a circular route that connect with Public Rights of Way within the wider landscape. At present, the majority of the Public Rights of Way are separated from the site by engineered bunds and planting. The bunds heavily screen the majority of the site with elevated views possible from users of a short section of the bridleway which runs adjacent to the southern boundary.

11.5.26 The site is bisected by the BT sound testing strip which runs south easterly from the satellite dishes with a Control Building located at the southern extent. The height of the building results in it being visible from the peripheral boundary rights of way.

11.5.27 To the centre of the site the landform falls to create a shallow valley feature, this landscape has been subject to restoration and includes a large waterbody with mature vegetation established around the periphery.

Landscape Resources

11.5.28 Physical landscape features/receptors within the site that may be directly affected by the development include the following:

- Land use;
- Topography;
- Waterbody;
- Woodland, Tree and vegetation; and
- Relationship with the development edge, settlement pattern and character.

Visual Context and Visual Receptors

11.5.29 Chapter 6 of GLVIA3 sets out how the visual baseline is established. The baseline for visual effects should establish the area in which the proposed development may be visible, those people who may experience views of the development, the viewpoints where they will be affected and the nature of the views at the viewpoints. This section considers these factors, with reference to a number of representative viewpoints from within the local landscape.

Extent of Visibility

11.5.30 In order to determine the extent of the area from which the development has the potential to be seen, GIS and Ordnance Survey Terrain data are modelled to create a topographical plan (Figure 11.3: Topography 10317/P02) and this is followed by the Zone of Theoretical Visibility (ZTV) mapping (Figure 11.4: Zone of Theoretical Visibility

10317/03). The computer generated ZTV is created using base earth OS 3D modelling data and does not take into consideration the screening effect of built form, trees and vegetation and how this may influence the visibility of the site and development upon it. This information provides a starting point for the fieldwork in terms of determining the extent of visibility and the likely receptors. Field verification is essential in determining the extent of the actual visual envelope for the development. The ZTV indicates the potential for development of the site area to a maximum height of 13m would have the potential to be viewed from the surrounding landscape.

11.5.31 As illustrated on Figure 11.5: Visual Context, the site is visually contained within the local landscape by woodland and tree belts to the north and south and the built development at Adastral Park to the west. Within the wider landscape to the east, distant views are limited by intervening hedgerows and trees to field boundaries and along local roads, tree belts and the topography that falls away towards Waldringfield to the east.

11.5.32 The viewpoints chosen to inform the assessment and as agreed with the Council reflect the limited visibility of the site and proposed development within the local landscape. This is due to the predominantly flat topography and screening effect of adjacent development to the west, tree belts, woodland and hedgerows to field boundaries both bounding the site and within the wider landscape. Earthworks and bunding to the site boundaries further limit views into and across the site area from adjacent Public Rights of Way, roads, places of work, residential properties and recreational resources/visitor attractions. Although the eastern boundary is open, longer distance views beyond Newbourne Road are limited by intervening trees and hedgerows, screening views from Public Rights of Way and Waldringfield to the east.

11.5.33 The viewpoint locations have been chosen to be representative of a variety of groups of people (visual receptors), including local workers and residents, users of Public Rights of Way and local roads. The viewpoints also allow for views from a range of orientations and distances to be considered, as well as those from key locations including within the AONB.

11.5.34 In addition to representing a range of visual receptors and key views, the photoviews also illustrate the landscape character of the area and visual context within which the site and key landscape features are experienced. This will allow for a balanced assessment to be made of the likely landscape and visual effects arising from the proposed development.

11.5.35 It should be noted that the proposed viewpoints do not provide an exhaustive record of all areas from which there may be views of the site.

Viewpoints, Visual Receptors and Composition of Views

Viewpoints

11.5.36 The photographs included in this report have been taken using an SLR digital camera using a focal length equivalent to 50mm in accordance with the Landscape Institute Landscape Advice Note 01/11. They are intended to provide an indication of the composition of the view and extent of visibility. It is recognised that such views are best experienced in the field. The photographs were taken during January 2017 in fine

weather with good visibility. The photographs include annotations to describe the extent of visibility from each location and the composition of the views.

The composition of views from these representative viewpoints are illustrated on Figure 11.8: Photoviewpoints 1 – 16 and described below.

Visual Receptors

11.5.37 The groups of people identified as having the potential to be affected by the proposed development are listed below, and are represented by the proposed viewpoints. Views from these locations are illustrated on the Photosheets (Figure 11.8).

Users of Public Footpaths and Bridleways within and bounding the site

- Viewpoints 1 – 3: Users of Public Footpaths passing along the northern site boundary, within the site;
- Viewpoints 12 & 13: Users of Public Footpaths within and crossing the site;
- Viewpoints 14 & 15: Users of Bridleways passing along the southern site boundary, within the site;
- Viewpoints 7 & 16: Users of Bridleways to the south of the site, adjacent to the Stables Café, Brightwell Barns and Sheep Drift Farm; and
- Viewpoints 10 & 11: Users of Bridleways, pavements & Barracks Square alongside the A12 to the west of the site.

Users of Public Rights of Way within the countryside to the east, south and west of the site

- Viewpoints 4 & 5: Users of Public Rights of Way, Ipswich Road, Newbourne Road and views from the AONB to the east of the site;
- Viewpoint 6: Users of Public Footpaths to the south of Newbourne Road, south of the site;
- Viewpoint 8: Users of Public Footpaths to the north of Foxhall Road, west of the site; and
- Viewpoint 9: Users of Public Footpaths and Bridleways south of Brightwell Heath, west of the site.

Motorists using the A12 and local roads (Ipswich Road and Newbourne Road to the south and east of the site)

- Viewpoint 10: Users of the A12 passing the site to the west;
- Viewpoint 7: Users of Ipswich road to the south of the site at the access to Brightwell Barns and Sheep Drift Farm;
- Viewpoint 4: Users of Newbourne Road to the east / south east of the site (glimpsed views); and
- Viewpoint 5: Users of Newbourne Road and Ipswich Road approaching the site from the east.

Residents, Workers and Recreational Visitors

11.5.38 The LVIA will also give consideration within the assessment to the potential effects upon views from neighbouring workplaces, recreational facilities and residential properties overlooking the site and the visual amenity of these groups of people. This will be limited to an assessment made from fieldwork within the public realm, and not

involve visiting private workplaces or properties themselves. Those groups of people to be considered include the following:

- Workers at Adastral Park;
- Workers at Brightwell Barns and business units at Sheep Drift Farm;
- Users of the Waldringfield Golf Club;
- Visitors to the Moon & Sixpence Holiday Park to the north of the site area;
- Residents of properties adjacent to and overlooking the site; and
- Workers at Seven Acre Business Park.

Views from the Public Footpaths and Bridleways within and bounding the site

Public Footpath Martlesham 43

11.5.39 Photoviewpoints 1 and 2 illustrate the views obtained from the footpath adjacent to the northern boundary of the site; from this location views are heavily screened. The landscape is enclosed by the mature tree belts adjacent to the site boundary with the on-site large earth bund forming a dominant focal point. Views are therefore limited to the immediate foreground with views channelled along the boundary rights of way.

11.5.40 The right of way continues along the eastern boundary, with the earth bund and mature vegetation bounding the route creating a sense of isolation from the wider landscape and producing an enclosed landscape which contrasts with the flat landform in the wider landscape.

Public Footpath Waldringfield 6

11.5.41 Views from this Bridleway look across the arable land in the foreground with partial views of the site as illustrated by Photoviewpoint 3. The mature boundary vegetation to the eastern site boundary softens and partially screens views of the wider landscape, however, there are a number of detracting features located within the area, these include the Control building which lies to the south of the sound testing strip being visible in the mid-distance with the BT Orion Building and Pegasus Tower as a highly visible focal point beyond on the horizon. Further features within the landscape include the array of large white satellite dishes which lie adjacent to the southern boundary of Adastral Park.

11.5.42 The mature boundary vegetation to the site filters views of Seven Acres Business Park which lies adjacent to the eastern boundary of the site. Due to the changes to the landform within the site as a result of the mineral extraction, views are limited of the wider site with only glimpsed views possible of the central and western section.

Public Footpath Brightwell 30

11.5.43 The intervening earth bunding and vegetation adjacent to the footpath heavily screen views over the site with users of this route experiencing occasional glimpsed views over the site. Further to the west views are possible over the site, however, due to the landform these are restricted of the wider site as illustrated by Photoviewpoint 12. The

undulating landform and boundary features channel views over the northern section of the site towards the western boundary.

11.5.44 To the north of the site lies Adastral Park which is bound by high security fencing beyond which lies an area containing large satellite dishes to the east and an area of mature woodland to the west, users are heavily influenced by the imposing detracting features in close proximity to the route, this results in the footpath having a distinct urban fringe character. As the landform falls to the west the views of the fencing and development to the north lesson as the landscape becomes more enclosed by the landform and existing vegetation.

Public Footpath Brightwell 9 and 10 diverted

11.5.45 Photoviewpoints 13 illustrate the views obtained from the footpath, there are expansive views over the large central waterbody and associated mature embankment vegetation, with glimpsed views between the embankment vegetation of the operational plant within the active mineral extraction operations. Views from this location are located within the lowest part of the site and therefore wider views of the site are limited by both the landform and the mature vegetation within the restored landscape of the site.

11.5.46 The users of this route would experience enclosed views with rising landform to the east and west, this channels views south towards the wooded southern boundary and north towards Adastral Park, therefore depending on the direction of travel the users experiences views which are distinctly of a transitional urban edge.

Public Footpath Brightwell 11

11.5.47 Users from this footpath have limited views over the site as illustrated by Photoviewpoints 7, 14 and 15. The right of way runs adjacent to the southern boundary, with the majority of the route bound by earth bunds and mature planting to the north and to the south by mature tree belts which creates a buffer landscape between the site and Ipswich Road. Where there are glimpsed views into the site these are transient and of short duration with the undulating landform within the site further limiting views.

11.5.48 Views from the south are glimpsed from gateways as illustrated by Photoviewpoint 14, The views look along the access road to the mineral extraction opertaions with glimpsed views of the operational plant and the eastern section of the site, to include views of the Control Tower to the southern end of the testing strip and the large earth bund to the northern boundary partially visible beyond. The BT Orion Building and Pegasus Tower are visible on the horizon in the mid-distance due to occupying higher ground to the north of the site.

11.5.49 Views further to the west from the right of way junction between Brightwell 11 and 10, as illustrated by Photoviewpoint 15, are restricted by the undulating landform, views are channelled northwards towards Adastral Park and the BT Orion Building and Pegasus Tower which creates a focal point on the horizon, especially given how the development contrasts with the surrounding landscape. Once passed the site boundary the views become heavily restricted, as illustrated by Photoviewpoint 7, by the intervening mature vegetation, large earth bund and the lower lying landform.

Public Footpath Brightwell 12

11.5.50 To the south west views of the site are heavily screened by the continuation of the earth bund and the intervening development associated with Sheep Drift Farm, as illustrated by Photoviewpoint 16. The existing bund encloses the right of way and restricts views across the site. Views along this route are heavily influenced by existing urban features to include the close board fencing to the boundary of the caravan storage area which lies to the north of Sheep Drifts Farm and the BT testing area that lies further to the west. There is a strong horizontal emphasis created by boundary fencing and bunding with vertical features of note being the BT Orion Building and Pegasus Tower to the north and the telecommunication mast to the rear of Sheep Drift Farm.

11.5.51 The right of way continues across the A12 which bounds the western boundary of the site, the large planted earth bund which lies adjacent to the western site boundary limits views into the site, as illustrated by Photoviewpoint 10. The flat landform to the west of the site combined with the intervening mature vegetation and the earth bund enclose the views which are channelled towards the focal point to the north of the BT Orion Building and Pegasus Tower.

11.5.52 A pedestrian footpath runs along the eastern edge of the A12, from here views are heavily screened for the majority of the route with glimpsed transient views possible from a short section to the south of Barack Square, as illustrated by Photoviewpoint 11. The views are framed by the adjacent tree belt and bund, with mid distance views over the north west of the site to include the Bowl Barrow and Pill Box. Further views of the site are limited by the on-site landform.

Views from Public Rights of Way within the countryside to the east, south and west of the site

11.5.53 Users of Public Right of Way Waldringfield 27 which runs south of the site, as illustrated by Photoviewpoints 4 and 5, have views over the flat arable landscape within the foreground with the site in the mid distance. The majority of the site is heavily screened by the mature woodland to the south adjacent to Ipswich Road and the eastern boundary associated with the existing development off Newbourne Road. This vegetation frames views over the eastern section of the site. The array of large white satellite dishes forms a distinct focal point to the north of the site set against a wooded back drop created by Spratts Plantation. There are glimpsed views over the woodland of BT Pegasus Tower and other local detractors consisting of two large wind turbines within the immediate landscape.

11.5.54 As the user travels north views across the site increase as the woodland recedes, the views possible from the footpath adjacent to Ipswich Road are illustrated by Photoviewpoint 5. The viewpoint represents views towards the site from the adjacent Suffolk Coastal and Heaths AONB which lies to the east. Views of the site are compromised by the presence of both Ipswich Road and Newbourne Road with associated road signs and glimpsed views of development of Waldringfield Heath which form distinct urban indicators in the view. Views across the site from this location are partially screened by the mature vegetation to the site boundaries, which frame views of the southern and western section of the site. Notable features within views include the BT Orion Building and Pegasus Tower as a distinct focal point on the horizon.

11.5.55 Photoviewpoint 6 illustrates views from the wider landscape to the south. Users have views across a flat arable landscape with mature vegetated field boundaries. The mature woodland which bounds Ipswich Road to include Foxburrow Plantation forms a distinct feature within the landscape which heavily screens views of the wider landscape to the north. There are glimpsed views of the site possible between the break in the belt of vegetation. The existing operational plant within the mineral extraction area is partially visible with further features within the surrounding landscape being the BT Orion Building and Pegasus tower which can be seen over the woodland belt to the south of Sheep Drift Farm and the two wind turbines to the south of Ipswich Road.

11.5.56 Public Right of Way 5 lies to the south west of the site. From this route views towards the site are heavily screened by the mature woodland within the locality, as illustrated by Photoviewpoint 8. The linear woodland belt that lies to the south of Martlesham Heath, the mature woodland belt to the south Sheep Drift Farm and the mature tree belt adjacent to Ipswich Road create a layering effect that reads as a continuous belt of vegetation and heavily screens the site. There are notable urban influences in the landscape with glimpsed views of the BT Pegasus Tower, wind turbines to the south of the site and lighting columns associated with the road junction between the A12 and Foxhall Road. **Due to there being no views into the site this receptor is scoped out as this stage.**

11.5.57 Bridleway 6 lies to the west of the site located within a large linear field to the south of Martlesham Heath, Photoviewpoint 9 illustrates views at the junction with Public Right of Way 5. The users of these rights of way have views of the southern boundary of Martlesham Heath residential development with the southern boundary defined by areas of mature woodland and large residential development affronting the wider landscape. The large arable field is bounded to the south by a linear woodland belt, the two features channel views when heading in an easterly direction along the right of way, towards the western site boundary. The BT Orion Building and Pegasus Tower are visible over the existing residential development with the A12 transport corridor, existing road side planting and earth bund to the western boundary of the site visible in the mid distance. The combination of these features heavily influences the nature of the view and heavily screens views of the site.

Views from Motorists using the A12 and local roads (Ipswich Road and Newbourne Road to the south and east of the site)

A12

11.5.58 Although the focus of road users travelling along the A12 is along the north-south axis, the existing built development of Adastral Park screens views into the site when approaching form the north. The mature woodland and development to the south around Sheep Drifts Farm screens views into the site when approaching from the south.

11.5.59 Views towards the western boundary of the site are therefore only possible for a short duration of approximately 400m. However, the planted earth bund to the western boundary heavily screens views into the site, as illustrated by Photoviewpoint 10. The scale and mass of BT Orion Building and Pegasus Tower within the locality forms an imposing backdrop to the site.

Ipswich Road

11.5.60 Views from Ipswich Road are limited by the mature vegetation and the local topography which screens views over the site. Where views of the site are possible it is through breaks in the vegetation cover and earth bunds. As illustrated by Photoviewpoints 7 and 14, these are glimpsed for a brief period due to the speed of travel. Further to the east the mature woodland and bunding to the southern site boundary stops and there are wider views possible across the site, as illustrated by Photoviewpoint 5.

11.5.61 Views over the site are only possible for a short section approximately 300m to the east of Ipswich Road. Views over the site are limited when heading in an easterly direction with the most direct views into the site possible when driving in a westerly direction from the junction between Newbourne Road and Ipswich Road as illustrated by Photoviewpoint 5. Views into the site are further limited by the mature woodland associated with development located to the eastern site boundary at Waldringfield Heath which restricts views over the northern part of the site. The flat landform and the mature vegetation to the site boundary result in framed views of the southern part of the site with the majority of the site screened due to it being located on lower landform.

Newbourne Road

11.5.62 Views from the majority of Newbourne Road are heavily screened by the existing development and mature vegetation to the east of the site. Views towards the site are filtered / partial views towards the site between trees and gappy lengths of hedgerow for a short duration of approximately 265m. As Newbourne Road continues south into the wider landscape the mature hedgerow adjacent to the western edge, which is visible in Photoviewpoint 4, heavily screens views towards the site.

11.5.63 Due to the framing of views and mature vegetation within close proximity, the composition of views over the site and the degree of the site seen within them alters as the viewer moves along the road. Existing development present in these views includes BT Orion Building and Pegasus Tower, the Control Building located at the end of the testing strip, onsite operational plant, and the array of satellite dishes.

Views from Residents, Workers and Recreational Visitors

Workers at Adastral Park

11.5.64 Users of Adastral Park Innovation Centre will experience a range of views, due to the varied boundary treatment and location on higher landform. The workers overlooking the site include the following; people with access to the woodland for recreation and views from buildings and car parks adjacent to the western section of the northern boundary. The mature woodland vegetation and development within the south of Adastral Park would heavily filter and screen possible views of the site from users located further to the north.

11.5.65 Where possible, views would be over the north of the site, with the rough grassland to the north west visible from the lower floor users of the BT buildings adjacent to the boundary. However, the views from users of the upper floors of the BT Orion Building and Pegasus Tower would have expansive views over the site and the wider landscape to the south.

Workers at Brightwell Barns and business units at Sheep Drift Farm

11.5.66 Views from Brightwell Barns are heavily screened from the ground floors by the intervening earth bunds to the site boundary, as illustrated by Photoviewpoint 7. Views

are possible form the first floor of buildings which back onto the site. Workers on the first floor would have views into the site.

Users of the Waldringfield Golf Club

11.5.67 Due to the intervening vegetation and development along Newbourne Road, views of the site are limited to the south western corner of the golf course. Users have glimpsed views of the south eastern corner of the site, as illustrated by Photoviewpoint 5.

Visitors to the Moon & Sixpence Holiday Park

11.5.68 Users of the Moon and Sixpence Holiday Park have heavily filtered views towards the site, illustrated by Photoviewpoint 2. The mature tree belt and understorey vegetation adjacent to the eastern boundary heavily filters views into the site with the large internal earth bund restricting views of the wider site.

Residents of properties adjacent to and overlooking the site

11.5.69 Views adjacent to the western boundary include residents of Martlesham Heath. The eastern boundary of the development is bounded by mature trees and vegetation which are to mitigate the effects of the adjacent A12 transport corridor, and heavily screen views of the site beyond. Further screening of the site provided by the planted earth bund adjacent to the western boundary, as illustrated by Photoviewpoint 10.

Workers at Seven Acres Business Park

11.5.70 Workers at Seven Acres Business Park have limited views into the site. The intervening mature vegetation to the west located within the Moon and Sixpence heavily screens views, with partial views of the site possible to the south. As illustrated by Photoviewpoint 3, wider views of the site are limited by further mature vegetation to the south.

Suffolk Coast and Heaths Area of Outstanding Natural Beauty

11.5.71 The AONB lies to the east of the site, approximately 90m to the east at the closest point. The landscape between the site and the AONB boundary is defined by an area comprising Waldringfield Heath, Seven Acre Business Park and the Moon and Sixpence Holiday Park, the area includes a substantial amount of mature vegetation, of note are the mature tree belts that lie adjacent to the eastern site boundary. The combination of intervening existing development and mature vegetation located between the site and the AONB limits the intervisibility. Where views are possible it is only for a short section to the south east of the site, from along Newbourne Road and the junction with Ipswich Road. These views are as illustrated by Photoviewpoint 5.

11.5.72 Views over the majority of the site from this location are heavily screened by the mature vegetation that lies adjacent to the north of Ipswich Road and the mature vegetation to the southern boundary of properties within Waldringfield Heath. This results in framed views over the southern section of the site possible from a short section of approximately 265m. Views further to the south are heavily screened by the mature hedgerow to the western edge of Newbourne Road, as illustrated by Photoviewpoint 4.

11.5.73 The flat arable landscape in the foreground of the view lies on gently rolling landform, within the site there is a small earth bund located to the south and the landform to the

centre of the site falls towards the large waterbody located to the north, therefore as a result of the onsite mineral extraction operations the majority of the site is not visible. There are notable features within the surrounding landscape, to include the BT Orion Building and Pegasus Tower that is situated to the north of the site on higher ground forming a distinct focal point. There are glimpsed views on the silos associated with the mineral extraction operations.

11.5.74 Overall it is considered that the combination of onsite and offsite landscape features and surrounding landform results in the site being heavily contained from the surrounding landscape, both physically and visually. This limits the number of people who may see the development and the extent of impacts on their visual amenity.

11.5.75 Beyond views obtained from land adjacent to the site, views from the wider countryside are limited to those obtained from the southeast where there are views across the open arable fields towards the northern site area.

Night Time Visual Context

Assessment of Night Time Visual Effects

11.5.76 The assessment considers the lighting associated with the proposals in terms of the type of lighting, its situation, purpose and the mitigation measures that have been incorporated into the lighting strategy to minimise light pollution.

11.5.77 This takes the form of a qualitative assessment of the visual effects based on a judgement against the baseline conditions. This is an approach supported by GLVIA3, which states at paragraph 6.12:

"Quantitative assessment of illumination levels, and incorporation into models relevant to visual effects assessment, will require input from lighting engineers, but the visual effects assessment will also need to include qualitative assessments of the effects of the predicted light levels on night-time visibility."

11.5.78 The night time assessment is informed by a review of the existing night time context as illustrated by the baseline photography.

11.5.79 In order to consider the night time baseline panoramic photographs were undertaken on March 7 2017 from viewpoints 5, 6 and 10. This was shot with a Canon 5D mkiii (21.4mp) using a 50mm prime lens (f/1.4), a manfrotto panoramic tripod head, and digital meter and level. The location was recorded using a hand held GPS (EGNOS/GLONASS) +/- 2m). The camera was in portrait orientation and rotated by 15 degree increments to record a 180 degree panorama. Shooting was at ISO 100@f8 with an exposure time of around 30 seconds. Processing was done in RAW data where white balance and exposure were corrected and the shots stitched into a cylindrically projected panorama.

11.5.80 The locations of the viewpoints which form the basis of this assessment are illustrated on a series of photosheets in Figure 11.8. The photographs include annotations to describe the extent of visibility and composition of the views.

11.6 Predicted impacts

Introduction

11.6.1 The application is made in outline only and therefore the description below deals with parameters rather than specific details. The following sets out the changes (impacts) that are predicted to occur as a result of the proposals which relate to the landscape and visual context.

11.6.2 The GLVIA 3 recognises the importance of the judgement of the professional undertaking the assessment of effects in determining the likely significance of effects. To overcome the potential problems associated with the over-reliance on matrices and tabular summaries of effects that have typically been used in the past there is a greater emphasis on the need for narrative text describing the landscape and visual effects of a proposed development and the judgements made on their significance.

11.6.3 To provide transparency as to the judgements made in this assessment the following text explains how the nature of the landscape and visual receptors (identified in the Baseline Conditions section) and nature of the change are considered in the overall judgement of the likely significance of the effects.

11.6.4 Whilst the emphasis is on the use of descriptive text within the assessment, the Sensitivity and Magnitude of Change criteria set-out in the tables at Appendix H1 are referenced where to necessary to explain a judgement clearly, for example where there may be several criteria being considered for a single receptor.

11.6.5 For the purposes of this assessment, significant effects are those which are assessed as being **High.**

Classification of Resources: Landscape Sensitivity

11.6.6 The threshold and terminology referred to in this section is set out at Appendix H1 The classification of sensitivity of the landscape character and landscape resource is related to:

- The susceptibility of the landscape;
- The type of change proposed; and
- The value placed on the landscape.

Landscape Susceptibility

11.6.7 Susceptibility is the ability of the landscape to accommodate the proposed development without undue consequences for the maintenance of the baseline situation.

11.6.8 As set-out in more detail within Chapter 2 of this ES and examined within the Design and Access Statement prepared to support the planning application, the proposals have been designed in order to respond to the landscape and visual context and minimise adverse effects. A fundamental part of the proposals is the retention of the central area of the site to include the existing established lake and surrounding mature vegetation as a Waterside/ Heathland Park. This will include areas of Public Open Space and Suitable Alternative Natural Green Space (SANGS) to include outdoor equipped playgrounds and casual or informal play. With the focus of the area to create a green corridor through the site, connecting to the existing GI in the wider landscape and to remain free from development. There are also opportunities to strengthen some landscape features and the structure of the landscape as part of the proposals, including the planting of

woodland and trees, management of hedgerows and retention and protection of existing trees within and bounding the site.

11.6.9 The classification of susceptibility to change is set-out at Appendix H1, which provides an indication of the thresholds of High, Medium, and Low susceptibility.

11.6.10 Residential development within the site area to comprise a range of 2 to 4 storey houses up to a maximum height of 18m for key buildings would be consistent with the character and pattern of existing development within this location. By the setting back development from the site boundary and maintaining a large central area as a green corridor, and appropriate landscape treatments to the site boundary, the proposed development would be located in a landscape that would reflect the existing settlement pattern of housing development within the local area to include Waldringfield to the east and Martlesham Heath to the west. The existing woodland and tree belts to the site boundary (both existing and proposed) will contain development and maintain the enclosure that is currently present.

11.6.11 Whilst development across the site area will extend the settlement to the east and south along Ipswich Road and the A12 respectively, the area is contained in the wider landscape by development at Adastral Park to the north, Moon and Sixpence Holiday Park and Seven Acre Business Park to the east and development associated with Sheep Drift Farm to the south west. Further screening of the site is created by the peripheral earth bunds, hedges, trees and woodland of the site, with the mature coniferous tree belt to the southern boundary along Ipswich Road. Through strengthening the boundary vegetation with additional woodland and tree and hedgerow planting, development within the site will be further contained and will present a soft edge to the settlement. Setting back of development from Ipswich Road and enhancement of the existing roadside hedgerow with hedgerow trees will provide a soft transition and continuation of the treed skyline that is a characteristic of development to the south and south east.

11.6.12 Considering the above, the landscape is assessed as having a **Medium** susceptibility to the change proposed. This reflects the overall consistency with the prevailing character and pattern of the landscape and townscape within the local area, whilst acknowledging that some mitigation measures are required in order to enhance the assimilation into the landscape.

Landscape Value

11.6.13 Whilst the site is situated within close proximity to the AONB, it is not the subject of any statutory designation or local landscape policy which is based on condition or quality criteria. As set-out at paragraph 113 of the NPPF, there is a need to protect valued landscapes, whilst ensuring that protection is commensurate with their importance. As there is no definition of what constitutes a valued landscape contained in the NPPF, it is necessary to ascertain how the local landscape within which the site is situated may be valued based upon considered site specific analysis.

11.6.14 However, GLVIA 3, paragraph 5.26 makes clear that:

"The fact that an area of landscape is not designated either nationally or locally does not mean that it does not have any value".

11.6.15 Having 'value' and being a 'valued landscape' are not inter-changeable terms. A landscape may have a degree of local value but that does not equate to possessing value sufficient to reach and surpass the necessary threshold to be 'valued' by a particular community at either a local or national scale.

11.6.16 A number of recent Appeal decisions and High Court Judgements have considered the issue of landscape value and it has been the case through these Appeals that, in order for a landscape to be considered 'of Value' it needs to be more than ordinary. In an Appeal Decision relating to Land south of Knightcott Road, Banwell, Somerset (13th October 2016)[4] Inspector Pope states, at paragraph 47 that:

"There is no definition of "valued landscape" within the Framework. However, following the Judgement in Stroud District Council v SoS CLG and Gladman Developments Limited [2015] EWHC 488 (Admin) the site must possess demonstrable physical attributes which would take it beyond mere countryside".

11.6.17 In an Appeal Decision relating to Land off Nethercote Road, Tackley, Oxfordshire (14th November 2016) Inspector Ridge acknowledged the importance of understanding whether a site is part of a valued landscape and the role of a site within a wider setting and the contribution which a site makes to that wider setting at paragraph 27 that:

"It is the quality of the landscape of which the appeal site forms part and the contribution which the appeal site makes as an integral part of that landscape which takes it out of the ordinary and leads me to conclude that it is part of a valued landscape."

11.6.18 He then goes on to undertake an analysis of the Value Indictors as set-out in the GLVIA3, Box 5.1, stating at paragraphs 48 and 49 that:

"In considering the physical attributes of the site my attention has been drawn to Landscape Institute's 'Guidelines for Landscape and Visual Impact Assessment' (GLVIA) third edition. This does not comprise planning policy or Government guidance but it can assist in identifying valued landscapes. It has been referred to by both main parties within their landscape assessments.

For undesignated landscapes, GLVIA advises that the start point in establishing its value would be landscape character assessments and associated planning policies and/or strategies and guidelines which could give an indication of particularly valued aspects of the landscape. I also note from GLVIA that a strategy of landscape conservation is usually a good indicator of this. A range of factors are set out in GLVIA to help identify valued landscapes."

11.6.19 In order to ascertain whether the landscape of the site is valued, the GLVIA3 approach has been adopted within this LVIA. The assessment has drawn upon the detailed analysis of the Value Indicators as set-out in the tables for each of the Local Landscape Character Areas Assessed at Appendix H5 a summary of the value assessment for the site and the surrounding landscape is set-out below.

11.6.20 In an Appeal Decision relating to Land off Nethercote Road, Tackley, Oxfordshire (14th November 2016) Inspector Ridge acknowledged the importance of understanding the

[4] Appeal Ref: APP/D0121/W/15/3138816

value of the wider setting and the contribution that a site makes to that wider setting. This includes having regard to the quality of the wider landscape, and the contribution that the site makes to this. In the case of Tackley, the Inspector identified that:

"It is the quality of the landscape of which the appeal site forms part and the contribution which the appeal site makes as an integral part of that landscape which takes it out of the ordinary and leads me to conclude that it is part of a valued landscape."

11.6.21 It is therefore necessary to understand how the site relates to the wider landscape setting and the contribution that it makes as part of that landscape when identifying value. A summary of the value assessment for the site and the surrounding landscape is set-out below.

11.6.22 In considering the value of the landscape the following aspects of the landscape are noted5 as relevant in the assessment process:

*"**Landscape Quality (condition)**: A measure of the physical state of the landscape. It may include the extent to which typical character is represented in individual areas, the intactness of the landscape and the condition of individual elements;*

***Scenic Quality**: The term used to describe landscapes which appeal to the senses (primarily but not wholly the visual senses);*

***Rarity**: The presence of rare features and elements in the landscape or the presence of a rare Landscape Character Type;*

***Representativeness**: Whether the landscape contains a particular, and/or features and elements, which are considered particularly important examples;*

***Conservation Interests**: The presence of features of wildlife, earth science or archaeological or historical and cultural interest can add to the value of a landscape as well as having value in their own right;*

***Recreation Value**: Evidence that the landscape is valued for recreational activity where experience of the landscape is important;*

***Perceptual aspects**: A landscape may be valued for its perceptual qualities and/or tranquillity;*

***Association**s: Some landscapes are associated with particular people, such as artists or writers, or event in history that contribute to perceptions of natural beauty of the area."*

11.6.23 For each of these considerations there is a range from '**Good**' through '**Ordinary**' to '**Poor**' in terms of the landscape performance against these criteria. In the table below these issues are considered in relation to the site, with reference to the detailed landscape assessment undertaken by Tyler Grange.

11.6.24 The Appendix H8 considers the landscape value of the local landscape character types and evaluates them against the criteria as outlined in Appendix H1.

11.6.25 In the case of site, the area does not relate to the typical character of the wider landscape, due to the mineral extraction operations and relationship with the industrial / commercial development at Adastral Park.

[5] GLVIA 3, Box 5.1, Page 84

11.6.26 Having considered the key elements related to value, the site is generally assessed as being **Ordinary**. This is especially the case for the physical attributes of the landscape which are those that have been cited in Appeal decisions and Judgements relating to the value of the landscape.

11.6.27 Although in respect to recreation the area is of **Good** value, it is **Ordinary** to **Poor** in all other physical attributes. This is due to the degraded landscape character and features associated with the mineral extraction operations with limited arable landscape. Detractors which also limit the value of the landscape, include the situation of the site adjacent to the built edge of Adastral Park, A12, Seven Acre Business Park, Brightwell Barns and Sheep Drifts Farm and associated development.

11.6.28 For the purposes of ascertaining whether the area is valued or not, this places the overall site area as **Ordinary** and of local importance. It is therefore not 'valued' in relation to the provision of paragraph 109 of the NPPF, and as considered in various Appeal Decisions and Judgements.

Visual Sensitivity

11.6.29 The table below identifies the sensitivity of visual receptors to having the potential to experience change to views and / or impacts upon visual amenity arising from the proposed development.

11.6.30 As with the landscape character and resource (Table 11.2), this includes a review of the associated value and susceptibility. The susceptibility of the visual receptors is considered in relation to the proposed development in order to provide a focussed assessment. The assessment has been informed by the sensitivity criteria included at Appendix H1.

Table 11.2 Visual Receptors - Sensitivity

Visual Receptor	Susceptibility	Value	Sensitivity
Users of Public Footpaths and Bridleways within the Site			
Users of Public Footpaths passing along the northern site boundary, within the site. **Viewpoints 1 – 3**	**Medium** The proposals will remove the large earth bund to the site boundary, this will be replaced with residential development. Views will be of active frontages partially filtered by new tree and shrub planting within the proposed GI infrastructure.	**There are no recognised views or vantage points shown on maps from these locations, views are therefore of limited value**	**Medium** Users of Public Right of Way
Users of Public Footpaths within and crossing the site. **Viewpoints 12 & 13**	**Medium** The proposals will introduce residential development to the west. The large	**There are no recognised views or vantage points shown on maps from these locations, views are therefore of limited**	**Medium** Users of Public Right of Way

	centre waterbody retained and enhanced with additional planting, which will filter views of development located to the east and south of the waterbody.	**value**	
Users of Bridleways passing along the southern site boundary, within the site. **Viewpoints 14 & 15**	**Medium - High** The proposals introduce development to the north of the right of way. The bunding and associated vegetation adjacent to the right of way will be removed and replaced with views of formal recreation in the foreground with a backdrop of development form **Viewpoint 14**. There would be filtered views of development located on the higher ground with the valley feature retained within the central green corridor **Viewpoint 15**	**There are no recognised views or vantage points shown on maps from these locations, views are therefore of limited value**	**Medium** Users of Public Right of Way
Users of Bridleways to the south of the site, adjacent to the Stables Café, Brightwell Barns and Sheep Drift Farm. **Viewpoints 7 & 16**	**Medium** The proposals will remove the earth bunding to the site boundary. Development will be located in close proximity which will screen views of the wider the site.	**There are no recognised views or vantage points shown on maps from these locations, views are therefore of limited value**	**Medium** Users of Public Right of Way
Users of Bridleways, pavements & Barracks Square alongside the A12 to the west of the site. **Viewpoints 10 & 11**	**Low** The earth bund to the western boundary will be reduced to around 2m with a 3m high acoustic barrier located along the length, this will screen views of the wider landscape. **Viewpoints 10**	**There are no recognised views or vantage points shown on maps from these locations, views are therefore of limited value**	**Low - Medium** Users of the roadside Pavement

	Medium Development will be located in the north western section of the site and screen further views of the site. **Viewpoints 11**		
Users of Public Rights of Way within the countryside to the east, south and west of the site			
Users of Public Rights of Way, Ipswich Road, Newbourne Road and views from the AONB to the east of the site. **Viewpoints 4 & 5**	**Low** Development to the south eastern corner of the site will be lower density and height. Tree and shrub planting to the area of GI along the site boundary will filter/soften views of the development edge from the wider landscape.	**There are no recognised views or vantage points shown on maps from these locations, views are therefore of limited value**	**High** Users of Public Right of Way
Users of Public Footpaths to the south of Newbourne Road, south of the site. **Viewpoint 6**	**Low** Development within the centre of the site is glimpsed through the mature vegetation to the southern boundary.	**There are no recognised views or vantage points shown on maps from these locations, views are therefore of limited value**	**High** Users of Public Right of Way
Users of Public Footpaths and Bridleways south of Martlesham Heath, west of the site. **Viewpoint 9**	**Low** The existing earth bund adjacent to the western boundary will be replaced with a 2m high bund with 3m acoustic barrier. This will screen views of the wider site with glimpsed rooftop views possible.	**There are no recognised views or vantage points shown on maps from these locations, views are therefore of limited value**	**High** Users of Public Right of Way
Motorists using the A12 and local roads (Ipswich Road and Newbourne Road to the south and east of the site)			
Users of the A12 passing the site to the west. **Viewpoint 10**	**Low** Development to the western boundary will be heavily screened for the majority of the road by the bund and acoustic barrier which replaces the earth bund. There will be	**N/A** No specific value attached to views from these locations	**Low**

	glimpsed views into the development from the new access.		
Users of Ipswich road to the south of the site at the access to Brightwell Barns and Sheep Drift Farm. **Viewpoint 7**	**Medium** The peripheral bund will be removed and replace with views of the new development adjacent to the southern boundary	**N/A** No specific value attached to views from these locations	**Medium** Users of a Country Lane
Users of Newbourne Road to the east / south east of the site (glimpsed views). **Viewpoint 4**	**Low** Development to the south eastern corner will be filtered/softened by the proposed planting within the area of GI to the site boundary. Further views of the site will be screened	**N/A** No specific value attached to views from these locations	**Medium** Users of a Country Lane
Residents, Workers and Recreational Visitors			
Workers at Adastral Park	**Medium - High** Views of development adjacent to the north western boundary with more expansive views of the site from the higher storeys will see the site across the wider site and the proposed residential development and GI. Views from the northern boundary will look over an area of heath land and central waterbody with the proposed residential development as a backdrop.	**N/A** No specific value attached to views from these locations	**Medium** Work place
Workers at Brightwell Barns and business units at Sheep Drift Farm	**Medium** The proposals will remove the earth bunding to the site boundary. Development will be located in close proximity which will screen views of the wider the site.	**N/A** No specific value attached to views from these locations	**Medium** Work place
Users of the	**Low**	**N/A**	**Medium**

Waldringfield Golf Club	Development to the south eastern corner will be possible heavily filtered by the proposed planting within the area of GI to the site boundary. Further views of the site will be screened	No specific value attached to views from these locations	Recreational users
Visitors to the Moon & Sixpence Holiday Park to the north of the site area; and	**Medium** The proposals will remove the large earth bund to the site boundary, this will be replaced with residential development. There will be partial to heavily filtered views of the proposed area of GI to the site boundary with new planting which partially filter the back drop of active residential frontages.	**N/A** No specific value attached to views from these locations	**Medium** Work place
Residents of properties adjacent to and overlooking the site	**Low- Medium** Where views are possible of the site, the peripheral area of GI will be viewed which includes new planting which partially filters view of the proposed development beyond.	**N/A** No specific value attached to views from these locations	**High** Residential users

Construction Phase

11.6.31 There will be a number of activities associated with the development of the site during the construction phase. They include the following temporary impacts relevant to the LVIA:

- Excavation and storage of spoil material;
- Lighting of the construction-site, as necessary during the winter months. Subject to a Construction Environmental Management Plan (CEMP) and compliance with appropriate conditions;
- Vehicles associated with the delivery of materials and staff, and movements within the site necessary for moving building materials;
- Fencing of the development site for health and safety purposes and to protect existing vegetation from construction activities;
- Fencing surrounding Public Rights of Way adjacent to the development site, for health and safety purposes;
- Construction of infrastructure and new buildings;

- Construction of new highway access off the A12 and Ipswich Road and associated removal of a length of tree belt to facilitate this new access; and
- Implementation of new landscape proposals incorporating new boundary planting, trees and shrub planting, facilitation of pedestrian routes; setting-out and implementation of the Waterside/ Heathland Park, including surface water/water attenuation provision.

Phasing

11.6.32 The implementation of the development will be phased as shown on the Phasing Plan 31677/08 which is submitted to support this application. Structural landscape planting to boundaries will be implemented as early as possible within each phase. Development of dwellings to the west of the site and phasing of development eastwards over the construction period would allow the new planting to the east of the site to establish and provide a more robust new landscape boundary within the proposed GI on the edges of the development from the outset.

Development Phase

11.6.33 The completed development will result in a number of long term effects. These will be:

- A change in land use across the site area from mixed use; to include mineral extraction, research and development testing and arable fields to residential development with associated infrastructure and Public Open Space;
- New highway access, internal streets, parking and associated pedestrian access;
- Presence of street lighting associated with the development, subject to detailed design;
- Retained and managed hedgerows, trees and woodland within and bounding the site;
- New shrub and tree planting within the development area and along the boundaries;
- Creation of localised attenuation basins, landscape structural planting and play areas will result in focal points and community interests; and
- Creation of a new Waterside / Heathland Park incorporating existing and new tree planting, additional waterbodies, paths, heathland and grassland, biodiversity and habitat enhancement, hibernacula, a trim trail / play equipment, enhanced hedgerows and new woodland planting.

Operation

11.6.34 Upon completion of the development, residual, post mitigation impacts upon the wide landscape will be limited due to the containment of the site and the early implementation of a robust and sensitively designed landscape framework. The proposals incorporate existing tree belt and woodland planting and providing an appropriate new landscaped edge to the east where the site adjoins the wider landscape and faces the AONB.

11.6.35 Site specific landscape impacts will relate to the changes in the land use and land cover of the site. These include those resulting from the provision of substantial new areas of open space and GI, set within the landscape framework and connecting with the surrounding landscape features. It is envisaged that the provision of green corridors and

open spaces incorporating new and existing tree and woodland planting will ensure that the visual impacts of the proposed scheme will be limited. The existing Public Rights of Way (PRoW) will be incorporated into the GI and open spaces within and bounding the site, providing attractive recreation areas that link with the existing rights of way network in the wider landscape. Additional new footpaths and substantial areas of open space are to be incorporated within the development.

11.6.36 New development will be suitably located and be of a height, density and character (materials and design) that reflects the local and distinctive Suffolk vernacular. New areas of accessible open space and GI to include circular walking routes will tie-in with the existing PRoW network which will combine to contain the proposed development from the wider landscape.

11.7 Mitigation

11.7.1 Mitigation Measures are those measures proposed to prevent/avoid, reduce and where possible offset or remedy any significant adverse landscape and visual effects.

Mitigation during Construction

11.7.2 Existing trees and hedgerows that are to be retained within the proposed development will be protected during construction activity. Measures will be implemented to ensure that trees/hedgerows which will not be removed do not suffer direct damage through operations on-site or indirect damage from spillages within the root zone or storage causing root compaction in accordance with BS 5837: .

11.7.3 The implementation of areas of SANG / Public Open Space, drainage attenuation, the Waterside / Heathland Park. Whilst the visual experience will change for those people using the footpaths during the construction phase, the magnitude of change experienced will be temporary. Landscape structural planting both existing and proposed within the open space and along the site boundaries provide landscape structure as early as possible in the life-span of the proposed development. Once established, the robust GI will soften views and reflect the landscape character of the wider landscape.

11.7.4 New planting will be undertaken during the planting season (October to March) where possible. This will ensure systematic implementation of new planting and a means of ensuring the most successful outcome for plant establishment. This will be phased in order to ensure the maturation of strategic structural landscaping as early as possible.

11.7.5 Lighting that is necessary during the winter months of construction will minimise sky glow, light spill and glare. The following mitigation will be delivered through an appropriately worded condition:

- Lighting will only focus on the area needed for construction activity, public amenity and safety;
- Up lighting will be kept to a minimum. Lighting equipment will be chosen to minimise the upward spread of light where possible, minimising the use of lighting columns; and
- To reduce the glare of lighting, the main beam angle will be adjusted so as not to be directed towards potential observers.

Mitigation Incorporated within the Completed Development

11.7.6 The Masterplan has been being designed in order to respond to the landscape context of the site, retaining positive features, including the existing boundary tree belts, on-site waterbody, topographical features, and maximising the opportunity to provide high quality areas of open space and GI as part of a holistic approach to placemaking.

11.7.7 This includes for a range of measures that seek to mitigate adverse impacts associated with the proposals. The proposed development is set back from the site boundaries beyond an enhanced green edge consisting of new hedgerow, hedgerow trees and woodland planting within which all key landscape features and rights of way network are located with, this will result in filtered views of the development edge.

11.7.8 Development to the south east will be set back from the site boundary behind a substantial area of open space which will include structural landscape planting. This edge treatment will provide a soft transition and improved edge between the site and the wider landscape to include the Suffolk Coastal and Heath AONB which lies to the east of the site. The Housing will be limited to 2 storeys at this location and set beyond boundary hedgerows and trees with further landscape planting within the open space beyond, this will reflect the well vegetated settlement boundary treatment found locally within Waldringfield.

11.7.9 The landscape framework will ensure that the eastern boundary adjacent to the AONB provides an appropriate transitional edge that reinforces the characteristics of the local landscape and respects the setting, views to and from the AONB obtained from local footpaths, roads, properties and recreational resources.

11.7.10 The provision of the Waterside Heathland Park and creation of a central green corridor will break up the development mass and scale. Limiting the development to smaller parcels reflecting the existing settlement pattern and retain and enhance the character of the southern edge of Adastral Park and the existing mineral extraction operations.

Mitigation of operational Lighting Impact

11.7.11 The lighting assessment submitted to support this application includes details for the proposed scheme which covers the following;

11.7.12 The lighting scheme will be designed to minimise light pollution, particularly as seen in views from the wider countryside of the AONB to the east and southeast. Floodlighting to sports pitches, tennis courts, car parks and public areas within and around the school and local centre will include measures such as the use of directional lighting, limiting the use of lighting to specified operating hours and implementation of lights that reduce glare and spill.

11.7.13 Where residential streets and areas of open space adjoin the countryside to the east of the site, opportunities for street lighting within this area to use low level bollard lighting and other measures to limit light pollution.

11.7.14 Where development fronts the landscape buffer and green corridor along the northern edge of the site, lighting will be minimised and designed to limit light spill into adjacent unlit / low-lit areas.

11.8 Summary of effects

11.8.1 The sensitivity of the various receptors is set out in Section 11.6 of this report. This section considers the magnitude of change and significance of effects based on the proposed scheme. The terms used, criteria and thresholds for the magnitude of change are included on the tables at Appendix H1. The significance thresholds are set out at Section 11.2 of this report.

11.8.2 As recommended by the professional guidance (GLVIA 3) this report avoids the use of matrices and tables and sets out the assessment in a narrative format. Figure 11.8 Photoviewpoints 1-16 and Figure 11.9 Photomontages 5,6 and 10 have been produced to support the following assessment

Magnitude of Change

Landscape Character

Construction Phase

11.8.3 During the construction phase, the magnitude of temporary change upon the landscape character of the site and its immediate context will be short term **High**, reflecting the degree of change in the context and introduction of elements uncharacteristic in the landscape. These will include the storage of materials, construction activities and building of infrastructure and new houses. These effects would be temporary in nature and would be limited to a localised area.

11.8.4 Construction works will be phased across the site with the development infrastructure and groundworks and laying of pipes associated with the implementation of the drainage, including digging of swales and attenuation basins forming the initial works. The groundworks would be of a short term **Low** magnitude of change, associated with the machinery on the site and work activities. This work will be short in duration and, once completed, the majority of work during the construction phase will relate to lower impact activities relating to planting of new trees, implementation of paths and installation of trim trail equipment.

Permanent Development

11.8.5 Upon completion, the development of the site will result in a **Moderate** magnitude of change to the overall landscape character and context to the site associated with the introduction of new housing and associated infrastructure. The early implementation of structure planting within areas of GI and to the site boundaries will ensure that the new development is set within an establishing landscape structure from the outset. As the planting continues to mature, it will provide a soft edge and transition with the adjacent countryside and AONB, breaking up the views of the development and the residential edge that fronts the wider countryside to the south east.

11.8.6 The proposed phasing of development across the site, as shown on **Phasing Plan 31677/08**, will result in the interface between the development and the AONB which lies to the east to have a minimum of 12 years maturity upon the point of completion, this will, after 15 years substantially soften views of the proposed development at this location, as illustrated on Photomontage 5. This will reflect the existing pattern and character of housing within the locality to include existing development of Waldringfield

within the AONB. Additional hedgerow and tree planting to the site boundaries to include gapping up the boundary tree belt and woodland to the periphery of the site will provide a soft, varied edge, filtering views of housing within the site, as well as adjacent development within Adastral Park as seen from within the wider landscape to the south and east.

11.8.7 Considering the above, over time the maturing planting will absorb the development and provide a positive settlement edge. This will alter the changes associated with the development of housing within the south eastern corner of the site from being **Low** to **Negligible** in nature.

11.8.8 Whilst the planting of trees and woodland both within and to the site boundary will assist in mitigating for the introduction of housing on the site, there are a number of proposals within the site that will provide landscape enhancements. New tree, hedgerow and scrub planting to include areas of grassland and wildflower meadow within the proposed GI will create informal areas of public open space and produce a robust landscape buffer in and around the site, these areas will retain where possible all the existing onsite landscape features and vegetation. This includes the ongoing management and additional planting to the large waterbody and associated restored landscape, with all planting to be undertaken where possible at the earliest opportunity and being subject to a management plan

11.8.9 All of these measures will enhance the landscape structure and introduce characteristic features back into the site. This will result in a **Moderate** magnitude of change through the reinstatement of the landscape within and to the site boundary including, the edge treatment to the south eastern corner. This will produce a soft filtered edge to the development and allow the proposed development to assimilate into the landscape.

Landscape Resources

11.8.10 Physical landscape features/receptors within the site that may be directly affected by the development include the following:

Landform

11.8.11 The site topography has undergone substantial alteration due to the mineral extraction operations. This has resulted in a landform that contrasts with that of the surrounding landscape. The proposals include for the reprofiling of the steep slopes and bunds to a more naturalistic landform which incorporate the existing onsite waterbody and valley feature.

11.8.12 Considering the above, the proposal will result in a **Low** magnitude of change upon this aspect of the landscape. The change relates to creating a more sympathetic landscape which relates to the wider landscape.

Land Use

11.8.13 The landscape within the site is under a range of uses, with a substantial area of land that has been subject to mineral extraction and is therefore bare ground. There are areas that have been restored following mineral extraction that are under rough grassland within the centre of the site to include a large waterbody and valley feature to the south. An area of arable land is located adjacent to the eastern boundary.

11.8.14 The proposed GI within the site will include the existing restored landscape to include the large waterbody and valley feature. These will be incorporated into a large central green corridor. The proposed development and GI across the site will change the land use of the site. However, the existing use as a mineral extraction-site is not reflective of the wider landscape character. The proposed development and nature of the GI taken together, to include retention and enhancement of landscape features, will result in a **Medium** magnitude of change.

Woodland, trees and vegetation

11.8.15 The proposals retain existing mature trees within and bounding the site and include measures to enhance existing onsite vegetation. The tree belt and mature hedgerow to the site boundary will be retained where possible with the exception to facilitate access, tree loss across the site is shown on the tree loss and protection plans included within the arboricultural assessment with occupancies this application. Vegetation cover across. The site will be further enhanced through additional planting within the site wide GI to include establishment of Heathland within the central green corridor and areas of tree planting and hedgerows to the site boundary. The existing mature vegetation to the embankment of the central waterbody will be retained with further tree planting within the central green corridor which runs from Spratts Plantation to the north to the valley feature to the south. This will break up the development and provide a substantial area of green space within the development. This will provide structure and serve to break up and soften the built form.

11.8.16 The proposed planting within the site and to the site boundary, especially the south eastern corner of the site will strengthen the landscape structure. The proposed additional planting to the site boundary will soften the proposed development as it is viewed from the wider landscape and provide a robust GI from completion of the scheme. This is in line with Suffolk Coastal District Local Plan: Core Strategy & Development Management Policies DPD, July 2013 objective 14- GI.

11.8.17 Taken together, the amount of new woodland, tree and vegetation planting associated with the proposals, which is to be laid out to respect and enhance the landscape character of the area, will result in a **Medium** magnitude of change.

Water body

11.8.18 The site contains a large central waterbody which forms a central focal point within the site and is located within an area of previously restored landscape. The waterbody is currently used as a local amenity by a fishing club and forms a backdrop to the right of way network within the site. The proposals locate the waterbody within a substantial area of GI that creates a central green corridor through the site.

11.8.19 Due to the free drainage resulting from the existing ground conditions waterbodies as part of the wider sustainable urban drainage are limited. The retention of the central waterbody will result in a **Neutral** magnitude of change.

Site character

Relationship with the edge, pattern and character

11.8.20 The site includes temporary structures associated with the current mineral extraction operations. These and other utilitarian buildings and structures will be removed prior to the development. Existing buildings and structures of cultural and heritage value, including Scheduled Monuments, will be preserved and sensitively incorporated into the proposals. Heritage Assets and their significance have been considered within the Heritage ES Chapter.

11.8.21 The development proposals have been designed to relate to the onsite landform and features whilst responding to how the development will be viewed from the wider landscape. The development has been sensitively located within a substantial robust GI, located around a large central green corridor to include waterbody and valley feature. There are green links which provide the majority of the site boundary with a landscape buffer. Of note is proposed area of open space and associated boundary native hedgerow and hedgerow tree planting to the south eastern corner which links the site to the wider landscape to the south and east, including the Suffolk Coast and Heaths AONB.

11.8.22 The proposed development has been designed to assimilate with the existing built context. By limiting development to the southern boundary, the development is located within a robust GI which produces a buffer landscape between the site and the immediate receiving landscape. The mitigation planting, including enhancement of the existing on-site vegetation and planting of trees and woodland will provide a varied, soft edge and break-up development from views.

11.8.23 Adastral Park lies adjacent to the northern site boundary. The proposed central green corridor to include the large central waterbody located adjacent to the majority of the boundary will provide a green buffer between Adastral Park and the proposed development within the centre and east of the site. The BT Orion Building and Pegasus Tower within Adastral Park are located in close proximity to the western section of the southern boundary and with development proposed adjacent to the site boundary at this location. The development in this location is proposed to be apartment living surrounded by communal open space which will provide a limited landscape buffer.

11.8.24 Development is set back from the eastern boundary beyond a landscape buffer which is to include tree and hedgerow planting along the length of the eastern boundary. This will produce a filtered settlement edge between the landscape further to the east which includes the Moon and Sixpence Holiday Park and Seven Acre Business Park with allotments and a larger area of open space to include tree and hedgerow planting to the south eastern corner. This will reflect the local landscape character and provide a filtered view of the proposed development similar to the character to that found locally within Waldringfield to the east.

11.8.25 The proposed development to the south of the site is set back from the southern boundary beyond a green buffer with the retention of the majority of the mature woodland belt which lies between the site and Ipswich Road. This will screen the site and maintain the existing site character, where tree belts are lost to facilitate access and development new landscape structural planting will be established. Once mature, the trees will reflect the existing boundary treatment to the southern boundary.

11.8.26 A junction for access into Phase 2 will located to the south the western boundary off the A12. The existing bund to the western boundary will be reduced in height and relocated adjacent to the A12, with an acoustic barrier located along the length. The overall height of this acoustic feature will be similar to that of the existing planted bund. Beyond the peripheral acoustic barrier there is a proposed area of open space, the combination of these two features will result in the proposed development to the west of the site being set back from the boundary.

11.8.27 Considering the above factors, the development will have a localised **Low** magnitude of change on the relationship with the settlement edge, pattern and character to the east of Martlesham Heath. This assessment reflects the fact that, whilst providing residential development across the site, the proposals include mitigation planting that will provide an appropriate settlement edge, reflecting the containment of the site in the local landscape.

Visual Effects

11.8.28 Consideration is given below to the magnitude of change to the views and visual amenity of people within and travelling through the local landscape associated with the proposed development. To be read in conjunction with **Figure 11.9 Photoviewpoints 1-16** and **Figure 11.9 Photomontages 5,6 and 10.**

Construction Phase

11.8.29 During the construction phase, activity on the site, movement of materials and construction traffic will increase movement across the site. However, as the site is currently under active mineral extraction not all these elements are incongruous. A number of elements would increase or be introduced into the landscape, these include scaffolding, fencing, increased machinery and construction workers. Hoarding to site boundaries where appropriate may serve to screen some construction activities, but would result in minimal loss of views across the site as the peripheral bunds currently limit views over the site. The majority of visual receptors assessed are from the existing PRoW network that runs both within and adjacent to the site boundary. Earth bunds are located between the user and the site for the majority of the peripheral routes, these heavily restrict views into the site.

11.8.30 The assessment has assumed that users of these PRoW are passing through the site on their current routes and takes into account the changes experienced from the public footpaths.

Visual Effects – Construction

11.8.31 During the construction phase, short term reversible adverse visual effects will include the following:

- Clearance and set up of compound area;
- New junction arrangements off A12 to the west, Ipswich Road to the south and Gloster Road to the north to facilitate the site access;
- New road infrastructure works;
- Building works; and

- Construction traffic including HGVs and staff cars travelling to and from the site.

11.8.32 All construction works will be carried out in full accordance with best practice procedures to minimise and protect, as far as practicable, potentially adverse effects upon the local vicinity.

11.8.33 The visual effects during construction are assessed as being of a transient nature and non-permanent, this is considered to be of limited significance overall. Inevitably there will be disruption to the site and its immediate surroundings during this phase of works. This would result in the effects being limited to the local area. However, due to the scale of the work are considered to cause a **Major adverse** visual effect upon users of footpaths within and adjacent to the site, residents and workers overlooking the site and users if local roads (12, Ipswich Road and Newbourne Road).

Permanent Development

11.8.34 This section considers the magnitude of change upon completion of the proposals. For the purposes of this assessment, it has been assumed that the structure planting associated with new hedgerow trees, woodland and tree belt planting has reached maturity after approximately 15 years of planting.

11.8.35 The structure planting (trees and woodland) within the GI will be delivered early-on in the construction phase in order to allow the planting to mature and deliver the mitigation and enhancements associated with the planting and use of the existing PRoW network by residents and the local population. Assuming that the structure planting was implemented prior to, or at the beginning of works on-site, this would be in the region of 3-15 years after completion of the construction phase.

Users of Public Footpaths passing along the northern site boundary, within the site (Viewpoints 1 – 3)

11.8.36 Upon completion, the proposals will be seen in context of the existing mature boundary vegetation with glimpsed views of the Moon and Sixpence Holiday Park. The right of way will be set within the peripheral GI forming a substantial landscape buffer which will include tree and hedgerow planting, this will provide a softer edge and transition which currently does not exist (Photoviewpoint 1 and 2). There will be filtered views of the development set back from the right of way which will result in wider views from the PRoW.

11.8.37 Users of the PRoW adjacent to Seven Acres Business Park (Photoviewpoint 3) will have views over proposed allotments in the foreground with the area of open space to include tree and hedgerow planting beyond. The vegetation and features within these areas will filter views of the proposed residential edge and the wider site area.

11.8.38 For these receptors, the proposals would result in a **Moderate** magnitude of change resulting from the introduction of housing development. The composition of the views and elements within the view would change. However, the extent of visibility remains largely unaltered due to the size and scale of the existing earth bund.

Users of Public Footpaths within and crossing the site (Viewpoints 12 & 13)

11.8.39 Enhanced hedgerow and tree planting will filter views from the PRoW's of the proposed development to the west which includes further areas of public open space (Photoviewpoint 12). These views change as the landform becomes enclosed to the south within the valley feature with the development set further back and located on higher ground. The existing open views across the central waterbody will be retained (Photoviewpoint 13) with glimpsed filtered views of proposed development beyond to the east and south of the central green corridor.

11.8.40 On balance the magnitude of change would be **Moderate**. The existing landform will screen the majority of view over the wider site and views of the proposed development will be of the filtered edge against the central green corridor.

Users of Bridleways passing along the southern site boundary, within the site (Viewpoints 14 & 15)

11.8.41 Upon completion, the majority of the development will be heavily screened beyond intervening mature trees and woodland along Ipswich Road, with proposed planting within the peripheral landscape further filtering views of the development edge. Glimpsed views of the site from the existing site entrance (Photoviewpoint 14) will be softened by new boundary planting with filtered views of the development set back beyond a substantial area of formal play in the foreground.

11.8.42 From within the valley feature (Photoviewpoint 15) new trees and hedgerow planting to the development edge set on the higher ground will heavily filter views of the development with the landscape within the valley being enhanced with additional planting and under a structured management plan.

11.8.43 For these receptors, the completed development will result in a **Moderate** magnitude of change.

Users of Bridleways to the south of the site, adjacent to the Stables Café, Brightwell Barns and Sheep Drift Farm (Viewpoints 7 & 16)

11.8.44 Upon completion, the earth bund to the boundary will be removed and there will be filtered views of development set back from the site boundary beyond an area of open space to include new tree and hedgerow planting (Photoviewpoint 7).

11.8.45 The removal of the earth bund will allow views into the site with the proposed area of allotments in the foreground and views of the proposed development beyond to the north (Photoviewpoint 16).

11.8.46 On balance, the proposals will result in a **Low** magnitude of change on these views. The view at present is of a large earth bund, and views will be replaced with areas of allotments and open space which will filter views of the proposed development beyond.

Users of Bridleways, pavements & Barracks Square alongside the A12 to the west of the site (Viewpoints 10 & 11)

11.8.47 The existing bund will be removed and relocated closer to the A12, the new boundary treatment will be formed by an earth bund upon which an acoustic barrier will be located with planting to either side. This will soften both views of the new acoustic barrier and

potential views of developments beyond, as illustrated by Photomontage 10. Views into the site will be possible from the proposed access point to the south. This will be a designed feature entrance. Beyond the peripheral bund an area of open space is proposed which will include further planting with development located further to the east. The combination of the bund and open space will create a substantial buffer between the majority of users along the A12 (Photoviewpoint 10).

11.8.48 The scale and height of development to the western edge will reflect the existing development within Martlesham Heath and will not introduce prominent development on the skyline. Additional planting to the site boundary will break up views towards the new development especially at the proposed junction into the development off the A12 which will provide an improved landscaped edge.

11.8.49 The glimpsed views from the Barracks square into the site will be replaced with views of the new earth bunding and acoustic barrier with associated new vegetation in the foreground (Photoviewpoint 11).

11.8.50 Considering the above from the west of the site, the completed development will result in a **Low** magnitude of change, reflecting the enhancements to the visual setting and complementary scale and form of the proposed development.

Users of Public Rights of Way within the countryside to the east, south and west of the site

Viewpoints 4 & 5: Users of Public Rights of Way 7A, 27 and Bridleway 35 and Ipswich Road, Newbourne Road

11.8.51 Users of PRoW in the wider landscape to the south (Photoviewpoint 4) will have views of low density 2 storey development set beyond an area of open space that includes new tree and hedgerow planting, filtering views of the development edge. The planting will be established at the onset of developments, with the proposed scheme taking 12 years to complete at this location. The planting within this location will have substantially matured by the time the site construction in this area is complete, therefore providing a robust landscape edge from the outset. The views of the wider site will remain heavily screened by the existing mature boundary vegetation with the views of the satellites located to the north of the site being replaced with the residential development edge that is a more characteristic view in the wider landscape, as illustrated on Photomontage 5.

11.8.52 Upon completion of the proposals, users of these rights of way and roads at this location will have views of the proposed open space with associated tree and hedgerow planting in the mid distance with the proposed development set beyond. The landscape structural planting and development to the south east will screen further views into the site (Photomontage 5). The proposed landscape treatment to the development reflects the existing landscape edge to Waldringfield which lies further to the east. The BT Orion Building and Pegasus Tower will still be visible on the skyline. (Photoviewpoint 5)

11.8.53 The proposals will result in a **Low** magnitude of change due to the proposed development not introducing uncharacteristic or incongruent features into the view. The overall composition and dominance of elements within the view will remain. The landscape treatment and design of a suitable development edge with filter views

between both existing and proposed vegetation. The development will not protrude above the wooded skyline which will be reinforced within the view by the proposed landscape planting. Overall from this location the proposed development would be seen as a small part of the wider view experienced by users of the PRoW and roads.

Users of Public Footpaths to the south of Ipswich Road, south of the site

11.8.54 There will be glimpsed views of the development between the mature vegetation to the south of the site (Photoviewpoint 6). The new planting proposed to the southern boundary adjacent to Brightwell Barns will further filter views into the site following maturity with the existing mature tree and woodland planting to the southern site boundary and adjacent to Ipswich Road screening views of the wider development.

11.8.55 The improved landscape structure will provide a robust boundary to the development and provide a filtered edge to the development to users of the footpath in this location. The majority of the proposed housing development located behind the mature reinforced boundary and not appreciably impacting upon views from this location. The magnitude of visual change will be **Low** reflecting the limited views into the site and the level of mature boundary planting and wooded foreground to the view.

Users of Public Footpaths and Bridleways south of Martlesham Heath, west of the site

11.8.56 Upon completion of the proposals, users of the bridleway will have views when travelling in an easterly direction of the new boundary treatment consisting of the reduced bund and acoustic barrier with new landscape planting. This will soften the appearance of the barrier and views of rooftops above the acoustic barrier of the proposed development adjacent to the western boundary (Photoviewpoint 9).

11.8.57 As the users travel towards the western boundary there will be increased views of the proposed site access off the A12 which lies to the south of the western boundary. (Photoviewpoint 10). The proposals will result in a **Low** magnitude of change for users of the Bridleway.

Motorists using the A12 and local roads (Ipswich Road and Newbourne Road to the south and east of the site)

Users of the A12 passing the site to the west

11.8.58 Upon completion of the proposals, users of the A12 will have views of the new acoustic barrier with new landscape planting which will soften the appearance of the barrier. The proposed entrance off the A12 will allow the users glimpsed short distance views into the site of the development adjacent to the site access. There are further views of rooftops above the acoustic barrier of the proposed development adjacent to the western boundary. (Photoviewpoint 10 and photomontage 10). The proposals will result in a **Low** magnitude of change for users of this road as the structure of views from the A12 will remain as existing.

Users of Ipswich Road to the south of the site

11.8.59 Upon completion of the proposals, users of Ipswich Road will have heavily filtered views of the active frontages of the proposed development which are set back beyond the existing mature southern boundary tree belt and area of open space, to include tree and hedgerow planting, for the majority of the route as the road lies on lower lying landform. Glimpsed views of the proposed development through occasional breaks in the mature

boundary vegetation will be possible for a short section with filtered views of development possible from a short section between Brightwell Barns (Photoviewpoint 7) and the proposed new access further to the east. Further glimpsed views are possible at the junction with the existing right of way access (Photoviewpoint 15).

11.8.60 As the road rises to the east and the tree belt thins, filtered views of the proposed informal recreational area will be possible with the development in the mid distance further filtered by intervening vegetation (Photoviewpoint 14). Users of the road adjacent to the south eastern corner will have the most direct views into the site when travelling in a westerly direction. The proposed development to the south eastern corner will be visible set beyond an area of open space to include tree and hedgerow planting which will filter the views of the development.

11.8.61 The proposals will result in a **Low** magnitude of change for users of the section of Ipswich Road which lies in close proximity to the south of the site. Users of Ipswich Road further to the west and east have no views of the site.

Users of Newbourne Road

11.8.62 Upon completion of the proposals, users of Newbourne Road will have views from a short section of the road which runs from Waldringfield Heath south to the junction with Ipswich Road (Photoviewpoint 5). Views further to the south are screened by the existing mature hedgerow (Photoviewpoint 4).

11.8.63 Users of this short section of Newbourne Road will have framed views of the proposed open space to include tree and hedgerow planting to the south eastern corner, and filtered views of the low density development beyond. The proposed vegetation and development within this location will screen further views across the site. The existing mature boundary vegetation adjacent to Ipswich Road and associated with the existing development to the west of Newbourne Road further to the north heavily screen views of the site.

11.8.64 The proposals will result in a **Low** magnitude of change for users of Newbourne Road. Views across the site are limited by the existing mature vegetation and the proposed landscape structure planting to the site boundary within the open space which will provide an improved structure to the landscape and reflect the wider landscape character.

Residents, Workers and Recreational Visitors

Workers at Adastral Park

11.8.65 Upon completion of the development, there will be views directly into the site for users of the BT Orion Building and Pegasus Tower. The views from the lower floors will view development in close proximity to the site boundary set within a communal landscape area. Users of the upper floors will have expansive views across the site with views of the wider development and associated GI to include the large central green corridor. Due to the scale and mass of the BT building and the mature intervening vegetation further views into the site from places of work further to the north are heavily screened. The magnitude of change is **Moderate** for users adjacent to the southern boundary and **Low** to **None** for users further to the north.

Workers at Brightwell Barns and business units at Sheep Drift Farm

11.8.66 Upon completion of the development, the enhanced planting to the southern boundary will filter views of the new development. For those properties with views across the site, these will be lost to the new development. The set back of properties from the boundary respects the visual amenity of the users, and will not result in overlooking or shading issues. The magnitude of change is **Moderate**.

Users of the Waldringfield Golf Club

11.8.67 Upon completion of the development, the new tree and shrub planting to the site boundary and within the proposed open space to the south eastern corner will filter views of the new development beyond. Further views over the south of the site will be lost. For users of the golf course views will only be experienced for a short duration due to the surrounding intervening vegetation and development, with views towards the site partially screened by existing vegetation adjacent to Newbourne Road. Users will have views across the arable land in the foreground towards the site boundary. The proposed boundary treatment with development set back beyond an area of open space will result in a boundary which reflects the surrounding landscape character. The magnitude of change is **Negligible**.

Visitors to the Moon & Sixpence Holiday Park to the north of the site area;

11.8.68 Upon completion of the development, the enhanced planting to the eastern boundary hedgerow will filter views of the new development. For those properties/users with views of the site which are limited by the large peripheral bunding, these will be lost to the new development. The set back of properties from the boundary will increase the views over the site and respect the visual amenity of the user, and will not result in overlooking or shading issues. The magnitude of change is **Low**.

Residents of properties adjacent to and overlooking the site

11.8.69 Upon completion of the development, the enhanced planting to the eastern boundary hedgerow will filter views of the new development. Due to the nature of the existing boundary treatment there are no expansive views from these properties across the site, there are heavily filtered views possible from a single property which is located adjacent to the eastern boundary to the west of Newbourne road. The set back of properties from the boundary respects the visual amenity of the residents of existing properties, and will not result in overlooking or shading issues. The magnitude of change is **Low** to **Neutral**.

Suffolk Coast and Heaths Area of Outstanding Natural Beauty

11.8.70 As outlined within Section 11.4 - Statutory and planning context, the Suffolk Coast and Heaths AONB is supported by a Management Plan. This is a material consideration when determining planning applications. The Management Plan has a role in supporting the Local Plans of various LPAs through the identification of issues, aims, objectives and actions that are relevant to the AONB and can be underpinned by planning policy.

11.8.71 The plan identifies the character that makes up the special qualities of the AONB. Those aims of relevance to landscape character and the situation of the application adjacent to, but outside the AONB, include the following:

- Aim 3: Conserve landscape character and enhance the distinctive nature of the AONB; and
- Aim 7: Retain the tranquillity of the area.

11.8.72 To the east of the site, the AONB is identified within the Management Plan as falling within the 'Estate Sandlands' Landscape Character Type, this comprises large areas of lowland heath, with the western edge including ancient woodlands and historic parklands. Settlements within the Estate Sandlands comprise small villages and scattered estate farms.

Development in the setting of the Suffolk Coast & Heaths Area of Outstanding Natural Beauty, December 2015

11.8.73 The position statement states that the AONB Partnership considers development in the setting of the AONB that would have a significant adverse impact on the natural beauty and special qualities of the area should not be supported. Whether a development affects the natural beauty and special qualities of the AONB will depend on the character, location, scale, material and design. Examples of adverse impacts identified by the position statement include the following:

- *Development not appropriate to the landscape setting of the AONB;*
- *Blocking or interference of views out of the AONB particularly from public viewpoints;*
- *Locating or interference of views of the AONB from public viewpoints outside the AONB;*
- *Loss of tranquillity through the introduction of lighting, noise, or traffic movement;*
- *Introduction of an abrupt change of landscape character; and*
- *Reduction in public access to or within the AONB.*

11.8.74 The development proposals have assessed both the site and the wider landscape character. This has informed the location, scale and massing of the development within the site and the appropriate landscape design. These include mitigation measures adopted to reduce adverse effects arising which will allow the proposed development to assimilate into the receiving landscape.

11.8.75 An area of open space is located to the south eastern corner with tree and hedgerow planting to the site boundary. This will establish a field boundary treatment between the site and the arable land to the south east of the site that is a key character within the local landscape. Proposed tree and shrub planting within the open space combined with the boundary planting will produce a settlement edge that reflects the local precedents such as Waldringfield that lies to the east of the site within the AONB itself.

11.8.76 Upon completion of the development, the new tree and shrub planting to the site boundary and within the proposed open space to the south eastern corner will filter views of the new low density development beyond, further views over the south of the site will be lost.

11.8.77 This is illustrated on the Illustrative Framework Masterplan 31677-08G and Photomontage 5 for users of the golf course views will only be experienced for a short duration with the existing intervening vegetation further filtering views across the arable land in the foreground towards the vegetated site boundary. The proposed boundary treatment with development set back beyond an area of open space will result in a boundary which reflects the surrounding landscape character. The magnitude of change is **Neutral**.

Suffolk Coast and Heaths Area of Outstanding Natural Beauty (AONB): Natural Beauty and Special Qualities Indicators, November 2016

11.8.78 This document was prepared to establish what constitutes the natural beauty and special qualities of the Suffolk Coastal and Heaths AONB, and forms part of the baseline to inform the proposed development at Sizewell. It includes several Natural Beauty and Special Qualities Indicators that cover the whole of the AONB and provides information against which to judge the effects of proposed development on the protected landscape. It also assists in defining and articulating what is characteristic and special about the AONB landscape.

11.8.79 A copy of the document, which includes tables that set-out the various criteria and indicators is contained at Appendix H6 These have been used to inform the assessment of the potential impacts of the proposed development upon the AONB landscape and its setting.

11.8.80 A set of tables that include a commentary for each of the Natural Beauty and Special Quality Indicators and how the site relates to these are included in Appendix H7. As Set out in these tables, the site shares few of the attributes of the Natural Beauty and Special Qualities associated with the Suffolk Coast and Heaths AONB.

11.8.81 The relationship of the site with the adjacent development and built edge of Adastral Park, the local road infrastructure and onsite mineral extraction operations combine to place the site within the developed context.

11.8.82 The tree belts and woodland that enclose and separate the site from the wider landscape and AONB are characteristic features shared with the designated landscape.

11.8.83 The lower density development and soft edge to the southeast of the site fronting the AONB forms a characteristic rural village transition, respecting the setting of the AONB and allowing the retention of views outwards across the AONB from within the development.

Night Time Visual Context

11.8.84 As described earlier, the existing night time context has been recorded at viewpoint 5, 6 and 10 to see how it is effected in relation to existing lighting within the landscape. The assessment was undertaken to evaluate the existing situation and the potential effects arising the development proposals. The assessment has assessed views from the edge of the Suffolk Coast and Heaths AONB (Photoviewpoint 5) , the Special Landscape Area to the south of the site (Photoviewpoint 6) and the A12 adjacent to the western boundary (photoviewpoint 10).

11.8.85 The panoramas afford views across the site and the wider landscape, to include the onsite mineral extraction operations and Adastral Park to the north. The most significant source of artificial lighting in the view is from the plant within the mineral extraction area and the BT Orion Building and Pegasus Tower adjacent to the northern boundary, further notable lighting is from car parking associated with the office buildings within Adastral Park which can be seen in photoview 5 and 10. Due to the limited boundary vegetation to the south eastern corner of the site the spillage and glare is apparent from the onsite mineral extraction operations (Photoviewpoint 5) with further sky glow evident from the a12 (Photoviewpoint 10). The glow over Adastral Park is also apparent in all

the views. Around the site the focus of light source relates to Pegasus Tower within Adastral Park which lies beyond the site. High level street lighting is also evident and forms a distinct feature in the landscape from the junction between the A12, Foxhall Road and Ipswich Road which lies to the south west of the site (Photoviewpoint 6).

11.8.86 The current baseline at the Proposed Site already includes lighting that is in operation 24 hours a day, with the BT Orion Building and Pegasus Tower forming a dominant feature in the landscape at night. Within the existing site area floodlights associated with the extraction-site and the operational plant illuminate large areas of the site. In addition, other sources of lighting within the local landscape are offices, vehicles and street lights. Vehicles are moving around this area 24 hours a day. Adjacent to the Proposed Site, other existing sources include the M12 corridor its junction and vehicles moving along it, together with, the night glow associated with the residential development and Adastral Park further to the north and west.

11.8.87 Considering these factors and given the existing context of artificial light sources within the site and nearby such as the BT Orion Building and Pegasus Tower, A12 corridor, and the existing sky glow from the residential and commercial development further north and west of the site, the magnitude of change has been assessed as being low of change to the existing baseline.

11.9 Significance of Effect

11.9.1 The significance of any landscape and visual effects is a function of the sensitivity of the affected landscape resources and visual receptors against the magnitude of change that they would experience. As appropriate and in accordance with the published guidance, professional judgement is used in the assessment of effects. The following tables set out the conclusions of significance based on the baseline analysis, impacts that would occur once mitigation measures have been included within the development (magnitude of change) and sensitivity of receptors as identified within this assessment.

11.9.2 The baseline includes the Classification of Resources. The consideration of the Magnitude of Change for landscape and visual resources provides a detailed review of matters relating to the sensitivity of the landscape and visual receptors and how the proposed development may affect these. In order to avoid duplication of information and enable the correlation between sensitivity, magnitude of change and significance of effect to be easily understood, the tables below provide a brief summary of key points.

Construction Phase

11.9.3 During the construction phase of the development programme there will be continuous change to the landscape of the site and the views experienced by residents and those moving around the area. It is generally recognised that this is the most disruptive phase of the development.

Landscape Effects

Landscape Character

Table 11.3 Landscape Character Significance of Effects – Construction Phase

Susceptibility to the change proposed	Value	Sensitivity	Magnitude of Change	Significance of Effect
Low Character and pattern of the landscape not reflective of the wider LCA and set within an enclosed landscape.	**Ordinary*** Landscape character typical of mineral extraction-site with limited features. Influence of built edge	**Low**	**Temporary Moderate adverse** Construction activities introducing limited uncharacteristic elements	**Moderate adverse**

*Ordinary value indicates landscape of local importance that is not 'valued' in relation to the provision of paragraph 109 of the NPPF

Landscape Features

11.9.4 The loss of a small area of arable land to the east of the development will occur within the later stages of the construction phase, with land becoming partially lost to development with the remaining area as open space to include new tree, hedgerow and shrub planting.

11.9.5 During the construction phase, both retained vegetation and new tree, shrub and hedgerow planting will be protected. Strategic tree and woodland planting, as well as trees within the site wider GI and to site boundaries will be implemented early-on in the phasing of the construction. There will therefore be an increasingly beneficial effect during the construction phase as the vegetation matures.

11.9.6 The landscape features of the site to include the existing vegetation and the waterbody will be retained with changes to the landform and land use as a result of the proposed development. The landscape will have an increased urban character as development increases across the site, this will replace the former mineral extraction operations landscape with the implementation of planting and establishment of the site wide GI. Overall the significance of the landscape effects during the construction period, on the existing character of the site will be **Moderate Adverse**.

Visual Effects

11.9.7 In respect of the views, the character and composition of the visual experience associated with the local views will include incongruent elements, such as scaffolding and construction vehicles. The views will change on a daily basis. However, the duration of this change in the visual experience during the construction phase is limited and short-term.

11.9.8 Details of the magnitude of change for each of the groups of people who may experience visual change (visual receptors) are set-out above. Overall the significance of the visual effects during the construction period, on views for those people living near to the site and walking along the local PRoW and roads, will be **local** and **Moderate adverse**.

11.9.9 The exceptions to this are users of footpaths to the west of the A12 and motorists on the A12. Due to the limited visibility and / or nature of the receptors the construction activities would be unlikely to result in visual effects of greater than **Minor Adverse** significance.

Night time effects

11.9.10 Whilst construction activities would be limited to normal working hours during winter months this would mean the construction-site would be lit early morning and early evening. However, the mineral extraction operations on-site will be lost which would reduce the level of lighting within the site and lighting within Adastral Park currently is 24 hours a day where units are illuminated, with peripheral roads allowing vehicles to constantly move around the area.

11.9.11 In terms of views from viewpoint 5 adjacent to the Suffolk Coast and Heaths AONB specifically but also more generally there would be a potential decrease on the baseline in lighting in the landscape. Mitigation measures could be introduced to reduce any temporary effect arising from construction activities. There would be an extension of illumination introduced into wider site area.

11.9.12 Overall the night time light levels will be reduced as the existing floodlighting within the site will be lost with lighting associated with construction operational for a reduced period of the day. Having considered the effect of lighting in its current context, and in particular when viewed from the Suffolk Coasts and Heaths AONB; it is considered the effect would result in a **Minor adverse** effect.

Permanent Development

11.9.13 In general terms whilst there will be direct changes to the site itself, such changes will be limited to localised impacts due to the majority of the site being screened from the wider landscape. Views from the existing onsite PRoW's will open up when the peripheral bunds are removed. The new development will be seen in the context of the existing built edge of Martlesham Heath to the west, Adastral Park to the north, the Moon and Sixpence / Seven Acre Business Park to the East and Brightwell Barns and existing development associated with Sheep Drift Farm to the south. There are likely to be glimpsed views from the wider undeveloped agricultural countryside to the south / southeast. The assessment of effect seeks to place these changes into the local context.

11.9.14 The changes will be permanent although the maturation of the landscape mitigation measures will assist with the assimilation of the development over time and reinforce the integration with the existing and current settlement edge. For the purposes of the assessment it is considered that new vegetation will be effective in terms of landscape and visual contribution within 15 years of planting.

Landscape Effects

Landscape Character

Table 11.4 Landscape Character Significance of Effects – Permanent Development

Susceptibility to the change proposed	Value	Sensitivity	Magnitude of Change	Significance of Effect
Low Character and pattern of the landscape not reflective of the wider LCA and set within an enclosed landscape.	**Ordinary*** Landscape character typical of mineral extraction-site with limited features. Influence of built edge	**Low** Land has been subject to substantial human activity and loss of the historic landscape.	**Moderate** The proposals introduce housing that is typical of the area, along with a robust GI to include landscape features that reflect the wider landscape character and enhance the site boundaries	**Moderate adverse**

Landscape Features

Table 11.5 Landscape Features Significance of Effects – Permanent Development

Landscape			
Receptor	**Sensitivity**	**Magnitude of Change**	**Significance of Effect**
Land Form Landscape heavily altered due to the mineral extractions operations	**Low** The site has been subject to substantial human activity through the mineral extraction.	**Medium** The proposals will restore levels across the site with the removal of the engineered peripheral bunds.	**Minor beneficial**
Land Use Ordinary, contrasting landscape character with the wider landscape due to the mineral extractions operations	**Low** The site has been subject to substantial human activity through the mineral extraction.	**Medium** The proposals introduce housing that is typical of the area, along with a robust GI to include landscape features that reflect the wider landscape character and enhance the site boundaries.	**Minor adverse**
Trees and woodland	**Sensitivity**	**Magnitude of Change**	**Significance of Effect**

Features contributing to local character	**High** The existing trees and woodland form a distinct feature in the landscape and screen the site from the wider landscape.	**Medium** Retention of existing trees. New woodland, tree and hedgerow planting both within and to the site boundaries	**Minor beneficial** Retention and Enhancement of landscape structure, features and character
Waterbody	**Sensitivity**	**Magnitude of Change**	**Significance of Effect**
Large central waterbody which provides a focal point, wildlife habitat and local amenity	**High**	**Negligible** The waterbody will be retained within the central green corridor	**Neutral** The lake will be maintained and incorporated within the GI and managed to maintain the existing habitat.
Relationship with the settlement edge, pattern and character	**Sensitivity**	**Magnitude of Change**	**Significance of Effect**
Contained from wider landscape. Need to set back development form the site boundary and limit development to the south, especially the south eastern corner.	**Low** The site is bounded by mature vegetation that contains the site	**Low** Housing set within a robust GI incorporating mitigation planting to provide an improved settlement edge, replacing mineral extraction-site and earth bunds.	**Minor adverse** Introduction of new housing on settlement edge, although not uncharacteristic and providing improved transition with countryside

Visual Effects

11.9.15 Although the proposed development will introduce changes across the site the change in visual composition is in keeping with the edge of settlement location and would not introduce elements that are either incongruous or new. The views over the site are present are heavily restricted by the peripheral earth bunds. These will be removed as part of the landform alterations with the proposed development set back from the site boundary.

11.9.16 The significance of the visual effect for users of PRoW within and adjacent to the site will be **Moderate adverse**. However, the proposals enhance areas of the site which at present containing visual detractors such as high security fencing and earth bunds, especially to the northern boundary.

11.9.17 In views from the south the development seeks to improve and complement the composition of the view by introducing a soft settlement edge to the development and views from the wider landscape.

Table 11.6 Visual Receptors Significance of Effects – Permanent Development

Visual Receptor	Sensitivity	Magnitude of Change	Significance
Users of Public Footpaths passing along the northern site boundary, within the site. **Viewpoints 1 – 3**	**Medium** Users of Rights of Way	**Medium** Development set beyond landscape buffer to include new tree and hedgerow planting providing a soft transition.	**Neutral**
Users of Public Footpaths within and crossing the site. **Viewpoints 12 & 13**	**Medium** Users of Rights of Way	**Moderate** Development set within a substantial landscape buffer to include new tree and hedgerow.	**Neutral**
Users of Bridleways passing along the southern site boundary, within the site. **Viewpoints 14 & 15**	**High** Users of Rights of Way	**Low** Development set beyond landscape buffer to include new tree and hedgerow planting providing a soft transition.	**Moderate Neutral**
Users of Bridleways to the south of the site, adjacent to the Stables Café, Brightwell Barns and Sheep Drift Farm. **Viewpoints 7 & 16**	**High** Users of Rights of Way	**Low** Development seen in context of existing development and set beyond landscape buffer to include new tree and hedgerow planting providing a soft transition.	**Minor Adverse**
Users of Bridleways, pavements & Barracks Square alongside the A12 to the west of the site. **Viewpoints 10 & 11**	**Low - Medium** Users of Rights of Way and pavements	**Low** Development seen in context of existing development and set beyond landscape buffer to include new tree and hedgerow planting providing a soft transition.	**Minor Adverse**
Users of Public Rights of Way within the countryside to the east, south and west of the site			
Users of Public Rights of Way, Ipswich Road, Newbourne Road and views from the AONB to the east of the site. **Viewpoints 4 & 5**	**High** Users of Rights of Way	**Low** Development set beyond landscape buffer which has been established 12years at the point	**Minor Adverse**

		of completion, thereby providing a robust green filtered edge to views of the development.	
Users of Public Footpaths to the south of Ipswich Road, south of the site. **Viewpoint 6**	**High** Users of Rights of Way	**Negligible** Glimpsed views of the development set within a mature robust wooded landscape	**Minor Adverse**
Users of Public Footpaths and Bridleways south of Martlesham Heath, west of the site. **Viewpoint 9**	**High** Users of Rights of Way	**Low** Development located beyond the boundary bund and acoustic barrier with a further are of open space beyond providing a degree of separation.	**Minor Neutral**
Motorists using the A12 and local roads (Ipswich Road and Newbourne Road to the south and east of the site)			
Users of the A12 passing the site to the west. **Viewpoint 10**	**Low** Users of local road with limited views of the site.	**Low** Presence of new road junction and housing not uncharacteristic, with maturing landscape boundary treatment	**Minor Neutral**
Users of Ipswich road to the south of the site at the access to Brightwell Barns and Sheep Drift Farm. **Viewpoint 7**	**Medium** Users of local road with limited views of the site.	**Low - Moderate** Presence of new road junction and housing not uncharacteristic, which are set back from the road beyond the mature woodland belt and area of open space.	**Minor Adverse**
Users of Newbourne Road to the east / south east of the site (glimpsed views). **Viewpoint 4**	**Medium** Users of local road with limited views of the site.	**Low neutral** Development set beyond landscape buffer which has been established 12years at the point of completion, thereby providing a robust green filtered edge to views of the development.	**Minor Adverse**
Residents, Workers and Recreational Visitors			
Workers at Adastral Park	**Low**	**Low to Moderate**	**Minor Adverse**

	Place of work.	**adverse** Views of development adjacent to the north western boundary from the lower floors, with more expansive views of the site from the higher storeys will see the site across the wider site and the proposed residential development and GI.	
Workers at Brightwell Barns and business units at Sheep Drift Farm	**Low** Place of work.	**Low to Moderate adverse** Development seen in context of existing development and set beyond landscape buffer to include new tree and hedgerow planting providing a soft transition.	**Minor Adverse**
Users of the Waldringfield Golf Club	**Low** Recreational users.	**Negligible** Development set beyond landscape buffer which has been established 12 years at the point of completion, thereby providing a robust green filtered edge to views of the development.	**Negligible**
Visitors to the Moon & Sixpence Holiday Park to the north of the site area; and	**Medium** Leisure users	**Low** Development set beyond landscape buffer to include new tree and hedgerow planting providing a soft transition.	**Negligible**
Residents of properties adjacent to and overlooking the site	**High** Residents	**Low** Development set beyond landscape buffer to include new tree and hedgerow planting providing a soft transition.	**Negligible**

Night time effects

11.9.18 The proposed external lighting in relation to night time views and receptors concerns the introduction of a modern lighting strategy to illuminate the Proposed Development and to replace all existing. This would result in the extension of lighting to a wider area.

11.9.19 While the effects of night time lighting would remain in views, improved efficiency, design and siting would assist the potential to ameliorate them against a backdrop of the A12 and adjacent sites to the east and south. Lighting of the Proposed Development including both internal and external lighting would be viewed in this context.

11.9.20 As discussed, the improvements that can be made to the current baseline coupled with design, orientation, directional control, timing and location would serve to reduce light pollution and excessive light spill.

11.9.21 The planning application is Outline only and as such limited detail for a comprehensive lighting strategy is available. Having considered the effect of lighting in its current context, and in particular when viewed from the Suffolk Coasts and Heaths AONB; the measures that will be put in place in detail design, the low adverse magnitude of change is not considered to result in a significant effect on night time visual amenity. The effect would not exceed **Minor adverse**.

Policy

11.9.22 The following text identifies relevant policies with respect to the development proposals and considers compliance or conflict.

National Planning Policy Framework

Designated Landscapes

11.9.23 The site is not situated within or in proximity to any landscapes designated for their landscape value, as defined by the NPPF at Footnote 9 and the weight applied to these by paragraph 113.

Valued Landscapes

11.9.24 As considered within this report, the site does not comprise a 'valued landscape' as defined by the NPPF at paragraph 109. This assessment has been arrived at through detailed consideration of the GLVIA3 Value Indicators and how the site and the local landscape perform in relation to these.

Suffolk Coastal District Local Plan: Core Strategy & Development Management Policies DPD, July 2013

Objective 1 - Sustainability

Strategic Policy SP1 – Sustainable Development

11.9.25 Strategic Policy SP1 seeks to achieve sustainable development, including to conserve and enhance the area's natural, historic and built environment and maintain and enhance a sense of place.

11.9.26 As set-out in this assessment and illustrated on the Strategic Landscape Scheme (**10317-P14**), the proposals have responded to the landscape context of the site and its surroundings. This has been achieved through the limiting of development to the south eastern area and retaining the key landscape features within and the site boundaries which form a substantial area of open space managed as an area of heathland. These areas incorporate enhancements to include new woodland, tree, hedgerow and shrub planting and management for wildlife benefits.

11.9.27 The proposals consider the onsite Scheduled Monument which is to be located within a substantial area open space to the north west of the site within a setting that also relates to, and includes, the other historic feature within the proximity.

Objective 11 – Protecting and Enhancing the Physical Environment

Strategic Policy SP15 – Landscape and Townscape

11.9.28 Strategic Policy SP15 seeks to protect and enhance the various landscape character areas within the district, through opportunities linked to development or through other strategies.

11.9.29 The assessment contained within this chapter has identified and assessed the local landscape character, this has informed the development proposals, with a proposed scheme that is sympathetic to the surrounding receiving landscape to include how the proposals relate to the Suffolk Coast and Heaths AONB which lies to the east of the site. The proposals incorporate development of lower density and scale to be located to the south eastern corner of the site, with views of the development filtered by appropriate landscape planting located within a substantial area of open space. This will produce a soft filtered edge to the development, similar to the existing setting of Waldringfield which lies within the AONB to the east of the site.

Objective 12 - Design

11.9.30 Although there is no specific Strategic Policy relating to design, the DPD considers the design and housing density, citing the use of appropriate development management policies and Supplementary Planning Guidance to ensure that development is of high quality, with local distinctiveness being important in making development fit the place.

11.9.31 In relation to housing density, the DPD states that the Council will adopt a flexible approach to density, with proposals responding to existing distinctive character. It is expected that large scale developments deliver a range of densities.

11.9.32 The proposals for the site include a range of densities with a varying scale and massing of development across the site, the higher density larger scale development is located within the centre of the site with lower mass, scale and density development located adjacent to the eastern and southern site boundaries.

Objective 14 – Green Infrastructure

11.9.33 The importance of GI as an environmental resource and its role in reducing pressure on sensitive high quality landscapes and wildlife areas to reduce recreation pressure upon them is recognised within the DPD and related policies.

11.9.34 The proposed development is located within a substantial and robust GI, which retains the existing site features of value to include the large central waterbody and the mature woodland planting to the site boundaries. The mineral extraction operations has created a landscape that has lost many of the historic landscape features, the proposals look to re-establish area of heath land habitat and increase the tree and shrub cover across the site which will provide a larger and more diverse landscape.

Strategic Policy SP17 – Green Space

11.9.35 This Policy seeks to ensure that communities have access to Green Space that provides heath, community cohesion and a greater understanding of the environment, without detriment to wildlife and landscape character.

11.9.36 As stated above the proposed development within the site is located within a substantial and robust GI. The GI proposals have been designed to offer recreational benefit to the immediate locality, however, the nature and scale of the GI will allow for users from the local area to have an attractive area to visit with improved facilities located within a short distance. The facilities on offer include leisure and sports centres which will reduce the pressure on the higher sensitive quality landscapes within the Suffolk Coast and Heath AONB to the east of the site.

Strategic Policy SP20 – Eastern Ipswich Plan Area

11.9.37 The DPD identifies an allocation of 2,000 new homes on land to the east and south of Adastral Park, including the application-site area. The Council identify the area as having 'positive significant advantages' with the justification for the area including that:

- The development would utilise land that is to be the subject of mineral extraction (some parts already being worked) and consists of gently undulating land that is very much self-contained within the landscape;
- The ability to properly mitigate the impact on the AONB through the provision of strategic landscaping at an early stage of the development and properly plan an appropriate layout and phasing requirements; and
- Access to and impact upon the countryside can be improved through mitigation measures including new open spaces as part of the overall development.

11.9.38 Within Strategic Policy SP20, the strategy for the Martlesham, Newbourne & Waldringfield Area Action Plan includes the following provisions:

- A planned direction of growth eastwards of the A12, to the south and east of Adastral Park;

- Creation of its own distinctive identity with smaller readily distinguishable villages, neighbourhoods and communities within the larger area;
- Provision of advanced planting and landscaping to create new settlement boundaries that blend with the surrounding landscape and contribute to biodiversity and the ecological network; and
- Maximises opportunities to achieve access to greenspace, including the countryside.

11.9.39 The site proposals look to create a distinct character that is located around the mature central waterbody and central green corridor. A green landscape buffer is located to the site boundary to include new tree and shrub planting, this landscape buffer will mitigate the potential adverse impacts of the proposed development on the surrounding landscape.

11.9.40 Considering the above, it is clear that the proposed development is compliant with Policies within the Suffolk Coastal District Local Plan: Core Strategy & Development Management Policies DPD, July 2013 and can demonstrably show that the design of the scheme has responded to the landscape. the proposed development provides a substantial amount of enhancements relating to the provision of the open space, housing development of a scale and nature that responds to the landscape and townscape context, and new tree and woodland planting.

11.10 Conclusion

11.10.1 When considering the landscape and visual effects of development it is important to recognise that any change to a landscape which facilitates open views across the site will result in adverse landscape and visual effects. The extent of the effects and degree of conformance with the local context need to be taken into consideration. In addition, the effects need to be put in the planning balance with all other economic, social and environmental effects of the development.

11.10.2 This LVIA Chapter has undertaken a thorough assessment of the landscape and visual context within which the site is situated, as well as the sensitivities associated with the site and the local area. This has included both desk based study and fieldwork. This baseline work has informed the development proposals in order to ensure that the scheme responds positively to the landscape and visual context and sensitivities.

11.10.3 The site is not situated within a landscape designated for its landscape value. The LVIA includes a detailed assessment of the landscape of the site and its local context. This includes an assessment of a number of landscape factors and value indicators, as set-out at Box 5.1 of the GLVIA3 guidance document. This has been used to demonstrate that the site is of **Ordinary** character in relation to physical attributes and therefore is not a 'valued landscape' as considered at paragraph 109 of the NPPF.

11.10.4 Local Policy requires development to respond to the landscape context, taking into account the Council's published Suffolk Coastal District Core Strategy and DPD and the Landscape East Landscape Character Assessment. This includes the need to respond to, protect and enhance the landscape character, as well as being of an appropriate scale to their immediate surroundings and overall size and character of the settlement, and integrated with the existing form.

11.10.5 The assessment contained within this report has identified the landscape and visual effects associated with the proposed development.

11.10.6 The proposed development has been designed to respond to the existing landscape and built context. Development has been located within the site in order to reflect the existing settlement pattern and that responds to the existing on-site landform and landscape features, whilst considering how the proposed development is received within the wider landscape setting.

11.10.7 New and enhanced boundary planting, including new woodland and tree belts meets the aspirations of the Published Landscape Guidelines for the area and as required by Strategic Policy with the Suffolk Coastal District Local Plan. This will integrate the development into the local landscape, reinforcing the containment of the site within the wider landscape and assisting in providing a soft transition to the countryside and settlement edge.

11.10.8 The provision of a substantial GI both within and to the site boundary will provide a number of landscape benefits, including: the enhancement of the degraded landscape and re-establishing of hedgerow trees, planting of new woodland and management of the Open Space for wildlife benefits. The Heathland Park also provides an open setting to the large waterbody and retains the Public access through the site, as well as providing new routes linking footpaths within the Park.

11.10.9 The proposals have responded to comments received during public consultation and community involvement. This has included additional woodland planting, reduction of building heights to boundaries, provision of trim trail equipment and paths within the GI.

11.10.10 The landscape character of the site and receiving environment has been assessed as 'low' reflecting the contrasting characteristics and features of the site and those found in the wider landscape. Whilst there are more sensitive features and elements within the local landscape, these are not situated on the site. The proposals have taken into consideration the need to respond to sensitivities of the surroundings, in particular the south eastern corner of the site and the interface with the wider landscape and the Suffolk Coast and Heaths AONB to the east.

11.10.11 The proposals have been assessed as having a long-term **Moderate adverse** effect on the landscape character of the site. This is a result of the scale of the proposals which will introduce residential development set within a mature landscape framework. The proposals propose to enhance the degraded aspects of the landscape and provide a wide range of landscape, GI and recreational benefits.

11.10.12 The proposals have been assessed as having a **Minor adverse** effect upon the relationship with the existing settlement edge. The proposals set the existing rights of way within a substantial area of GI and improve the landscape interface. This is a localised impact that is contained from the wider landscape.

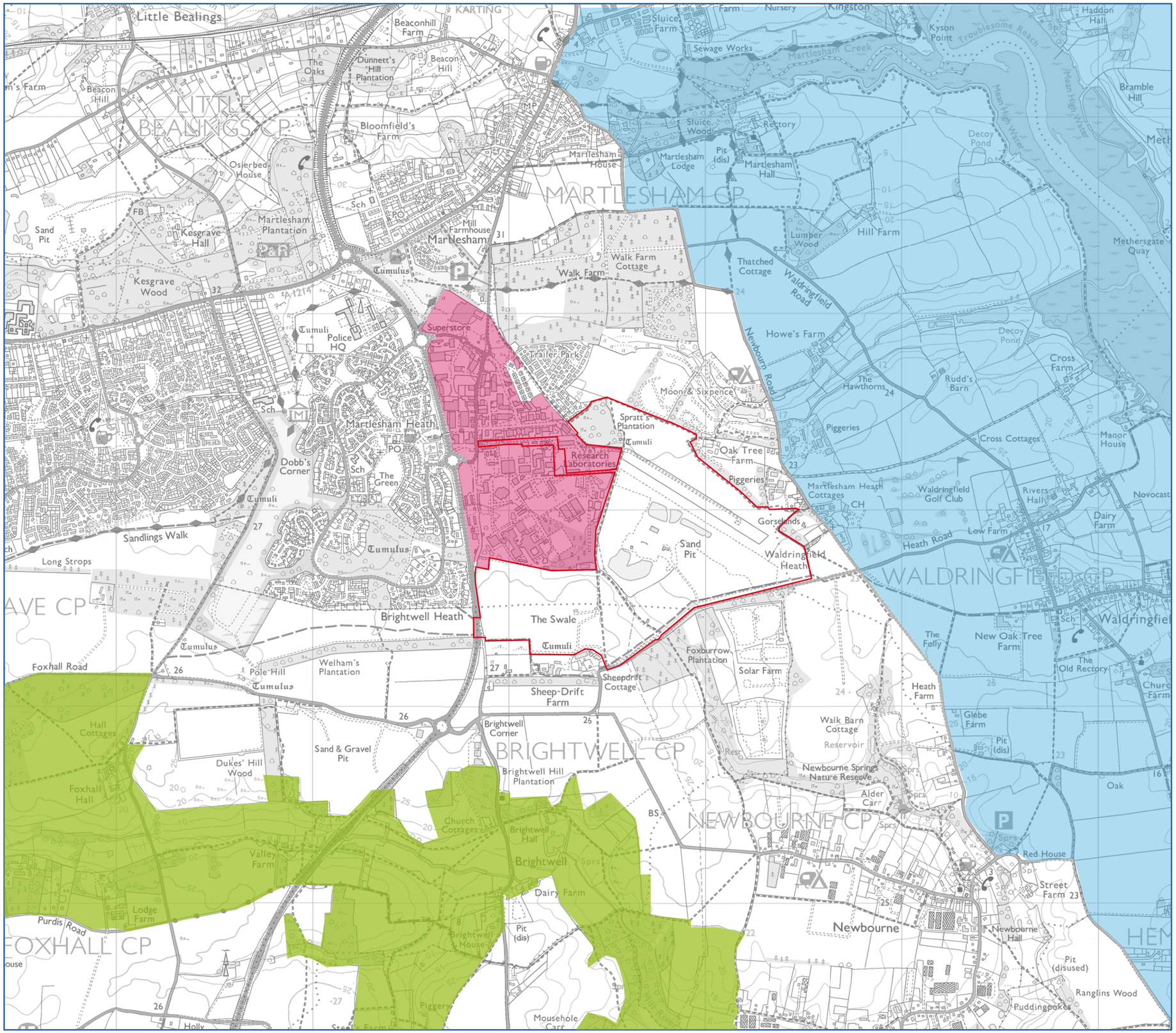
11.10.13 Beneficial effects have also been identified relating to the provision of new woodland and tree planting to strengthen the landscape structure.

11.10.14 Adverse visual effects have been identified for residents adjacent to the site and users of road network as they pass the site.

11.10.15 As set-out above, the proposed development responds positively to the landscape and visual context, providing a host of benefits associated with the provision of a substantial area of open space and robust GI, including landscape and recreational benefits in line with the aspirations of Suffolk Coastal District Local Plan: Core Strategy & Development Management Policies DPD, July 2013.

11.10.16 The proposals are also compliant with the Suffolk Coast and Heaths AONB management plan and respond positively to the wider landscape character and the setting of the AONB. The proposals deliver measures to restore and enhance landscape features that have been lost through the mineral extraction operations.

11.10.17 In conclusion there would be no overriding adverse effects that should preclude the proposed development on landscape and visual grounds. It is considered that a high quality scheme can be delivered on the site which is in keeping with best practice and current government guidance and which would make a positive contribution to the local landscape.



Site Boundary

Suffolk Coastal District Local Plan July 2013

Strategic Policy SP20 - Eastern Ipswich Plan Area (covers map area)

General Employment Area (Policies: AP51, AP61, AP215, AP216, AP220, AP221)

Area of Outstanding Natural Beauty (Policies: AP21)

Special Landscape Area (Saved Policies: AP13)

N

0m 200m 400m 600m 800m 1000m

Scale@1:20,000

Project	Land South and East of Adastral Park, Suffolk
Drawing Title	**Fig 11.1 Landscape related Planning Policy and Designations**
Scale	1:20,000@A3
Drawing No.	10317_P01b
Date	March 2017
Checked	SP/MF

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Site Boundary

N

0m 100m 200m 300m 400m 500m

Scale@1:10,000

Project	Land to the South and East of Adastral Park Suffolk
Drawing Title	**Figure 11.2: Site Specific Context**
Scale	1:10,000@A3
Drawing No.	10317_P05B
Date	March 2017
Checked	AMcP/MF

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Site Boundary

Height AOD (m)

40m and above

30m

20m

10m

1m and below

Source:
The plan has been modelled using GIS computer software (QGIS) and Ordnance Survey Terrain 5 data, and as such does not take into account built form or vegetation present within the landscape.

N

0m 200m 400m 600m 800m 1000m

Scale@1:25,000

Project	Land South and East of Adastral Park, Suffolk
Drawing Title	**FIGURE 11.3: Topography**
Scale	1:25,000@A3
Drawing No.	10317/P02b
Date	March 2017
Checked	AMcP/RH

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Site Boundary

Zone of Theoretical Visibility (ZTV)

High Potential Visibility

Low Potential Visibility

No Visibility

Source:
The Zone of Theoretical Visibility (ZTV) illustrates the extent to which the site at 13m ridge height is potentially visible within a 5km radius (1.6m high receptor). The ZTV has been modelled using GIS computer software (Global Mapper) and Ordnance Survey Terrain 5 data, and as such does not take into account built form or vegetation present within the landscape. Field verification is required to refine the accuracy of the ZTV.

N

0m 200m 400m 600m 800m 1000m

Scale@1:25,000

Project	Land South and East of Adastral Park, Suffolk
Drawing Title	**FIGURE 11.4: Zone of Theoretical Visibility**
Scale	1:25,000@A3
Drawing No.	10317/P03b
Date	March 2017
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- Site Boundary
- Photoviewpoint Location
- Photomontage Location
- Nightime Photoviewpoint Location
- Footpath
- Bridleway
- Restricted Byway
- Trees and Woodland Limiting Views
- Built form / Development

N

0m 200m 400m 600m 800m 1000m

Scale@1:20,000

Project	Land to South and East of Adastral Park, Suffolk
Drawing Title	**FIGURE 11.5: Visual Context**
Scale	1:20,000@A3
Drawing No.	10317_P07e
Date	March 2017
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Site Boundary

National Character

The study and plan area shown lies within the Suffolk National Character Area profile 82

- Suffolk Coast and Heaths (Profile 82)

Regional Character

The Suffolk Landscape Character Assessment (2010)

- Urban
- Rolling Estate Sandlands
- Estate Sandlands
- Rolling Valley Farmlands / Ancient Rolling Farmlands
- Plateau Estate Farmlands

N

0m 200m 400m 600m 800m 1000m

Scale@1:20,000

Project	Land South and East of Adastral Park, Suffolk
Drawing Title	**Figure 11.6: Landscape Character (Published)**
Scale	1:20,000@A3
Drawing No.	10317_P04b
Date	March 2017
Checked	SP/MF

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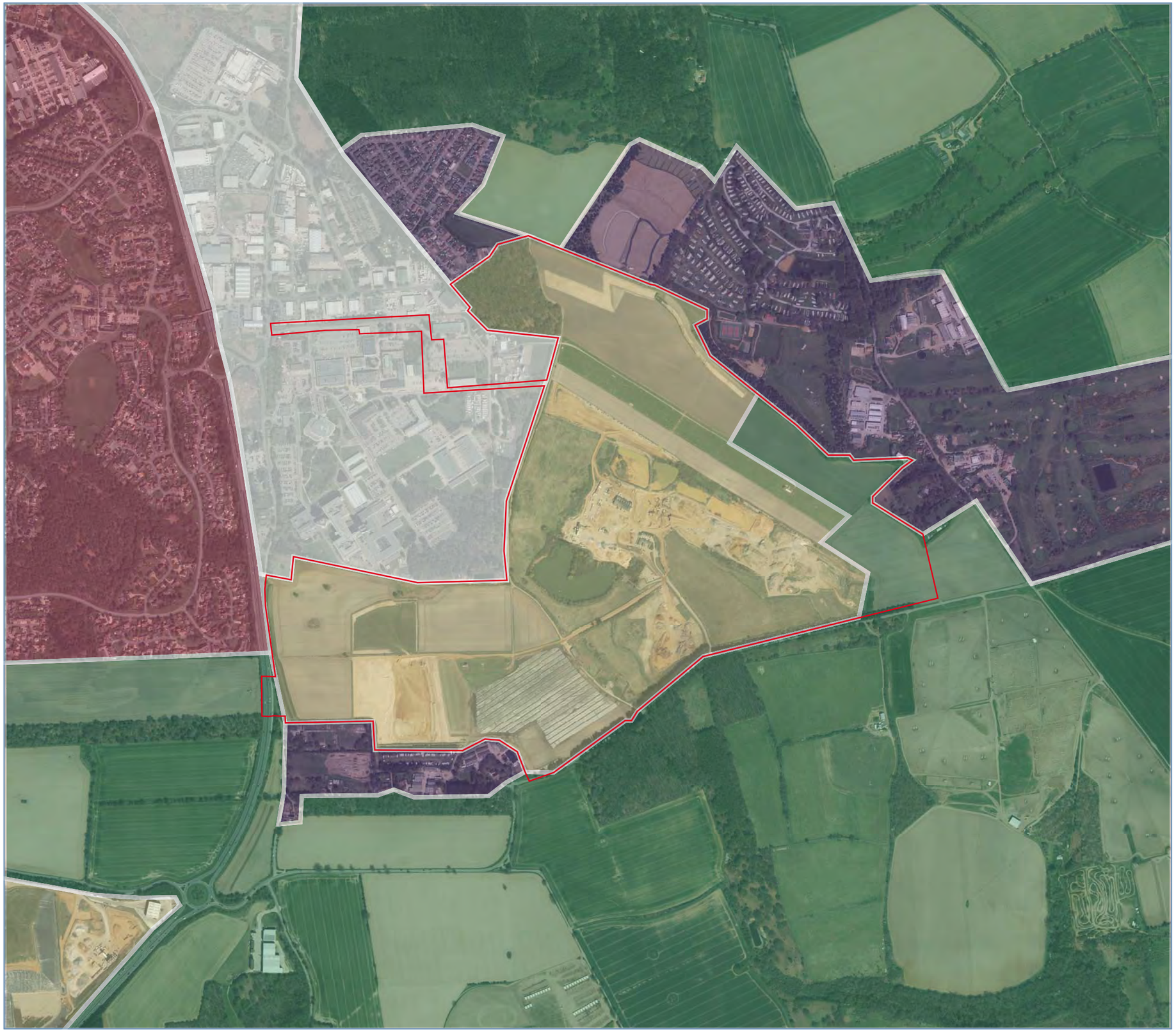

- Site Boundary
- Industrial / Commercial
- Residential
- Minerial Extaction
- Amenity
- Wooded Arable Farmland

N

0m 100m 200m 300m 400m 500m

Scale@1:10,000

Project	Land to the South and East of Adastral Park Suffolk
Drawing Title	**Figure 11.7: Local Landscape Character Assessment**
Scale	1:10,000@A3
Drawing No.	10317_P06B
Date	March 2017
Checked	AMcP/MF

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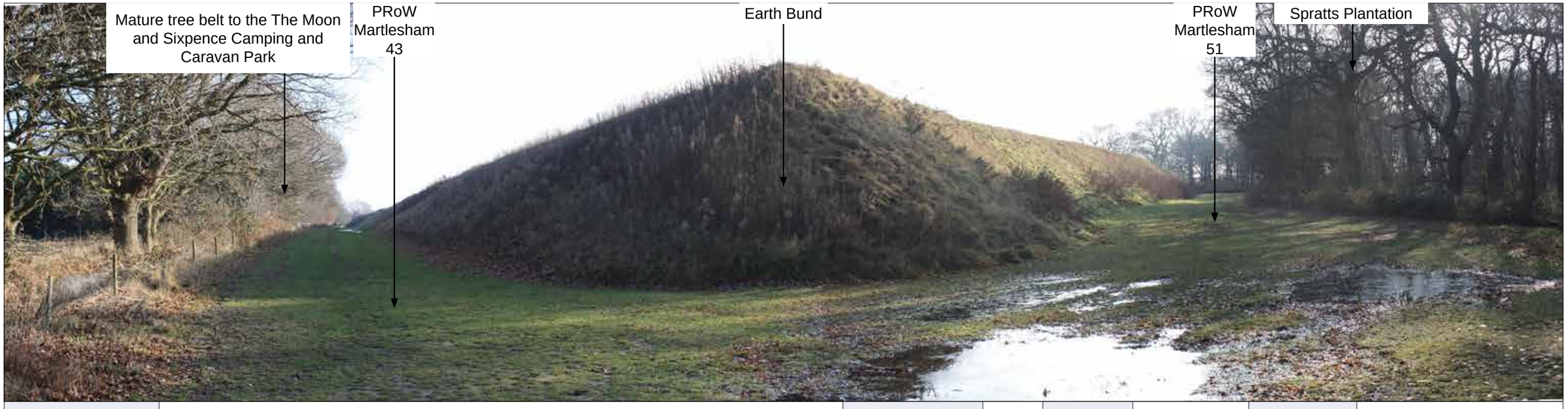
Figure 11.8

Photoviewpoints 1 and 2



Photoviewpoint 1:	Taken from junction between PRoW 42, 43 and 51	**Distance from Site:**	0m	**Orientation**	South	**Coordinates:**	
Description / Commentary:	From this location, at the footpath junction, the views are enclosed and are dominated by the vertical pressence of the trees and the man made Earth bund which form a key focal point at this junction. PROW Martlesham 43 is visible to the left of the view with PRoW Martlesham 51 visible to the right of the view. The wooded boundary to The Moon and Sixpence is visible to the far left of the view, the large Earth storage bund to the north of the site is visible from the left to the right of the view with Spratts Plantation visible to the far left of the view. The mass and scale of the earth bund and adjacent woodland focus views along the respective footpaths.						

Photoviewpoint 2:	Taken from PRoW 23	**Distance from Site:**	0m	**Orientation**	West	**Coordinates:**	
Description / Commentary:	Views from this footpath are heavily screened by the the close proximity to the earth bund in the foreground which in combination with the mature woodland to the site boundary which is visible the far left and far right of the view further encloses the views and creates an enclosed intimate landscape. The mass and scale of the earth bund and the gently falling landform at this location result in views having a strong horzontal emphasis with the engineered landform.						

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Photoviewpoints 1 and 2 — Drawing Title
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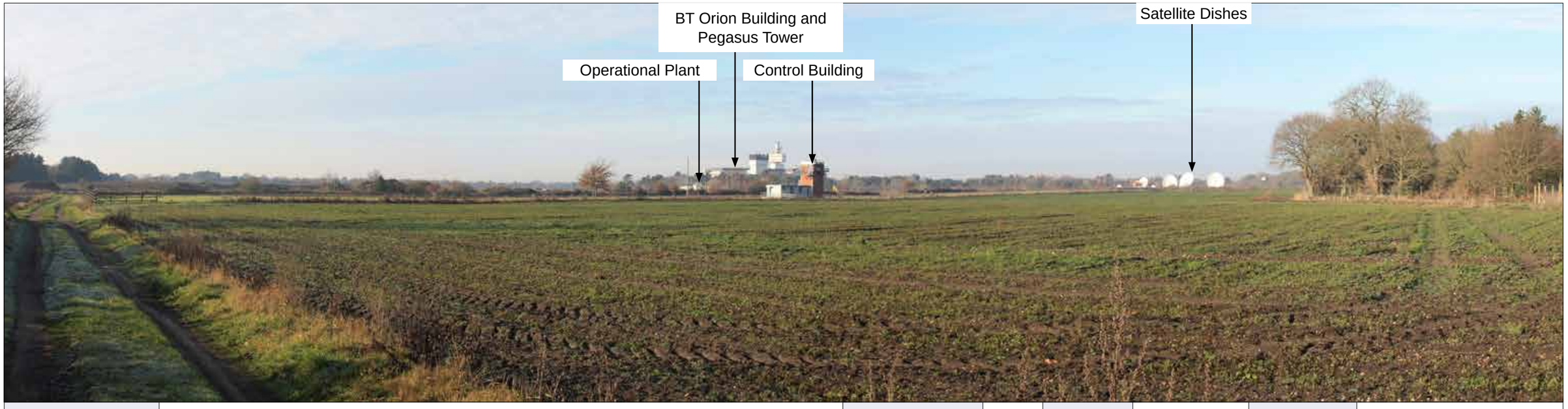
Figure 11.8

Photoviewpoint 3



Photoviewpoint 3:	Taken from Bridleway Waldringfield 6	**Distance from Site:**	0m	**Orientation**	West	**Coordinates:**	
Description / Commentary:	The view looks west from the Bridleway across arable land. A single arable field is visible in the foreground across the view, the Control Building the the south of the sound testing strip is visible to the left of the view in the mid distance with the BT Orion Building and Pegasus Tower visible beyond. The array of large white satellite dishes is visible to the centre left of the view. The mature boundary vegetation with filtered views of Seven Acres Busines Park is visible from the centre to the right of the view.						

Photoviewpoint 3:	Contd	**Distance from Site:**	0m	**Orientation**	West	**Coordinates:**	
Description / Commentary:							

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Photoviewpoints 3 — Drawing Title

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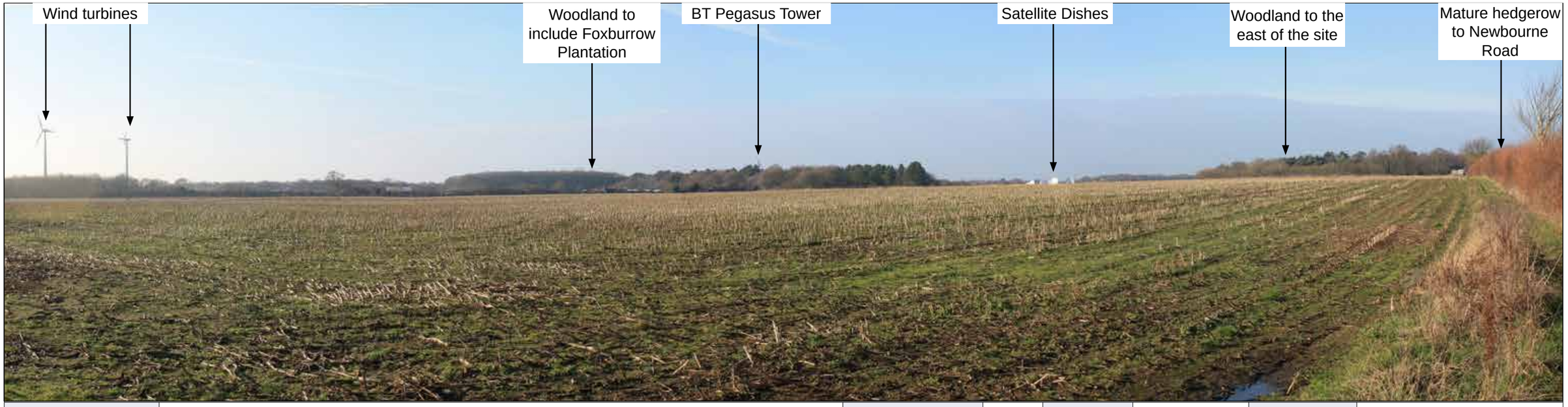
Figure 11.8

Photoviewpoints 4 and 5



Photoviewpoint 4:	Taken from PRoW Waldringfield 27	**Distance from Site:**	450m	**Orientation**	North West	**Coordinates:**	
Description / Commentary:	From this location there are open expansive views across the flat arable landscape in the foreground which results in a strong horizontal emphasis to the view with a back drop in the mid distnace of mature woodland vegetation to include Foxburrow Plantation adjacent to Ipswich Road to the centre of the view with the large wind turbines located further to the south which are visible to the left of the view adding a vertical empphasis to the landscape. The array of large white satellite dishes to the north of the site which are visible to the right of the view lie within Adastral Park and form a focal point within the landscape, this is due to scale and massing of the array. Further mature vegetation associated with propoerty to the eastern site boundary is visible to the right of the view which screens views of the existing development further to the north.						

Photoviewpoint 5:	View from junction between Ipswich Road, Newbourne Road, Bridleway 35 and PRoW 7A and 27	**Distance from Site:**	230m	**Orientation**	North west	**Coordinates:**	
Description / Commentary:	The view looks towards the south eastern corner of the site across and illustrates potential views from the edge of Suffolk Coastal and Heaths AONB. Ipwich Road is visible to from the left to the centre right of the view with Newbourne Road visible to the far right of the view. The mature tree belt adajcent to Ipswich Road is visible to the far left of the view with the mature vegetation associated to properties located to the west of Newbourne Road visible from the centre to the right of the view. Glimpsed views of the on site operational plant associated with Mineral extraction are possible to the left of the view with the BT Orion Building and Pegasus Tower being visible beyond on the horizon.						

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Photoviewpoints 4 and 5 — **Drawing Title**

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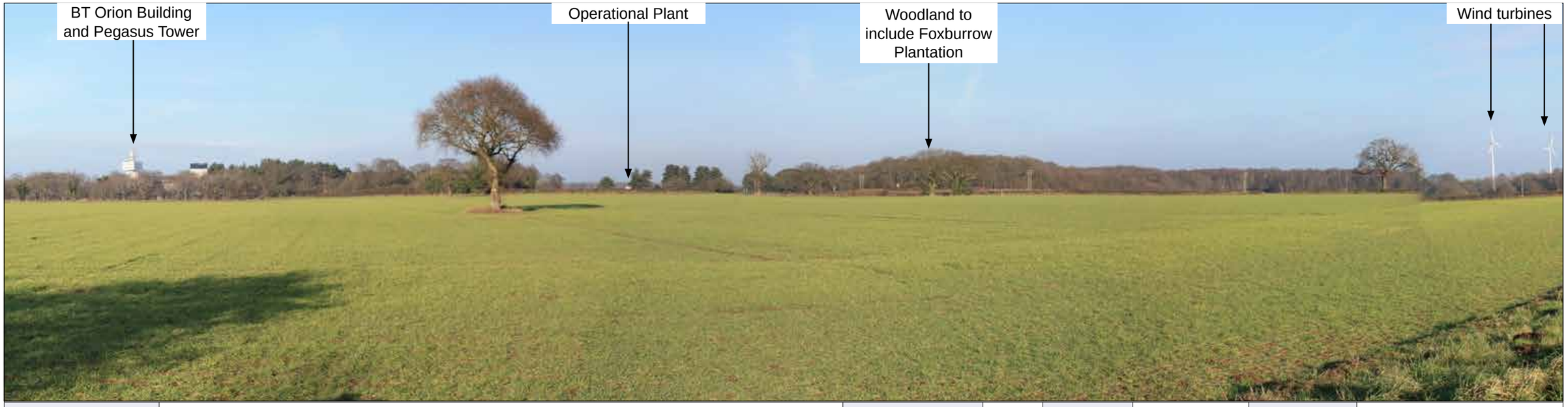
Figure 11.8

Photoviewpoints 6 and 7



Photoviewpoint 6:	Taken from PRoW 14 and 14A	**Distance from Site:**	550m	**Orientation**	North	**Coordinates:**	
Description / Commentary:	Open expansive views across the flat arable landscape with limited boundary vegetation in the foreground with the landform falling slightly to the north, emphasising the horizontal nature of the views. The mature woodland adjacent to Ipswich Road provised a green back drop to the foreground with views beyond heavily filtered, there are views of notable vertical features of BT Orion Building and Pegasus tower to the left of the view, the opertaional plant for the ongoing mineral extraction within the site to the centreof the view and the two wind turbines to the south of the site being visible to the right of the view.						

Photoviewpoint 7:	Taken from Bridleway 12	**Distance from Site:**	15m	**Orientation**	North East	**Coordinates:**	
Description / Commentary:	Views are limted to short distance views with the landscape rising to the left and right of the view. Brightwell Barn complex of wooden clad offices and associated cafe and car parking, visible from the far left to the centre of the view, add an urban influence into the landscape. Ipswich road is visible in the right of the view with the mature vegetated verges enclosing the road and heavily screening views of the wider landsacpe. The mature trees, lighting columns and bollards introduce along with the earth bund forming a back drop introduce vertical emphasis to the view.						

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Photoviewpoints 6 and 7 — Drawing Title

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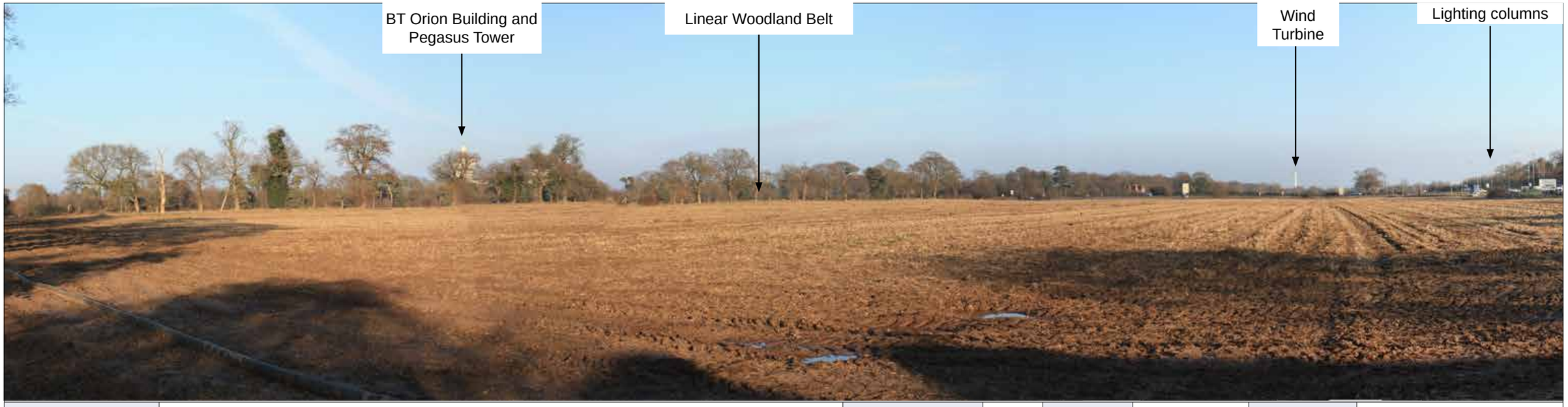
Figure 11.8

Photoviewpoints 8 and 9



Photoviewpoint 8:	Taken from PRoW 5	**Distance from Site:**	610m	**Orientation**	North East	**Coordinates:**	
Description / Commentary:	The open expansive views from PRoW 5 to the south west of the site look of a flat arable field with a wooded backdrop which heavily screens views of the site, the flat landscape provides a horizontal emphasis to the landscape with limited vertical features within the view. There are glimpsed views of BT Orion Building and Pegasus Tower to the left of the view with the wind turbines to the south of the site visoble to the right of the view and lighting columns adjacent to the road junction between the A12 and Foxhall Road.						

Photoviewpoint 9:	Taken from Junction between Bridleway 6 and PRoW 5 to the west of the site	**Distance from Site:**	620m	**Orientation**	East	**Coordinates:**	
Description / Commentary:	Views from this location as channelled by the linear field which is bounded by the existing woodland and built development of Martlesham Heath to the north and the linear tree belt to the south. The mature woodland to the left adn right of the view, the existing development of Marlesham Heath to the centre of the view with the BT Orion Building and Pegasus Tower beyond create an opposing vertcial emphasis to the falt arable landsacpe to the foreground.						

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Photoviewpoints 8 and 9 — Drawing Title
Land to the South and East of Adastral Park — Project
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Figure 11.8

Photoviewpoints 10 and 11

Photoviewpoint 10:	Taken from Bridleway 6 adjacent to A12.	**Distance from Site:**	10m	**Orientation**	East	**Coordinates:**	
Description / Commentary:	Views from this location are contained by the earth bund and planting to the east of the A12, this focus views along the A12 to the focal point of the BT Orion Building and the Pegasus Tower. Futher features within the landscape add a vertcial emphasis and contain the view from the wider landscape .						

Photoviewpoint 11	Taken from Barracks Square.	**Distance from Site:**	0m	**Orientation**	South East	**Coordinates:**	
Description / Commentary:	VIews are glimpsed between the tree belt to the left of the view and the planted earth bund to the centre of the view. There are views over the north western section of the site from the left to the centre of the view, the gently falling landform within the site and the eath workings limit mid distance views with the woodland adjacnet to Ipswich Road to the south of the site visible in the far distance. The Pill Box and Bowl Barrow Scheduled Monument is visible to the the centre of the view.						

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Photoviewpoints 10 and 11

Land to the South and East of Adastral Park

Drawing Title

Project

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March 2017 Date

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Figure 11.8

Photoviewpoint 12

Photoviewpoint 12	Taken from junction between PRoW 10 and 30.	**Distance from Site:**	0m	**Orientation**	South West	**Coordinates:**	
Description / Commentary:	Views look over the north western section of the site, the sloping landform to the left of the view and the southern boundary security fencing of Adastral Park beyond which lies mature woodland visible to the right of the view channel views along the northn boundary with the mature vegetation adajacent to Barracks Square is visible to the centre of the view. The lack of vegetation and gently sloping landform produce a horizontial emphasis to the view.						

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Photoviewpoint 12 — **Drawing Title**

Land to the South and East of Adastral Park — Project

10317/P08E — Drawing No.
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Figure 11.8

Photoviewpoint 13

Photoviewpoint 13:	Taken from PRoW 10	**Distance from Site:**	0m	**Orientation**	East	**Coordinates:**	
Description / Commentary:	The restored landscape rises to the east and south with previous mineral workings within the site resulting in a large water boday and associated mature vegetation, the undulating landform limits wider views. The mature vegetation to the south of Adastral Park is visible to the left of the view with the mature tree belt adjacent to Ipswich Road to the south of the site being visible to the right of the view. The mature vegetation results in the view having a wooded backdrop with the waterbody as a focal point.						

Photoviewpoint 13:	Cont	**Distance from Site:**		**Orientation**		**Coordinates:**	
Description / Commentary:							

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Photoviewpoints 13
Land to the South and East of Adastral Park

Drawing Title
Project
10317/P08E — Drawing No.
March 2017 — Date
AMcP/RH — Checked

Figure 11.8

Photoviewpoint 14

Photoviewpoint 14:	Taken from Bridleway 11	**Distance from Site:**	0m	**Orientation**	North	**Coordinates:**	
Description / Commentary:	From this point there are open expansive views across the mineral extraction area with Adastral Park forming the back drop to the left of the view and the Earth bund and woodland to the north visible to the the right of the view. The earth bunding to the site boundary is visible within the foreground in the left and the far right of the view, there are glimpsed views of the mineral operations and plant beyond to the left of the view. the flat landform and bunds add a horizontal emphasis to the views with features of note being the BT Orion Building and Pegasus Tower to then far left of the view, the array of large white satellites to the left of the view and the Control Building to the end of the testing strip to the right of the view.						

Photoviewpoint 14:	Cont	**Distance from Site:**	0m	**Orientation**		**Coordinates:**	
Description / Commentary:							

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Photoviewpoint 14
Land to the South and East of Adastral Park

Drawing Title
Project
10317/P08E — Drawing No.
March 2017 — Date
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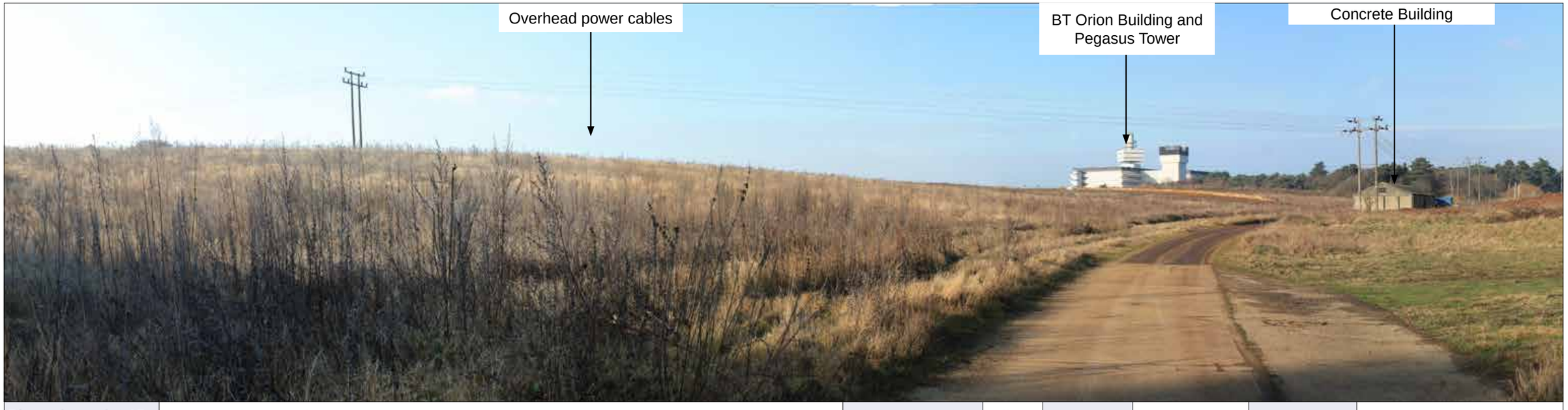
Figure 11.8

Photoviewpoint 15



Photoviewpoint 15	Taken from Bridleway 12	**Distance from Site:**	0m	**Orientation**	North	**Coordinates:**	
Description / Commentary:	From this location the surrounding landform encloses the views which are focused towards the BT Orion Building and Pegasus Tower, the rough grassland within the view creates a sparse landscape with view features. The overhead power cables and post create with a back drop off Adastral Park						

Photoviewpoint 15	Cont	**Distance from Site:**		**Orientation**		**Coordinates:**	
Description / Commentary:							

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Photoviewpoint 15

Land to the South and East of Adastral Park

Drawing Title

Project

10317/P08E Drawing No.

March 2017 Date

AMcP/RH Checked

Figure 11.8

Photoviewpoint 16

Photoviewpoint 16:	Taken from Bridleway 12	**Distance from Site:**	0m	**Orientation**	North East	**Coordinates:**	
Description / Commentary:	From this location views are enclosed and restricted by the earth bund to the site boundary to the left of the view and the close board fencing to the boundary of the caravan storage area to the north of Sheep Drifts Farm which is visible from the left to the far right of the view. A strong horizontal emphasis is created by boundary fencing and bunding with vertical features of note being the BT Orion Building and Pegasus Tower to the far left of the view and the telecommunication mast to the right of the view.						

Photoviewpoint 16:	Cont	**Distance from Site:**		**Orientation**		**Coordinates:**	
Description / Commentary:							

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Photoviewpoint 16 — **Drawing Title**

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Figure 11.9

Photoviewpoints 5

Photoviewpoint 5:	View from junction between Ipswich Road, Newbourne Road, Bridleway 35 and PRoW 7A and 27	**Distance from Site:**	230m	**Orientation**	North West	**Coordinates:**	
Description / Commentary:							

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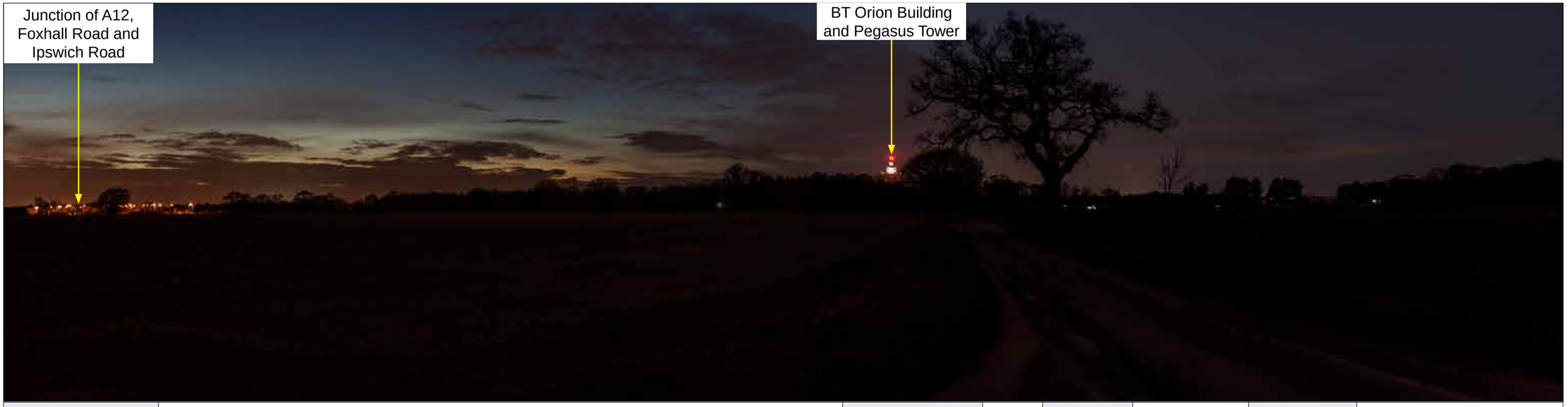
Night Time Photoviewpoints 5

Land to the South and East of Adastral Park

Drawing Title	
Project	
10317/P08A	Drawing No.
March 2017	Date
RH/MF	Checked

Figure 11.9

Photoviewpoints 4 and 5



	Taken from PRoW 14 and 14A	**Distance from Site:**	550m	**Orientation**	North	**Coordinates:**	
Description / Commentary:							

Photoviewpoint 6:	Taken from PRoW 14 and 14A	**Distance from Site:**	550m	**Orientation**	North	**Coordinates:**	
Description / Commentary:							

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Night Time Photoviewpoints 6

Land to the South and East of Adastral Park

Drawing Title

Project

10317/P08A — Drawing No.

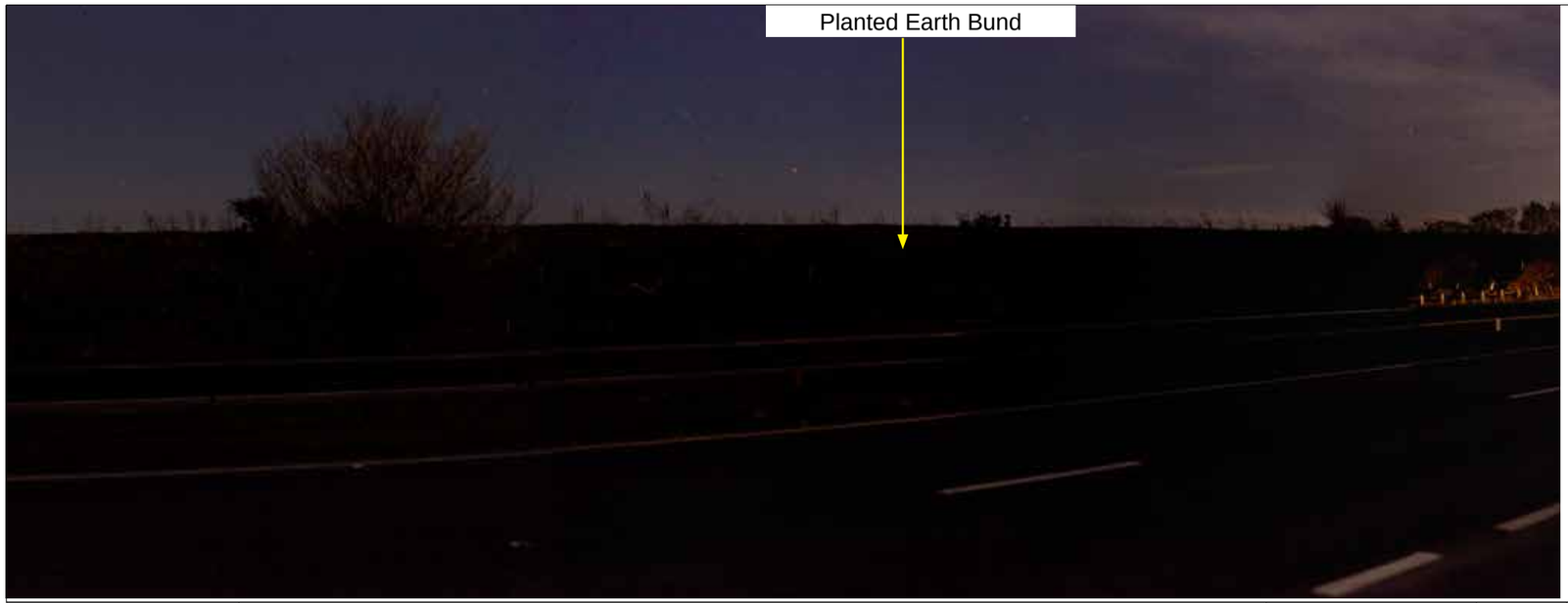
March 2017 — Date

RH/MF — Checked

Figure 11.9

Photoviewpoints 10

Photoviewpoint 10:	Taken from Bridleway 6 adjacent to A12.	**Distance from Site:**	10m	**Orientation**	East	**Coordinates:**	
Description / Commentary:							



		Distance from Site:		**Orientation**		**Coordinates:**	
Description / Commentary:							

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Night Time Photoviewpoints 10

Land to the South and East of Adastral Park

Drawing Title

Project

10317/P08A — Drawing No.

March 2017 — Date

RH/MF — Checked

Photoviewpoint 5: View from junction between Ipswich Road, Newbourne Road, Bridleway 35 and PRoW 7A and 27

Photoviewpoint 5:	Existing view	**Distance from Site:**	230m	**Orientation:**	North west	**Coordinates:**	
Description / Commentary:	The view looks towards the south eastern corner of the site across and illustrates potential views from the edge of Suffolk Coastal and Heaths AONB. Ipwich Road is visible to from the left to the centre right of the view with Newbourne Road visible to the far right of the view. The mature tree belt adajcent to Ipswich Road is visible to the far left of the view with the mature vegetation associated to properties located to the west of Newbourne Road visible from the centre to the right of the view. Glimpsed views of the on site operational plant associated with Mineral extraction are possible to the left of the view with the BT Orion Building and Pegasus Tower being visible beyond on the horizon.						

Photoviewpoint 5:	View on completion	**Distance from Site:**		**Orientation:**		**Coordinates:**	
Description / Commentary:							

Photoviewpoint 5:	Year 15	**Distance from Site:**		**Orientation:**		**Coordinates:**	
Description / Commentary:							

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Site Photomontages | **Drawing Title**
Land to the South and East of Adastral Park | Project
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MF/AMcP | Checked

Figure 11.10

Photoviewpoint 5: Taken from PRoW 14 and 14A

Photoviewpoint 6:	Existing view	**Distance from Site:**	550m	**Orientation:**	North	**Coordinates:**	
Description / Commentary:	Open expansive views across the flat arable landscape with limited boundary vegetation in the foreground with the landform falling slightly to the north, emphasising the horizontal nature of the views. The mature woodland adjacent to Ipswich Road provised a green back drop to the foreground with views beyond heavily filtered, there are views of notable vertical features of BT Orion Building and Pegasus tower to the left of the view, the opertaional plant for the ongoing mineral extraction within the site to the centreof the view and the two wind turbines to the south of the site being visible to the right of the view.						

Photoviewpoint 6:	Development wirelines	**Distance from Site:**		**Orientation:**		**Coordinates:**	
Description / Commentary:							

Photoviewpoint 6:	Year 15	**Distance from Site:**		**Orientation:**		**Coordinates:**	
Description / Commentary:							

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Site Photomontages
Land to the South and East of Adastral Park

Drawing Title
Project

10317/P16A — Drawing No.
March 2017 — Date
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Photoviewpoint 5: View from junction between Ipswich Road, Newbourne Road, Bridleway 35 and PRoW 7A and 27

Photoviewpoint 10:	Existing view	**Distance from Site:**	10m	**Orientation:**	East	**Coordinates:**	
Description / Commentary:	Views from this location are contained by the earth bund and planting to the east of the A12, this focus views along the A12 to the focal point of the BT Orion Building and the Pegasus Tower. Futher features within the landscape add a vertcial emphasis and contain the view from the wider landscape .						

Photoviewpoint 10:	View on completion	**Distance from Site:**		**Orientation:**		**Coordinates:**	
Description / Commentary:							

Photoviewpoint 10:	Year 15	**Distance from Site:**		**Orientation:**		**Coordinates:**	
Description / Commentary:							

12 NOISE

12.1 Introduction

12.1.1 This Chapter has been prepared by Brookbanks Consultants Ltd to present the findings of an assessment of the effects of the Proposed Development on noise and vibration during both the construction and post-completion stages.

12.1.2 Environmental noise rarely reaches the sound pressure levels associated with hearing impairment. However, noise can cause annoyance; it is commonly blamed for sleep disturbance and has been linked by researchers to less obvious effects, such as cardiovascular and mental health problems and reduced performance at work or school.

12.1.3 Human subjects, under laboratory conditions, are generally only capable of noticing changes in steady noise levels of no less than 3 dB(A).

12.1.4 The Proposed Development has the potential for noise impacts associated with operational traffic; and also during the construction phase.

12.1.5 The following sections outline the site conditions and assess the appropriateness of the site for the Proposed Development in accordance with local and national guidance.

Noise Terminology

12.1.6 The scale used to identify noise sources is the decibel (dB) scale which extends from 0 to 140 decibels (dB) corresponding to the intensity of the sound pressure level. The ear recognises sound based on pitch and frequencies. Microphones cannot record noise in the same way, so to counter the noise-measuring instrument applies a correction to correspond more closely to the frequency response of the ear. The correction factor is called “A Weighting” and the resulting measurements are written as dB(A). Typical dB(A) noise levels for familiar noise are indicated below.

Table 12.1 Familiar Noise Levels (dB(A))

Approximate Noise Level	Noise Example
10	Normal breathing
20	Rustling leaves, mosquito
30	Whisper
40	Stream, refrigerator humming
50	Quiet office
60	Normal conversation
70	In car noise without radio
80	Vacuum cleaner / washing machine
90	Lawnmower
100	Train
110	Pneumatic Drill
120	Thunder
130	Plane taking off
140	Threshold of pain

12.1.7 The noise levels indicated above are sound pressure levels (SPL) and describe the noise level at a single point in space. Noise levels at a receptor vary over time depending on the occurring noise generating activities. The following indices are used to take into account noise level variation over time:

- LAeq T is the equivalent continuous sound level and is the sound level over the time period (T). It is possible to consider this level as the ambient noise encompassing all noise at a given time. LAeq T is considered the best general purpose index for environmental noise;
- LA90 T represents the noise level exceeded for 90% of the measurement period and is used to indicate quieter times during the measurement period. It is usually referred to as the background noise level;
- LA10 T refers to the level exceeded for 10% of the measurement period. LA10 T is widely used as a descriptor of traffic noise; and
- LAmax is maximum recorded noise level during the measurement period.

12.2 Scope and methodology

12.2.1 A wider study to assess the impact within the local road network is based on the Calculation of Road Traffic Noise (CRTN) procedures and has been based on the study area adopted within the Transport Assessment (ES Volume 2) which identifies the roads experiencing the highest increase in flows.

12.2.2 An assessment against BS8233 will be provided in order to confirm the internal and external noise environment.

Significance Criteria

12.2.3 The format of this section of the ES follows a standard study pattern, by setting out an appraisal of the baseline conditions, followed by a description of the Proposed Development features and an identification of the potential environmental effects due to the Proposed Development. The importance of each mechanism and an assessment of each potential effect are then considered along with any mitigation measures and recommendations for further investigations where necessary.

12.2.4 Methods of assessment have been employed that are consistent with current guidance and recommendations in the form of statutory documents and recognised publications to ensure that the findings represent a robust approach to the Assessment.

12.2.5 The criteria for determining the sensitivity of receptors is provided in Table 12.2 below.

Table 12.2 Description of Sensitivity Rating

Sensitivity	Descriptors
Very High	Internationally or nationally protected endangered species which is also known to be noise sensitive (i.e. noise may change breeding habits or threaten species in some other way)
High	Dwellings, habitats supporting locally important wildlife communities that are sensitive to noise
Medium	Schools, hospitals, quiet recreation areas
Low	Officers, cafes/bars with external areas
Negligible	Industrial, retail

12.2.6 The DMRB Volume 11, Section 3, Part 7: Environmental Assessment Procedure is used for the assessment of operational noise impacts for road schemes and gives guidance on the magnitude of impact from noise changes upon the local environment. The significance of predicted increases in road traffic noise as a result of the Proposed Development has been assessed according to the criteria described below.

12.2.7 The tables below outline the criteria for determining the magnitude in relation to changes in traffic noise, with short term relating to the first occupation of the development with longer term relating to 10 years after opening.

Table 12.3 Magnitude of impact - short term

Magnitude	Change in traffic noise (dB)
Major	5 +
Moderate	3 – 4.9
Minor	1 – 2.9
Negligible	0.1 – 0.9

Table 12.4 Magnitude of impact – long term

Magnitude	Change in traffic noise (dB)
Major	10 +
Moderate	5 – 9.9
Minor	3 – 4.9
Negligible	0.1 – 2.9

12.2.8 BS5228: 'Code of Practice for noise and vibration control on construction and open sites' is the methodology for the prediction of construction noise, and control of noise and vibration. Significance can be considered in relation to fixed limits for noise and vibration, or alternatively in considering the potential change in the ambient noise level with the addition of construction noise for the purposes of the Proposed Development. This significance can be assessed using the criteria below.

Table 12.5 Magnitude of effect

Magnitude	Change in traffic noise (dB)
Major	5 +
Moderate	0.1 – 4.9

12.2.9 For operational effects, the sensitivity of the receptor and the magnitude of the impact have been combined using the matrix below to determine the significance of the effect. Where the matrix offers more than one significance option, professional judgement has been used to decide which option is most appropriate.

Table 12.6 Assessment Matrix

	Magnitude of Impact			
Sensitivity	**Negligible**	**Negligible**	**Moderate**	**Major**
Negligible	Negligible	Negligible or Minor	Negligible or Minor	Minor
Negligible	Negligible or Minor	Negligible or Minor	Minor	Minor or Moderate
Moderate	Negligible or Minor	Minor	Moderate	Moderate or Major
Major	Minor	Minor or Moderate	Moderate or Major	Major

12.2.10 The terms in Table 12.6 have the following definitions:

- Substantial: Only adverse effects are normally assigned this level of significance. They represent key factors in the decision-making process. These effects are generally, but not exclusively, associated with sites or features of international, national or regional importance that are likely to suffer a most damaging impact and loss of resource integrity. However, a major change in a site or feature of local importance may also enter this category;
- Major: These beneficial or adverse effects are considered to be very important considerations and are likely to be material in the decision-making process;
- Moderate: These beneficial or adverse effects may be important, but are not likely to be key decision-making factors. The cumulative effects of such factors may influence decision-making if they lead to an increase in the overall adverse effect on a particular resource or receptor;
- Minor: These beneficial or adverse effects may be raised as local factors. They are unlikely to be critical in the decision-making process, but are important in enhancing the subsequent design of the project; and
- Negligible: No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

12.2.11 Effects of moderate, major or substantial significance represent effects considered to be significant in terms of the EIA guidance.

12.3 Consultation undertaken

12.3.1 During the development of this chapter the following statutory bodies and interested parties have been consulted regarding the proposals:

- Environmental Health Officer: Suffolk Coastal District Council

12.3.2 This included the agreement that the BS8233:2014, being based on the CRTN, is the most appropriate method to assess the noise environment.

12.3.3 Through the discussions with the Environmental Health Officer, it has been agreed that a noise survey is required for the site.

12.4 Statutory and planning context

The Control of Pollution Act 1974

12.4.1 The Control of Pollution Act 1974 section 62 and 63 contains powers for local authorities to deal with noise and vibration from construction and demolition-sites.

The Planning and Compulsory Purchase Act 2004

12.4.2 The Planning and Compulsory Purchase Act 2004 requires local authorities to draw up local development plans. Setting the broad framework for acceptable development in their area and reconciling the conflicts inherent in development.

12.4.3 Under the Town and Country Planning Act 1990, local planning authorities may include planning conditions to Planning Consents which could include controls on the emission of noise.

National Planning Policy Framework

12.4.4 The National Planning Policy Framework ("NPPF") published in March 2012 sets out the Government's National Planning Policies for England and how these can be applied in plan-making and decision-taking. Current planning law requires Local Authorities to determine planning applications in accordance with the local development plan unless there are material considerations which require them to reach a different decision.

12.4.5 Paragraph 123 of NPPF indicates that planning policies and decisions should aim to:

- avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;
- mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions;
- recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established; and
- identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

Noise Policy Statement for England

12.4.6 The Noise Policy Statement for England (Defra 2010) provides a more overarching policy statement on the approach to noise in England. The NPSE provides guidance on the management of noise from sustainable development without placing unreasonable cost or time restraints on sustainable developments.

12.4.7 This Noise Policy Statement for England (NPSE) sets out the long term vision of Government noise policy, to:

- 'Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development.'

12.4.8 The NPSE indicates that noise should not be considered in isolation to the wider benefits of a proposal. The intention is to minimise noise impacts as far as is reasonably practicable. NSPE defines three Noise Policy Aims:

- Avoid significant adverse impact on health and quality of life;
- Mitigate and minimise adverse impacts on health and quality of life; and
- Where possible, contribute to the improvement of health and quality of life.

12.4.9 The explanatory note of NPSE defines the following terms:

- NOEL: No Observed Effect Level: This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise;
- LOAEL: Lowest Observed Adverse Effect Level: This is the level above which adverse effects on health and quality of life can be detected; and
- SOAEL: Significant Observed Adverse Effect Level: This is the level above which significant adverse effects on health and quality of life occur.

12.4.10 The NPSE does not provide a numerical value for the SOAEL, stating at paragraph 2.22:

- "It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available."

12.4.11 The first aim of the NPSE is:

- "Avoid significant adverse impact on health and quality of life"

12.4.12 To meet the first aim of the NPSE the resultant noise levels as a result of the Proposed Development should be below the Significant Observed Adverse Effect Level (SOAEL) at the noise sensitive properties.

12.4.13 The second aim of the NPSE is:

- "Mitigate and minimise adverse impacts on health and quality of life"

12.4.14 To meet the second aim of the NPSE the resultant noise levels as a result of the Proposed Development should be below the Significant Observed Adverse Effect Level (SOAEL) but can be above the Lowest Observed Adverse Effect Level (LOAEL) at the nearest noise sensitive properties.

12.4.15 The third aim of the NPSE is where possible, the noise levels as a result of the Proposed Development at the nearest residential property should be lower than the existing noise levels improving the noise climate for the local community.

Planning Practice Guidance

12.4.16 In March 2014 Planning Practice Guidance (PPG) was published. The section entitled "Noise" provides the following general advice and relates to paragraph 123 of the NPPF.

12.4.17 The main objectives are to:

- avoid noise from giving rise to significant adverse impacts4 on health and quality of life as a result of new development.
- mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions.
- recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established.
- identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

12.4.18 A summary of the effects of noise exposure associated with both noise generating developments and noise sensitive developments is presented within the PPG as indicated below.

Table 12.7 Noise Exposure Hierarchy

Perception	Examples of Outcomes	Increasing Effect Level	Action
Not noticeable	No Effect	No Observed Effect	No specific measures required
Noticeable and not intrusive	Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid

Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

12.4.19 The guidance identifies that the subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any particular situation. These factors include:

- The source and absolute level of the noise together with the time of day it occurs;
- For non-continuous sources of noise, the number of noise events, and the frequency and pattern of occurrence of the noise; and
- The spectral content of the noise (i.e. whether or not the noise contains particular high or low frequency content) and the general character of the noise.

12.4.20 More specific factors to consider when relevant:

- Where applicable, the cumulative impacts of more than one source should be taken into account;
- Consideration should also be given to whether adverse internal effects can be completely removed by closing windows; and
- If external amenity spaces are an intrinsic part of the overall design, the acoustic environment of those spaces should be considered so that they can be enjoyed.

12.4.21 In relation to how noise can be mitigated, this is dependent on the type of development being considered and the character of the proposed location. In general, for noise making developments, there are four broad types of mitigation:

- Engineering: reducing the noise generated at source and/or containing the noise generated;
- Layout: where possible, optimising the distance between the source and noise-sensitive receptors and/or incorporating good design to minimise noise transmission through the use of screening by natural or purpose built barriers, or other buildings;
- Using planning conditions/obligations to restrict activities allowed on the site at certain times and/or specifying permissible noise levels differentiating as appropriate between different times of day, such as evenings and late at night; and
- Mitigating the impact on areas likely to be affected by noise including through noise insulation when the impact is on a building.

12.4.22 There are further considerations relating to mitigation of noise on residential developments. The noise impact may be partially off-set if the residents of those 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 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 dwellings; and

- 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).

Application of the Noise Policy Statement for England (Defra)

12.4.23 For the purposes of this assessment, the recommended noise levels have been defined as follows:

External Noise (Daytime)

- NOEL: noise levels less than 50 dB;
- LOAEL: noise levels between the 50 dB and 55 dB; and
- SOAEL: noise levels above the upper 55 dB.

Internal Noise (Night-time)

- NOEL: noise levels less than 30 dB;
- LOAEL: noise levels between the 30 dB and 35 dB; and
- SOAEL: noise levels above the upper 35 dB.

British Standard 8233:2014: Sound Insulation and Noise Reduction for Buildings

12.4.24 BS8233:2014 gives recommendations for the control of noise in and around buildings and suggests appropriate criteria and internal noise limits for habitable rooms of residential dwellings.

12.4.25 The standard goes on to provide details of the approach to be taken when assessing the design in terms of planning:

- Assess the site, identify significant existing and potential noise sources, measure or estimate noise levels and evaluate layout options;
- Determine design noise levels for spaces in and around the buildings;
- Determine sound insulation of the building envelope, including the ventilation strategy;
- Identify internal sound insulation requirements;
- Identify and design appropriate noise control measures; and
- Establish quality control and ensure good workmanship.

12.4.26 In accordance with the requirements of BS8233:2014, the following internal and daytime noise limits will need to be met within sensitive rooms of the residential dwellings:

Table 12.8 Noise BS8233 recommended noise levels

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35dB $LA_{eq\ (16\ hour)}$	-
Dining	Dining room	40dB $LA_{eq\ (16\ hour)}$	-
Sleeping / Daytime resting	Bedroom	35dB $LA_{eq\ (16\ hour)}$	30dB $LA_{eq\ (8\ hour)}$
External Amenity Space	Gardens	55dB $LA_{eq,\ T}$	-

12.4.27 In considering the application of the outdoor criteria, it is important to take account of the feasibility of achieving such a level. A review of 'Health effect-based noise assessment methods: A review and feasibility study' (National Physics Laboratory report CMAM16 HMSO) reported the following:

- "Perhaps the main weakness is that they fail to consider the practicality of actually being able to achieve any of the stated values. From the recent national survey of noise exposure carried out in England and Wales that around 56% of the population are exposed to daytime noise levels receding 55dB. The percentage exposed above the guideline values could not be significantly reduced without drastic action to virtually eliminate road traffic noise from the vicinity of houses. The social and economic consequences of such action would be likely to be far greater than any environmental advantages of reducing the proportion of the population annoyed by noise. There is no evidence that anything other than a small minority of the population expose at such noise levels find them to be particularly onerous in the context of their daily lives."

12.4.28 Due to the difficulty in satisfying the external criteria, the BS provides an over-arching consideration of how to treat outdoor areas:

- "However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited."

Calculation of Road Traffic Noise

12.4.29 Road traffic noise levels are typically measures and predicted in units of LA10 (18 hour) dB in accordance to Calculation of Road Traffic Noise (CRTN). The LA10 is the A-weighted sound level in decibels exceeded for 10% of the measurement period, which in this case is between 06:00 and 24:00. The noise index has been shown to correlate best with people's annoyance due to road traffic noise. LA10 noise levels measured over any three hours between 10:00 to 17:00 are typically 1 dB (A) higher than the LA10 over the 18 hour period (CRTN paragraph 43).

British Standard 5228: Code of Practice for Noise and Vibration Control on Construction and Open Sites

12.4.30 BS5228: 'Code of Practice for Noise and Vibration Control on Construction and Open Sites' (British Standards Institution 2009, as amended) sets out the methodology to predict construction noise and the control of noise and vibration. It provides guidance on methods of predicting and measuring noise and assessing its impact on those exposed to it, and also recommendations for basic methods of vibration control.

12.4.31 At this stage, the detailed means of construction, including matters such as the actual plant and equipment to be used, is not known. Such matters can be controlled through the use of appropriate conditions on any planning consent. The lack of detail at this stage means that the assessment of construction effects can only be qualitative, but nonetheless the detail available is sufficient to demonstrate that the construction phase can proceed without undue or significant adverse effects on the surrounding community.

12.4.32 Annex B in BS5228-2:2009 sets out guidance on effects of vibration levels of construction noise. Receptors to vibration have been identified as heritage sites such as nearby listed buildings and other noise sensitive receptors.

12.4.33 Human beings are very sensitive to vibration, BS5228-2:2009 suggesting that the threshold of perception typically being in the peak particle velocity (PPV) range of 0.14mm/s to 0.3mm/s. Vibration above these levels can disturb, startle, cause annoyance or interfere with work activities. Vibration nuisance is often associated with the assumption that if vibration can be felt then damage is inevitable. However, considerably greater levels of vibration are required to cause damage to buildings and structures.

12.4.34 The standard provides guidance for identifying the significance of noise and vibration levels from surface construction activity. Significance can be considered in relation to fixed limits for noise and vibration, or alternatively in considering the potential change in the ambient noise level with the addition of construction noise.

12.4.35 There are no national noise criteria for limiting noise from construction-sites. BS 5228 Annex E gives guidance on the significance of noise effects from construction and recommends the ABC method to establish construction noise limits.

12.4.36 The ABC method involves rounding the existing ambient noise levels to the nearest 5 dB for the appropriate time period and then comparing these levels to the total noise level, including construction noise. If the total noise level exceeds the existing rounded value, then a significant effect is deemed to have occurred.

Building Bulletin 93: Acoustic Design of Schools

12.4.37 BB93 provides guidance on external and internal noise levels to be achieved at school development sites. The BB93 identifies that the following daytime noise levels should be achieved:

- An upper limit of 60db LAeq (30 minutes) at the boundary of external premises for teaching and recreation;
- 55 db LAeq (30 minutes) in unoccupied playgrounds, playing fields and other outdoor areas;
- 50 db LAeq (30 minutes) in at least one area of the unoccupied playgrounds, playing fields and other outdoor areas, to ensure suitable noise levels for outdoor teaching; and
- Indoor ambient noise limits in schools between 30 and 40 db LAeq (30 minutes) depending on the use of the room.

12.4.38 The most dominant noise source which could affect the primary school is traffic related. The application is submitted in outline with all matters reserved. The precise location of the school building will be subject to future reserved matters applications.

12.5 Existing environment

12.5.1 Noise measurements have been carried out on the adjacent roads forming the site boundary. The results have been used to validate the 3D noise mapping produced by SoundPLAN. Daytime and night time noise levels have been monitored over a 24 hour period.

12.5.2 All noise measurements have been undertaken by an experienced consultant competent in environmental noise monitoring, and, in accordance with the principles of BS 7445: 2003: Description and measurement of environmental noise.

12.5.3 All acoustic measurement equipment used during the noise surveys conformed to Type 1 specification of British Standard 61672: 2003: Electroacoustics, Part 1 Specifications. A full inventory of the equipment is shown below:

Table 12.9 Noise Monitoring Equipment Inventory

Equipment	Manufacturer and Type	Serial Number	Calibration Certificate
Sound Level Meter	Norsonic 118	28952	08074
Sound Level Meter	Norsonic 118	30559	5280
Acoustic Calibrator	Norsonic 1251	32856	5279

12.5.4 The noise measurement equipment used during the daytime survey was calibrated at the start and end of the measurement period. No significant drift in calibration was found to have occurred on the sound level meter.

12.5.5 Traffic noise was identified as the predominant noise source, with no other significant noise events recorded. The results of the survey are indicated below.

Figure 12.1 Noise Monitoring Positions

Table 12.10 Noise Monitoring Results – Position 1

Measurement	Daytime	Hour Ending / Period	Night Time	Hour Ending / Period
Minimum dB $L_{Aeq\ 1hr}$	58	22:00	42	03:00
Minimum dB $L_{Aeq\ 1hr}$	70	09:00	63	07:00
Average dB $L_{Aeq\ 16hr\ /\ 8hr}$	66	07:00 to 23:00	56	23:00 to 07:00

Table 12.11 Noise Monitoring Results – Position 2

Measurement	Daytime	Hour Ending / Period	Night Time	Hour Ending / Period
Minimum dB $L_{Aeq\ 1hr}$	58	23:00	47	03:00
Minimum dB $L_{Aeq\ 1hr}$	66	09:00	62	07:00
Average dB $L_{Aeq\ 16hr\ /\ 8hr}$	63	07:00 to 23:00	56	23:00 to 07:00

Table 12.12 Noise Monitoring Results – Position 3

Measurement	Daytime	Hour Ending / Period	Night Time	Hour Ending / Period
Minimum dB $L_{Aeq\ 1hr}$	60	23:00	46	03:00
Minimum dB $L_{Aeq\ 1hr}$	69	09:00	64	07:00
Average dB $L_{Aeq\ 16hr\ /\ 8hr}$	67	07:00 to 23:00	57	23:00 to 07:00

Table 12.13 Noise Monitoring Results – Position 4

Measurement	Daytime	Hour Ending / Period	Night Time	Hour Ending / Period
Minimum dB $L_{Aeq\ 1hr}$	50	23:00	33	03:00
Minimum dB $L_{Aeq\ 1hr}$	58	09:00	54	07:00
Average dB $L_{Aeq\ 16hr\ /\ 8hr}$	57	07:00 to 23:00	46	23:00 to 07:00

12.6 Predicted impacts

Assessment of Construction Effects

12.6.1 During the construction stage, it is envisaged that limited demolition, earthworks, installation of necessary services and building construction would create the main noise impacts upon existing residential properties in the environs of the site.

12.6.2 At the time of writing, it is considered that the impact of construction traffic would be negligible. The site is accessed from the A12 Dual Carriageway and Ipswich Road. The temporary increase in traffic due to construction is likely to be indiscernible from daily variations in traffic flow. Further details regarding the levels of construction traffic are provided in the Transport Chapter.

12.6.3 Although the final details of the construction activities cannot be confirmed until contractors are appointed, construction noise levels have been predicted using the sound pressure levels for typical construction plant as described in BS 5228: 2009 Part 1. The sound pressure levels in BS 5228 have been presented as a LAeq at a distance of 10 m. A high percentage for the 'on-time' (the length of time that the equipment remains active on-site) has been assumed so as to present a reasonable worst case.

Table 12.14 Plant Description and Prevailing Noise Level on-site

Plant Description	BS5228 Reference	Sound level at 10m	On time %
Angle Grinder	Table C4 No. 93	80	40
Asphalt Paver	Table C5 No. 33	75	60
Circular Saw	Table C4 No. 72	79	40
Compressor	Table C5 No. 5	75	80
Concrete Pump & Concrete mixer truck discharging	Table C4 No. 28	79	80
Concrete Saw	Table C4 No. 71	85	10
Delivery Lorry	Table C2 No. 35	80	70
Diesel Generator	Table C4 No. 84	74	100
Dozer	Table C5 No. 12	77	60
Dumpers	Table C4 No. 9	77	60
Excavator	Table C5 No. 34	82	75
Percussion Drill	Table C4 No. 69	85	40
Pneumatic Breaker	Table D2 No.2	81	40
Poker Vibrator	Table C4 No. 33	78	80
Road Planer	Table C5 No. 7	82	70
Roller Compactor	Table C5 No. 29	76	60
Telescopic Handler	Table C4 No. 54	79	75
Tower Crane	Table C4 No. 49	77	60
Tracked Excavator	Table C5 No. 18	80	70
Tracked Excavator fitted with Breaker	Table D2 No. 5	91	70
Tracked Mobile Crane	Table C4 No. 52	75	60
Vibratory Roller (22t)	Table C5 No. 28	77	60
Water Pump	Table C2 No. 45	65	75
Welder	Table C3 No. 31	73	40
Wheeled Loader	Table C2 No. 26	79	75

12.6.4 The on-time correction factor has been extracted from Figure F5 within BS5288.

12.6.5 The construction noise impacts have been calculated using the following formula as described in BS5228:

$$k_h = 20 \times LOG \frac{R}{r}$$

Where:

Kh = the correction for propagation across hard ground

R = the distance to the receptor location

r = the distance of 10 m at which the SPL has been measured

12.6.6 Where more than one piece of the same equipment is used in a construction activity, the following equation has been used to determine the total noise level generated:

Combined noise level = x + 10*log10(N)

Where

x = noise level from a single piece

N = the number of items of equipment used

12.6.7 To calculate the combined noise level for a construction process the following equation has been used to combine the noise levels from the individual construction plant:

Combined event= 10*log10(10 L1/10 + 10 L2/10 + 10 L3/10 + …..10 Ln/10)

Where L1 = individual noise event

12.6.8 A reasonable worst case scenario has been presented by considering propagation across hard ground and by not considering screening provided by topographical features, buildings or other structures.

12.6.9 The potential noise impacts during the construction stage are presented below.

Table 12.15 Site Mobilization Noise Levels

Plant	Number	Noise level at 10m	Noise level at 20m	Noise level at 50m	Noise level at 100m	Noise level at 200m
Delivery Lorry	1	78.5	72.5	64.5	58.5	52.5
Tracked Mobile Crane	1	73.0	67.0	59.0	53.0	47.0
Telescopic Handler	1	78.0	72.0	64.0	58.0	52.0
Wheeled loader	1	77.5	71.5	63.5	57.5	51.5
Dozer	1	75.0	69.0	61.0	55.0	49.0
Dumpers	2	78.0	72.0	63.0	58.0	52.0
Diesel generator	1	74.0	68.0	60.0	54.0	48.0
Total		85.2	79.2	71.0	65.2	59.2

Table 12.16 Road Construction Noise levels

Plant	Number	Noise level at 10m	Noise level at 20m	Noise level at 50m	Noise level at 100m	Noise level at 200m
Road Planer	1	80.5	74.5	66.5	60.5	54.5
Tracked Excavator	1	78.5	72.5	64.5	58.5	52.5
Dozer (Spreading fill)	1	75.0	69.0	61.0	55.0	49.0
Dumpers	2	78.0	72.0	63.0	58.0	52.0
Vibratory Roller (22t)	1	75.0	69.0	61.0	55.0	49.0
Asphalt Paver	1	73.0	67.0	59.0	53.0	47.0
Diesel Generator	1	74.0	68.0	60.0	54.0	48.0
Total		85.5	79.5	71.3	65.5	59.5

Table 12.17 Building Construction Noise Levels

Plant	Number	Noise level at 10m	Noise level at 20m	Noise level at 50m	Noise level at 100m	Noise level at 200m
Tracked Excavator	1	78.5	72.5	64.5	58.5	52.5
Diesel Generator	1	74.0	68.0	60.0	54.0	48.0
Dumpers	1	75.0	69.0	61.0	55.0	49.0
Telescopic Handler	1	78.0	72.0	64.0	58.0	52.0
Concrete Pump &	1	78.0	72.0	64.0	58.0	52.0

Concrete mixer truck discharging						
Poker Vibrator	2	80.0	74.0	66.0	60.0	54.0
Compressor	2	77.0	71.0	63.0	57.0	51.0
Total		86.1	80.1	72.1	66.1	60.1

12.6.1 Construction activities can produce high noise levels, particularly close to source. Construction noise tends to fluctuate and is usually of fairly short duration related to particular activities. The construction noise impacts would depend on the proximity of construction activities to nearby receptor locations.

12.6.2 The demolition and construction noise impacts predicted above indicate that the impacts could be observed by sensitive receptors within 200m of the site. The predicted noise levels are based on a possible worst case scenario. Propagation across hard ground has been assumed and no screening from topographical features or other structures has been assumed.

12.6.3 The majority of existing residential dwellings lie over 200m from the site, meaning the highest value identified for noise levels at 200m (maximum) would be 64.3 dB, which is below the Category A threshold (ABC method) of 65 dB.

12.6.4 As set out in the Mitigation section, where necessary for the small number of dwellings affected, construction plant would be located, as far as reasonably practicable, away from adjacent occupied buildings or as close as possible to noise barriers or site hoardings located between the plant and the buildings. Such measures to control construction noise would be implemented through the BS 5228 Code of Practice for Noise and Vibration Control on Construction and Open Sites, which would also minimise operations during sensitive time periods.

12.6.5 Therefore, given the nature of the construction activities, it is not anticipated that the significance thresholds would be exceeded for long periods of time. Overall, it is considered that the magnitude of the noise impact in relation to the closest receptors would be low and at most would have a negligible effect.

Operational Noise Impacts – NPPF/ PPG 24 Noise Assessment

12.6.6 The BS 8233 boundaries for the existing situation were modelled initially. This indicated a close relationship between the modelled noise levels and those recorded through the noise survey.

12.6.7 Noise level prediction of the existing situation has been completed using the computer modelling software SoundPLAN. The noise model incorporated accurate ground level information including all relevant site features. The BS8233 boundaries for the baseline scenario were modelled for the day time and night time traffic flows initially.

12.6.8 To ensure that the future year models are reflective of the future year scenarios, the base line model was calibrated against the 24 hour noise levels recorded across the site during the monitoring.

12.6.9 The results of the sound modelling survey compared to the results of the SoundPLAN noise map are shown below.

12.18 Calibration of noise model

Position	Modelled Daytime LAeq 16hr	Predicted Daytime LAeq 16hr	Modelled Night time LAeq 8hr	Predicted Night time LAeq 8hr
1	66	65	56	56
2	63	64	56	56
3	67	66	57	57
4	57	59	46	55

12.6.10 The resultant daytime noise contours indicate that the majority of the site falls within the requirements of BS 8233.

12.6.11 A difference of up to 3dB between the actual and modelled noise levels is considered an acceptable variation in results, as human subjects, under laboratory conditions, are generally not capable of noticing changes in steady noise levels of less than 3 dB(A).

12.6.12 While there is an anomaly of a 9dB difference in the night-time results at Monitoring Point 4 adjacent to Ipswich Road, the results for daytime noise monitoring are similar. This is attributable to Soundplan assuming a constant flow of traffic along Ipswich Road in calculating an average noise level during the periods. In reality, due to Ipswich Road being a lightly trafficked road at night-time, traffic noise may have been lower than the model predicted. Therefore this means that there might be variation in the results.

12.6.13 Table 12.19 demonstrates a close relationship between the SoundPLAN model and the current 24 hour recorded noise levels across the site. However, this could be a result of less traffic than predicted on the day. This difference in noise level has not been considered as a significant concern due to the many other modelled levels falling in line with the actual recordings. Therefore the SoundPLAN model is sufficiently reflective of the actual noise environment and suitable to use in modelling future scenarios.

12.6.14 The SoundPLAN models to predict the future noise environment across the site are based on the calibrated base line model. The future year traffic flows have been based on a Paramics transport model produced by Vectos on behalf of BCL which includes the future committed developments and the Proposed Development.

12.6.15 At the time of writing, an Illustrative Framework Masterplan has been used to assess the impact of the introduction of the development on the noise environment. The potential location of the residential units has been considered. This indicates that the site falls predominantly within the requirements of BS 8233.

12.6.16 Through the site assessment presented here, it has been identified that noise screening from road traffic noise generated by the A12 Dual Carriageway will be required. This could take the form of a 5m high solid earth bund or a combination of a bund together with an acoustic barrier.

12.6.17 It has also been identified that noise screening from road traffic noise generated by the Ipswich Road will be required to protect the school playing fields. This could take the form of an 2m high solid earth bund or an acoustic barrier

12.6.18 However, opening windows for ventilation purposes would reduce the insulation provided by the building façade and may cause internal design standards to be exceeded. Therefore, if it is considered necessary to satisfy internal noise standards with a degree of ventilation, mitigation measures may be required to enable occupiers to obtain ventilation with windows closed. This can be achieved through the use of 'trickle' vents within the window frames.

12.6.19 The layout of the project and the internal arrangements of properties will be subject to further detailed design. Before the consideration of double glazing and trickle vents, priority would be given to the internal layout of the properties such that sensitive areas, i.e. bedrooms, are located to avoid facing onto the primary routes directly and consideration would be given to orientating buildings to minimise windows that face onto the noise source.

12.6.20 As set out above, these measures would be adopted as part of the project, together with noise screening along the eastern site boundary (discussed further below).

BS:8233 Assessment of Day Time Noise Levels in Living Rooms

12.6.21 BS8233 indicates that a daytime internal noise level of 30 dB LAeq represents the desirable noise standard. The calculated noise levels have been used to determine likely noise levels at the worst case locations (the A12 Dual Carriageway and Ipswich Road).

12.6.22 However, opening windows for ventilation purposes would reduce the insulation provided by the building façade and may cause internal design standards to be exceeded. However, an open window will still provide noise attenuation, with attenuation of 10-15dB will be delivered.

12.6.23 Trickle vents are widely used as a suitable ventilation method throughout the industry. The introduction of trickle vents has the potential for additional noise leakage. It is considered that this could lead to a difference of between 1dB and 2dB close to trickle vents, however, human subjects, under laboratory conditions, are generally only capable of noticing changes in steady noise levels of more than 3dB. Therefore the impacts of the trickle vents are considered negligible.

12.6.24 The layout of the development and internal arrangements of properties will be subject to further detailed design. Consideration should be given to the internal layout of the properties such that sensitive locations i.e. bedrooms, are located to avoid facing onto the A12 Dual Carriageway and Ipswich Road directly and finally consideration should be given to orientating buildings to minimise windows that face onto the noise source.

12.6.25 The Illustrative Framework Masterplan indicates how the development could be delivered, although details of development zones and the precise location of dwellings will be determined at the reserved matters stage. Therefore, typical housing locations representing the worst cases have been selected. These locations have considered the noise levels of dwellings situated adjacent to the A12 Dual Carriageway and Ipswich Road, before and after the addition of a noise bund (further details on the noise bund have been provided within the External Noise Standards section).

12.6.26 The worst case locations adjacent to the remaining highways have also been considered, although no additional noise bunds are necessary along these highways.

A12 Dual Carriageway - Day Time Levels

12.6.27 The typical day time façade noise level fronting the A12 Dual Carriageway is 63.9 dB. This noise level reduces to 30.9 dB when taking into account noise reductions through thermal double glazing, therefore indicating that the desired internal noise standard is easily achieved.

Ipswich Road - Day Time Levels

12.6.28 This indicates that the typical day time façade noise level fronting the Ipswich Road is 58.3 dB. This noise level reduces to 25.3 dB when taking into account noise reductions through thermal double glazing, therefore indicating that the desired internal noise standard is easily achieved.

Primary School - Day Time Levels

12.6.29 This indicates that the typical day time façade noise level at the site of the primary school is 50.3 dB. This noise level reduces to 17.3 dB when taking into account noise reductions through thermal double glazing, which achieves the desired internal noise standards.

12.6.30 No additional mitigation measures are considered necessary for these locations.

12.6.31 This indicates that appropriate attenuation can be achievable for all of the properties and school through the use of thermal double glazing, with facades of properties further into the site being protected and screened by other buildings. Orientating properties and consideration of the internal layout to avoid direct sight lines onto the main roads will further mitigate and reduce internal noise sources.

BS:8233 Assessment of Night Time Noise Levels in Bedrooms

12.6.32 BS8233 indicates that a night-time internal noise level of 30 dB LAeq is desired. The calculated noise levels, as previously indicated, have been used to determine likely noise levels at the worst case locations (the A12 Dual Carriageway and Ipswich Road).

A12 Dual Carriageway – Night Time Levels

12.6.33 The typical night time first floor façade noise level fronting the A12 Dual Carriageway is 59.7 dB. This noise level reduces to 26.7 dB when taking into account noise reductions through thermal double glazing, which achieves the desired internal noise standard.

Ipswich Road – Night Time Levels

12.6.34 The typical night time façade noise level fronting Ipswich Road is 57.0 dB. This noise level reduces to 24.0 dB when taking into account noise reductions through thermal double glazing, which achieves the desired internal noise standard.

External Noise Standards

12.6.35 The BS8233 highlight the requirement of managing noise in external living spaces. The agreed average noise limit should not exceed 55dB. As a result of this standard, the day time and night time boundaries have been modelled and contained within Appendix I.

12.6.36 With the site falling so close to the A12 Dual Carriageway, it is anticipated that significant noise mitigation, potentially in the form of an 5m noise barrier, will be required alongside the A12 Dual Carriageway to reduce the impacts of the traffic noise on the proposed dwellings.

12.6.37 A 2m noise barrier is required to mitigate the primary school playing fields adjacent to Ipswich Road.

12.6.38 At the time of writing it is considered that the noise barrier could consist of a combination an acoustic fence located on the top of an earth bund. The proposed housing is likely to be further offset from the base of the bund. The height of the noise barrier may vary across the site depending on the noise environment.

12.6.39 This impact of noise bund has been included within the detailed noise modelling. This shows that the noise levels adjacent to the A12 Dual Carriageway and Ipswich Road can be significantly reduced to an acceptable level. Therefore, indicating that the external noise requirements are achievable.

12.7 Mitigation

Direct and indirect noise and vibration from construction

12.7.1 To minimise the impact on receptors during the construction process, the following generic noise and vibration mitigation measures need to be implemented as appropriate for all works and would be incorporated into the future Construction Environmental Management Plan (CEMP):

- Construction activities should be confined to times of the day when they are least likely to be disturbing;
- Careful selection of plant, construction methods and programming. Only plant conforming with relevant national or international standards, directives and recommendations on noise and vibration emissions should be used;
- Construction plant should be located, as far as is reasonably practicable, away from adjacent occupied buildings or as close as possible to noise barriers or site hoardings where these are located between the plant and the buildings;
- Static and semi-static plant/equipment (e.g. compressors and generators) should be fitted with suitable enclosures where practicable;
- Personnel will be instructed on best practice to reduce noise and vibration as part of their induction training and as required prior to specific work activities;
- When plant is not being used, it should be shut down and not left to idle;
- Methods of work and vehicular routes will be selected with regard to minimising noise and vibration impact; and
- Given the phasing of construction, certain areas of the Proposed Development will be occupied while construction is still underway in adjacent areas. Where possible, the occupancy of completed phases of construction should be planned in such a way that there is a buffer between occupied areas and areas where construction is being carried out.

12.7.2 Given the nature of the construction activities expected on-site, the impact could be significant without mitigation. However the construction noise and vibration impacts can be mitigated effectively through the CEMP.

Direct façade noise levels on the proposed dwellings

12.7.3 Following this initial review of the proposed noise environment across the site, taking into account the future traffic levels, the following noise mitigation measures need to be implemented as appropriate:

- Trickle ventilation systems and double glazing for residential properties fronting onto the A12 Dual Carriageway and Ipswich Road;

- A noise screening barrier of height 8.5m adjacent to the A12 Dual Carriageway following further noise and viability assessments;
- A noise screening barrier of height 3m adjacent to Ipswich Road following further noise and viability assessments;
- Internal layout of properties to consider the location of lounge and bedroom areas for those properties fronting onto the A12 Dual Carriageway and Ipswich Road;
- Site layout to consider the internal layout of residential buildings to reduce sight lines onto the A12 Dual Carriageway and Ipswich Road;
- Site layout to consider locating houses with habitable in loft space rooms outside the first row of housing adjacent to A12 Dual Carriageway and Ipswich Road; and
- Orientation of buildings along the A12 Dual Carriageway and Ipswich Road to provide noise screening to ensure external noise thresholds can be achieved.

12.7.4 It has been demonstrated through noise modelling that the aforementioned noise mitigation measures will be effective.

12.8 Summary of effects

Residual Effects

12.8.1 The assessments completed above have considered both the proposed land uses and the impact on existing properties within immediate vicinity of the site. As a whole, the assessments do not identify any significant adverse impacts and thus no residual effects are anticipated.

Summary

Table 12.19 Summary Table

Receptor	Mitigation Measures Proposed	Residual Impact
Operational	• Trickle vent ventilation systems and double glazing for residential properties fronting onto the A12 Dual Carriageway and Ipswich Road; • A noise screening barrier of height 5m adjacent to the A12 Dual Carriageway following further noise and viability assessments; • A noise screening barrier of height 2m adjacent to Ipswich Road following further noise and viability assessments; • Internal layout of properties to consider the location of lounge and bedroom areas for those properties fronting onto the A12 Dual Carriageway and Ipswich Road; • Site layout to consider the internal layout of residential buildings to reduce sight lines onto the A12 Dual Carriageway and Ipswich Road; • Site layout to consider locating houses with habitable in loft space rooms outside the first row of housing adjacent to A12 Dual Carriageway and Ipswich Road; and	Negligible

	• Orientation of buildings along the A12 Dual Carriageway and Ipswich Road to provide noise screening to ensure external noise thresholds can be achieved.	
Construction	Application of the CEMP	Negligible

12.9 References

- Highways Agency (2008) Design Manual for Roads and Bridges. London, DFT
- Calculation of Road Traffic Noise, Department of Transport 1988
- Communities and Local Government NPPF (2012)
- British Standard 8233:2014; Sound Insulation and Noise Reduction for Buildings
- British Standard 5228: 'Code of Practice for Noise and Vibration Control on Construction and Open Sites'

13 SOCIO-ECONOMICS

13.1 Introduction

13.1.1 This chapter of the Environmental Statement, prepared by RSK, provides a desk-based assessment of the likely socio-economic effects of the Proposed Development.

13.1.2 The chapter sets out the proposed assessment methodology, provides planning policy context and describes relevant baseline conditions including demographics and settlements, education and qualifications, health, recreational facilities and access. Impacts and effects during construction and operation of the Proposed Development are then assessed, before any mitigation or enhancement measures are determined and final residual effects identified.

13.2 Scope and methodology

Assessment Scope

13.2.1 The scope of a socio-economic assessment can be wide-ranging and varies according to the development and its context, but essentially relates to quality of life. For example, assessment of the cultural and social capital and wellbeing of the community as a whole, including sense of place, jobs and training (creation of or access to), markets and flow of goods, services and information in the economy, infrastructure networks including transport, and availability of education can all be appropriate.

13.2.2 The scoping report concluded that there was potential for significant socio-economic impacts associated with the Proposed Development, and that a socio-assessment should be completed considering both the construction and operation of the Proposed Development, covering the following topics:

- Land Use;
- Demographics;
- Education;
- Employment and Business;
- Health and Wellbeing; and
- Recreation and access.

13.2.3 During the course of the EIA this scope was reviewed by RSK and it was concluded that for a comprehensive assessment (of the Operational Development) crime and safety, housing supply and house prices should also be considered. The scope was expanded accordingly.

13.2.4 Amenity effects on existing local residents and businesses are addressed in ES Chapter 15 Cumulative Assessment.

Study Area

13.2.5 The site is largely located within the Martlesham Ward of the administrative council area of Suffolk Coastal District Council (SCDC). A very small area on the eastern boundary

of the site is located within the Kirton Ward and the south west corner of the site and associated access is located within the Nacton and Purdis Farm Ward, all of which are also located in SCDC.

13.2.6 For the purposes of the assessment a Local Impact Area (LIA) and Wider Impact Area (WIA) were defined. The draft boundary for the Martlesham, Newbourne and Waldringfield Area Action Plan, as set out in the District Local Plan consultation documents, was discounted for the LIA, as it was considered the area needed to include local centres Kesgrave and Woodbridge. The EIA scoping report (Ref 13.1) proposed a study area of 3km radius around the red line boundary for assessment of local impacts, however after review as part of the EIA, and consultation responses (see Table 13.4) the LIA has been extended to a 5km radius around the site, as shown on Figure 13.1.

13.2.7 The WIA has been defined as the SCDC area, with consideration of the adjacent Waveney District Council (WDC) area (as WDC together with SCDC form East Suffolk) and/or the Suffolk region as appropriate.

Assessment Years (Temporal scope)

13.2.8 Baseline data for the socio-economic assessment was collated in 2017 and as such the baseline year for the assessment is taken as 2017. However, it should be noted that due to publication programmes, much of the baseline data relates to earlier years.

13.2.9 The Proposed Development would be constructed according to the parameter plans, and in phases, as presented in Appendix A.

1. 450 units, together with the new school
2. 550 units and A12 junction
3. 1,000 units

13.2.10 Construction is currently proposed to start in 2018 and the opening year for the completed development is currently proposed to be 2032. The latter has been used as the assessment year for the operational assessment. Should either of these dates change significantly the assessment would require review and validation or update.

Assessment Methodology

13.2.11 Unlike the majority of other topics assessed with an EIA, there is no legislation that specifies the content for a socio-economic assessment, or appropriate standards and thresholds for use in significance criteria. The assessment has therefore been informed by professional experience and knowledge. The principles of the assessment have been based on the International Association for Impact Assessment's 'International Principles for Social Impact Assessment' (Ref. 13,2).

13.2.12 A desk based assessment has been completed for the scope defined above, using information in the public domain together with further information and issues raised through consultation.

Baseline Study

13.2.13 Baseline environmental information collated in the Scoping Report has been supplemented with further desk-based review of publicly available information and consultations. Documents reviewed include:

- SCDC, Suffolk Coastal District Local Plan, Core Strategy (Ref. 13.3) and Site Allocations and Area Specific Policies (Ref.13.4), Development Plan Documents, together with relevant saved policies from the Suffolk Coastal Local Plan (as of January 2017) and Supplementary Planning Guidance (SPG);
- SCDC, Leisure Strategy 2014-2024 (Ref. 13.5) and Green Infrastructure Strategy (Ref.13.6);
- East Suffolk Enabling Communities Strategy (Ref. 13.7), East Suffolk Business Plan (Ref. 13.8) and East Suffolk Growth Plan (Ref. 13.9);
- Suffolk County Council (SCC), Joint Strategic Needs Assessment (Ref. 13.10) and Joint Health and Wellbeing Strategy (Ref. 13.11); and
- New Anglia Local Enterprise Partnership (NALEP), Strategic Economic Plan (SEP) (Ref. 13.12) and New Anglia Sector Skills Plan Construction (Ref.13.13).

13.2.14 Website based sources of data included:

- Office for National Statistics (ONS) (Ref.13.14) – 2011 Census and Neighbourhood Statistics (Martlesham, Nacton, Riverside, Kesgrave East and West Wards);
- NOMIS (Ref.13.15); 2011 Census data;
- Sustrans (National and Regional Cycle Trails); and
- MAGIC (for access land data).

13.2.15 Data has generally been collected for the local wards to the site but is also presented at the council, regional and national levels where appropriate to provide context.

Assessment of Impacts

13.2.16 An assessment has been made of the significance of likely socio-economic effects for construction and operation of the Proposed Development, taking into account the importance and sensitivity of receptors, the size (magnitude) of impact, how long the impact occurs and how likely it is to occur, based on the information available at the time of assessment. Significance criteria are outlined below, together with further detail on the calculations undertaken as part of the assessment.

13.2.17 Where relevant the assessment has been informed by the Design and Access Statement, Planning Statement, Statement of Community Consultation and the Rights of Way Statement for the Proposed Development. An Education Strategy Report has also been completed for the Proposed Development. This report uses school place information and an assessment of additional school place demand provided by SCC and is to be submitted as part of the planning application. Information from this report has been used in the assessment where appropriate.

13.2.18 Employment created during the construction phase of the Development has been calculated by dividing the estimated capital cost of the project by the gross output per

construction industry employee. This figure is referred to as 'job years'. Following economic conventions adopted by HM Treasury, ten job years of employment can be taken as equivalent to one full time job (known as full time equivalent or FTE). This employment would be temporary as its duration is dependent on the length of the construction period.

Significance Criteria

13.2.19 The principles for the EIA delivery and generic significance criteria are described in ES Section 5.2. These have been used as the basis to develop significance criteria for the socio-economic assessment, where effects are defined according to the sensitivity and importance of receptor (refer to Table 13.1), and impact magnitude, as defined in Table 13.2.

Table 13.1 Receptor sensitivity / importance

Receptor Sensitivity / importance	Description
Very high	Receptor of international importance and scale with very limited potential for substitution e.g. the international economy
High	Receptor of national importance and scale with limited potential for substitution or reparation e.g. the national economy, national cycle routes, nationally recognised tourist attractions or designated sites, cities
Medium	Receptor of regional importance and scale with limited potential for substitution or reparation e.g. regional and council level economy, regional attractions and associated visitors, towns and significant settlements.
Low	Receptor of local importance and scale e.g. local economy within the LIA, local tourist attractions and businesses, active workers in the LIA.

13.2.20 The criteria used to describe the magnitude of impact are defined in Table 13.2. Note impacts can be adverse or beneficial. Quantitative assessment can be applied using the categories where appropriate.

Table 13.2 Impact Magnitude

Magnitude	Definition
Very High	Irreversible, substantial (>15%) and permanent impact on a national or regional level.
High	Considerable (>10%) permanent impact at a national, regional or local level.
Medium	Temporary impact at a national or regional level, or permanent impact (>5%) at a local level
Low	No discernible impact at a national or regional level, temporary impact at a local level or small permanent impact (<5%)
Very low	No discernible alteration

13.2.21 An assessment of effect significance has been made as a function of the receptor sensitivity and impact magnitude, as summarised in Table 13.3. Significant effects are

considered to be those assessed as having a moderate, or major significance of effect and are shaded in red.

Table 13.3 Likely Effect Significance

Receptor Sensitivity	Impact Magnitude				
	Very High	High	Medium	Low	Very Low
Very High	Major	Major	Major	Moderate	Minor
High	Major	Moderate	Moderate	Minor	Negligible
Medium	Moderate	Moderate	Minor	Minor	Negligible
Low	Minor	Minor	Minor	Negligible	Negligible

Assumptions and Limitations

13.2.22 The electoral ward boundaries were redefined for the 2015 election. Baseline data is available for the wards before the boundaries were redefined i.e. 2011 Census data for the Martlesham, Kesgrave (East and West), Nacton and Riverside wards has been used in the assessment. There are some minor variations in population / resident numbers of areas according to the information source used and dates of updates, but this is not considered to significantly affect the impact assessment.

13.2.23 For the purposes of the assessment it has been assumed that 2,000 homes would be provided in the Proposed Development and a range of between 20% and 33% of the homes would be affordable. The final percentage would be subject to negotiations completed with SCDC and would meet policy requirements. The lower end of the range has been considered in the assessment as a conservative case. No provision has been made for sheltered accommodation or care homes but these may be considered at the detailed design stage.

13.2.24 Floorspaces for the proposed employment uses in the operational development are not available at this stage of the development process. Therefore it has not been possible to estimate the direct and indirect job creation for each proposed employment use. Once final floorspaces have been confirmed such calculations can be completed to confirm likely employment numbers. A professional judgement has been made on the likely effects of job creation.

13.2.25 The final number and mix of houses included in reserved matters and any subsequent applications relating to the Site may vary from that included in the outline application. Should this be the case the assessment would require review, to confirm there would be no material change to the identified effects.

13.2.26 It has been assumed that there are no changes to demographics or to education and health provision on-site during the construction phase. As the Proposed Development would be phased this would not be the case in practice, as homes constructed in Phase 1 would become occupied whilst later phases were still in construction. For simplicity, the interim changes to demographics and any changes to associated pressures on existing facilities e.g. education and health, are considered in the operational phase.

13.2.27 The assessment does not include economic modelling.

13.2.28 Assessment of effects of recreational users on designated and non-designated sites of ecological importance and associated detail on visitor management to the Deben Estuary is contained in the Shadow Habitats Regulation Assessment and ES Chapter: 8 Ecology. Quality of life effects such as air quality and noise are addressed in ES Chapters 6 and 12 respectively.

13.3 Consultation undertaken

13.3.1 A summary of the consultation responses from the Scoping Opinion and public consultations is provided in Table 13.4.

Table 13.4 Summary of Consultation Responses

Consultee	Issues Raised
SCC	Additional demand for recreation and open space within the wider area and use of the rights of way network to be considered. Health impacts are commonly part of Integrated Impact Assessments that combine EIA and a Health Impact Assessment (HIA). The baseline health conditions can be obtained from the Joint Strategic Needs Assessment and reference should also be made to the linkage to the Health and Wellbeing Strategy. Improvements to pedestrian and cycle routes and the access to open space can have positive benefits to existing populations if incorporated into an assessment. For potential social economic impacts, it is important to know the scale of the accommodation that is being planned, the mitigation on existing companies in the area, and the time horizon for the employment phase. The study area of 3km does not appear to be sufficient to properly assess impacts locally.
Natural England	Measures such as reinstating existing footpaths together with the creation of new footpaths and bridleways are to be encouraged. Links to other green networks should also be explored to promote the creation of wider green infrastructure. Relevant aspects of local authority green infrastructure strategies should be incorporated where appropriate. The EIA should consider potential impacts on access land, public open land, rights of way and coastal access routes in the vicinity of the development. Consideration should also be given to the potential impacts on the adjacent/nearby National Trail. Recommend reference to the relevant Right of Way Improvement Plans (ROWIP) to identify public rights of way within or adjacent to the site that should be maintained or enhanced.
Martlesham Parish Council	Cumulative traffic concerns raised – the assessment should also consider the expansion of the Martlesham retail area; traffic movements for Sizewell C and the East Anglia Offshore Windfarm projects.
Martlesham Heath Parish Council	Asked whether there would be a country park. Martlesham green spaces are at capacity. Any sports facilities for the development should be provided on-site. Parish Council would prefer a new secondary school rather than

Consultee	Issues Raised
	expansion of the existing school. Access to the secondary school from the Heath was also queried. Martlesham Community Hall is very well used and something of a similar size would work well on the site. Would welcome inclusion of changing facilities for sport as part of this facility. They will already have an extra 1,000 residents using the existing facilities as a result of committed development.
Waldringfield Parish Council	Potential risk of increase in crime and disorder due to increased population and resultant pressure on police resources.
Kesgrave Parish Council	Queried secondary school capacity and whether another would be provided on-site or relocate sixth form. Noted affordable housing is a local issue.
Martlesham Heath Householders Ltd	Manage all green spaces. Existing pedestrian cycle bridge is not suitable and has anti-social behaviour issues. Cycle routes MHHL may require assistance improving existing routes in relation to local schools.
Reverend Tate	Church would welcome involvement in helping to create new community. Would also welcome a large community space on-site which is flexible in terms of use. Need a community gathering area and local shops so travel not required. Accommodation for older people is needed. Primary schools locally are full.
Moon and Sixpence	Believes the development would have a negative effect on his business

13.4 Statutory and planning context

13.4.1 A comprehensive review of the relevant planning policy for the Proposed Development is provided in the Planning Statement that accompanies the planning application. A summary of relevant national and local policy documents and other strategy and guidance relevant to the assessment is provided below.

National Planning Policy Framework

13.4.2 The NPPF (Ref.13.16) emphasises the need for sustainable economic growth, supporting job creation and innovation whilst protecting and enhancing our natural environment. It aims to support strong, vibrant and healthy communities by providing a housing supply required to meet the needs of present and future generations; and by creating a high quality built environment, with accessible local services that reflect the community's needs and support its health, social and cultural well-being. In addition it requires that development takes account of and supports local strategies to improve health, social and cultural wellbeing for all, and delivers sufficient community and cultural facilities and services to meet local needs i.e. the development should, where possible, encourage physical activity and make it easy to do, and create places and spaces to meet.

Local Policy

13.4.3 Adastral Park is specifically identified in Policy SP20 of the SCDC Adopted Core Strategy and Development Management Policies for a strategic housing allocation of 2,000 homes. Policy details are summarised in Table 13.5 with other policies of relevance to the assessment.

Table 13.5 – Socio Economic Local Planning Policy

Local Policy	Key Provisions
SP20 Eastern Ipswich Plan Area	Sets out the approach to development for the three sub-sections of this plan area, one of which includes the site and notes development should be to the south and east of Adastral Park. Development should contain a mix of housing type and tenure, appropriately phased to allow for any necessary infrastructure and social and community facility upgrades, and a country park or similar strategic open space will be required, with a focus on encouraging walking and cycling and accessing green space.
SP1 Sustainable Development	Relate new housing development to employment services, transport and infrastructure; achieve a local balance between employment opportunities, housing growth and environmental capacity; ensure the provision of appropriate infrastructure in order to support existing and proposed communities.
SP2 Housing Numbers and Distribution	Provision for at least 7,900 new homes across the district between 2010 and 2027, with land for new homes distributed accorded to the Settlement Hierarchy (SP19). 2,100 new homes are allocated for the Eastern Ipswich Plan area (excluding outstanding planning permissions).
SP3 New Homes	Increase the stock of housing to provide for the full range of size, type and tenure of accommodation to meet the needs of the current and future population.
SP5 Employment Land	Martlesham Heath Business Campus including Adastral Park is identified as a Strategic Employment Area of regional significance and a key economic driver for the Haven Gateway. It is intended to further develop this area to create a high-tech business cluster.
SP16 Sport and Play	Provision, protection and enhancement of formal and informal sport and recreation facilities for all sectors of the community will be supported, particularly where shortfalls in local provision can be addressed.
SP17 Green Space	Communities should have well-managed access to green space within settlements for health and community benefits. The Council will work on green infrastructure opportunities with partners in strategic housing growth areas.
SP19 Settlement Policy	A settlement hierarchy is to be used in determining the scale of development appropriate to a location. The Area East of Ipswich (including Martlesham Heath) is classed as a Major Centre. Large scale development to meet strategic housing and employment needs is considered appropriate here.
DM2 Affordable Housing on	For Major Centre developments of 6 or more homes 1 in 3 homes will be expected to be affordable, unless its provision is not required

Local Policy	Key Provisions
Residential Sites	due to lack of local need or site conditions and suitability and economics of provision.
DM21 Design Aesthetics	Development is expected to establish a strong sense of place, using streetscenes and buildings to create attractive and comfortable places to live, work and visit.
DM22 Design function	Development is expected to meet criteria including maintaining safe and convenient access for people with disabilities, and takes into account need for crime prevention
DM23 Residential Amenity	New development should consider issues of residential amenity i.e. privacy / overlooking, outlook, access to daylight and sunlight, noise and disturbance, physical relationship with other properties, pollution including light and air quality, and safety and security.
DM32 Sport and Play	New residential development is expected to provide or contribute towards indoor and outdoor sport and play space, including equipment and maintenance where a local need has been identified.

13.4.4 In addition to the Core Strategy, a number of policies from the previously adopted Suffolk Coastal District Plan have been saved, until their replacement with detailed development plan documents. Those relevant to the area local to the site are Policy AP216 Ipswich Fringe, which defines the Martlesham Heath Industrial Estate (including the Adastral Park site) as an Employment Area, to which Policy AP51 General Employment Areas therefore also applies.

Other Relevant Strategy and Plans

13.4.5 The NALEP SEP provides the framework for investment by government and local partners across the region, defining growth sectors and locations (including ICT, and the Greater Ipswich area respectively) and setting out ambitions for provision of an additional 117,000 homes by 2026.

13.4.6 The SEP was informed by the East Suffolk Growth Plan, which aims to create the appropriate conditions in the local area to allow creation of 10,000 new jobs and increase the Gross Value Added (GVA, an indicator to monitor economic performance at regional and national level) to meet the NALEP average of £21,500 and exceed the national average of £20,000. This includes lobbying for investment in basic skills development through primary and secondary education, and working with the LEP Smart Anglia initiative to further develop the Information and Communication Technologies (ICT) sector.

13.4.7 The East Suffolk Business Plan sets out a Vision to maintain and sustainably improve the quality of life for everyone growing up, living in, working in and visiting East Suffolk. The plan identifies ten critical success factors to deliver the vision, of which the following five are particularly relevant to the site and Proposed Development:

- Leisure – increased access to quality leisure, cultural facilities and activities that support and promote healthier lifestyles;
- Housing – improved access to appropriate housing to meet existing and future needs;
- Communities – a diverse mix of resilient and supportive communities that value their rural and coastal heritage; which feel engaged, valued and empowered; and

where people's needs are met and where they can make a difference to their community;

- Community Health – enabling people to take responsibility for their own mental and physical health and wellbeing, helping them to live active and healthy lives, while remaining safe within their homes and communities; and
- Green Environment – protecting, enhancing and making sustainable use of our environment.

13.4.8 The plan sets out a number of specific actions for the Suffolk Coastal District, including delivery of a greater number of affordable homes and development of a Suffolk Coastal Youth Council. Several of the wider actions for East Suffolk relate to health and wellbeing e.g. initiatives to increase healthy eating and physical activity, and supporting community-led initiatives, which links to the SCDC Leisure Strategy.

13.4.9 The East Suffolk Enabling Communities Strategy (a joint strategy between SCDC and Waveney District Council) aims to improve the quality of life of local people by building sustainable and thriving communities through an asset based approach to empowerment, enabling and capacity building. The Joint Health and Wellbeing Strategy also includes a focus on prevention and self-care for healthcare, creating communities that have less need for interventions from public services, and where such services are required, these can be provided locally. Similarly the Joint Strategic Needs Assessment highlights the importance of improving independent life for people with physical and learning disabilities.

13.4.10 The Housing and Health Charter for Suffolk (Ref.13.17) states that housing and health are inextricably linked. The vision in the charter is *"for Suffolk people to live in a suitable affordable home that is in good condition, where they feel safe and supported by the local community".* Focus areas to respond to the charter include provision of specialist housing for older people, increasing supply and access to suitable affordable housing, and raising awareness of housing's role in tackling mental health and isolation issues including loneliness.

13.5 Existing environment

Population and Community

13.5.1 As can be seen in Figure 13.1, the nearest residential community is Martlesham Heath, located to the west of the site and the A12. (To the east of the A12 a number of individual residential properties are located immediately adjacent to the site along Newbourne Road to the east and Ipswich Road to the south). The larger village of Kesgrave is located further to the west of Martlesham Heath. Martlesham village is located approximately 1.6km to the north, with the town centre of Woodbridge approximately 4km to the north east.

13.5.2 Waldringfield and the Waldringfield Heath hamlet are located approximately 1.3km to the east of the site. The area to the south of the site is more sparsely populated, with the hamlet of Brightwell situated approximately 1.2km to the south and Newbourne village approximately 1.5km to the south. Ipswich is the nearest city, approximately 10km to the west.

13.5.3 Table 13.6 summarises local population data and provides a comparison of the population age structure at ward, district, county and national level. The data indicates

that district and regional populations are older than the national average and, with the exception of Kesgrave East where the number of children and younger families reflects the presence of the local secondary school, this situation is exaggerated at ward level. An active and healthy older generation can be important for the local economy in terms of spend, but may also place increased pressure on existing services e.g. healthcare.

Table 13.6 Population Numbers and Age Structure

Area	Population	% Split					
		0-14	15-29	30-44	45-59	60-64	65+
Martlesham Ward	4,897	14.3	13.3	14.9	23.4	10	24.1
Kesgrave East Ward	10,775	25.5	15.8	26.8	18.4	3.8	9.7
Kesgrave West Ward	3,736	12.6	13.4	13.9	18.5	8.5	33.1
Nacton Ward	4,602	15.9	13.7	15.9	24.7	7.5	22.3
Riverside Ward	1,954	13.1	8.8	10.8	19.0	8.3	40
SCDC	124,298	16.3	14.2	16.8	21.4	8	23.2
Suffolk	728,163	17	17.4	18.8	19.8	7.1	19.8
England & Wales	56.1M	17.6	19.9	20.5	19.4	6	16.6

Source: ONS, Census 2011, issued 2012

13.5.4 The SCDC Core Strategy notes that the district population is increasing: between 2001 and 2012 the district population grew by 7.9%. Whilst this is a significantly higher rate than WDC (2.9% for the same period) it falls slightly below the rate of 9.7% for the county as a whole (Ref. 13.18). Further growth is anticipated within the district, albeit at a slightly lower rate; according to ONS projections the population of SCDC will have grown to 131,000 by 2032 (the opening date of the completed development, if approved). This is an increase of approximately 5.4%.

13.5.5 The Index of Multiple Deprivation (IMD) provides an indication of the deprivation that may be experienced by people living in a particular area, using a number of indicators relating to health, income and employment, barriers to housing and services, education and training, environment and crime. The latest IMD was completed in 2015. In comparison to the previous IMD completed in 2010 Suffolk and all local authorities within it have become more deprived. The area still experiences below average levels of deprivation and SCDC remains the least deprived local authority within Suffolk (Ref.13.19), however, there are pockets of deprivation in all districts of Suffolk which can be very local and hidden within more affluent communities (Ref.13.20).

Housing Supply and Tenure

13.5.6 The East Suffolk Business Plan states there is a lack of all types of housing to meet the needs of businesses, with planned actions to include increasing the number of social housing providers across East Suffolk, and the opportunities and number of affordable homes for both young and senior people.

13.5.7 The SCDC Core Strategy sets out a requirement for 7,900 homes over the plan period (2010 – 2027). The SCDC Housing Land Supply Assessment (2016)(Ref.13.21) indicates that 2,016 homes have been delivered to date and, subject to allocated sites for housing being brought forward, there should be sufficient housing in the district for the five year period April 2016 to March 2021. The assessment allows for the Proposed Development to contribute 350 homes within this period.

13.5.8 Table 13.7 indicates that the proportion of households in SCDC and at the ward level who own their home outright is significantly higher than the regional and national average. The exception is Kesgrave East, which relates to the younger demographics of the population as presented in Table 13.6, though the level of home ownership is still higher than average. The proportion of rented accommodation, particularly social rented accommodation, is generally lower than regional and national averages. The UK House Price Index (ONS) indicates that house prices in the district are higher than the UK average.

Table 13.7 Housing Tenure

	Number of Households	Percentage Split					
		Owned Outright	Owned with mortgage / loan	Shared Ownership	Social Rented	Private Rented	Living Rent Free
Martlesham Ward	2,198	51.2	29.8	0.2	3.5	14.4	0.9
Kesgrave East Ward	3,935	25.2	53.1	0.3	4.2	16.5	0.5
Kesgrave West Ward	1,701	57.7	26.3	0.2	8.8	6.2	0.8
Nacton Ward	1,938	44.8	36.4	0.4	3.7	12.7	2.0
Riverside Ward	948	55	21.9	0.4	10.9	10.3	1.5
SCDC	53,558	42.5	30.7	0.4	11.4	13.6	1.5
Suffolk	310,745	35.7	31.5	0.7	14.8	15.6	1.6
England & Wales	23.4M	30.8	32.7	0.8	17.6	16.7	1.4

Source: ONS, Census 2011 and Rural Services Network Suffolk Coastal Evidence Base

13.5.9 A range of supported accommodation exists for older people in the local area, with varying levels of additional care provision. The accommodation available (based on known information at the time of writing) is summarised in Table 13.8.

Table 13.8 Supported Housing Developments within the LIA

Settlement	Sheltered Housing	Extra Care	Care Home
Martlesham Heath	1		
Woodbridge	11	2	3
Kesgrave	3	1	1

Education and Skills

13.5.10 The Suffolk County Council Family Services Directory (Ref.13.22) indicates there are a range of nurseries and playgroups in the immediate local area (Kesgrave, Martlesham, Martlesham Heath and Waldringfield) and a number of registered childminders in the Martlesham Heath and Kesgrave areas.

13.5.11 The site and LIA study area are located within the Suffolk County Local Education Authority (LEA). The LEA identified local primary and secondary schools that are relevant to the Proposed Development and information on these schools is summarised in Tables 13.9 and 13.10. Some primary school capacity exists in the local area at present and forecasts indicate a reduction in numbers in local schools in future years.

Table 13.9 Primary Schools, Capacity and Forecast

School	Distance and direction from Site	Capacity	Forecast
Martlesham	1.5km to NW	140	Surplus, through to 2020
Gorseland	1.3km to NW	420	Over capacity, small surplus by 2020
Birchwood	~800m to NW	210	At capacity, small surplus by 2020
Waldringfield	~1.2km to E	105	At capacity, surplus by 2020
Bucklesham County	~2.3km to S	105	Surplus, through to 2020
Cedarwood	~2.5km to W	420	Surplus, through to 2020
Heath	~3.1km to NW	630	Surplus, through to 2020

*Capacity and Forecast figures provided by Suffolk County Council

13.5.12 Kyson and Bealings primary schools are also located within the assessment study area, but were not identified by the LEA as being relevant to the Proposed Development. At present Kyson has a surplus in capacity and Bealings is at capacity.

13.1.1 With the exception of Ipswich Academy, all secondary schools are demonstrating a shortfall in capacity by 2020. Longer term forecasts to 2025 indicate increasing pressure on places overall, in this group of schools.

Table 13.10 Secondary Schools, Capacity and Forecast

School	Distance and Direction from Site	Capacity	Details
Kesgrave High	~2.5km to NW	1753	Over capacity, little change by 2020
Copleston	~5.7km to W	1785	Marginal over capacity, little change by 2020
Ipswich Academy	~6.7km to SW	1229	Significant surplus, reduced but large surplus by 2020
Farlingaye High	~4.4km to N	1986	At capacity, marginal over capacity by 2020

School	Distance and Direction from Site	Capacity	Details
Northgate High	~7km to NW	1883	Surplus, at capacity by 2020
St. Albans RC Academy	~5.4km to W	1017	Marginal over capacity, little change by 2020

*Capacity and Forecast figures provided by Suffolk County Council (Figures for Ipswich Academy exclude sixth form)

13.5.13 A number of out of school clubs, breakfast clubs and school holiday clubs also exist in the local area e.g. the Rhymes at Gorseland, Academy Martlesham and Martlesham out of school clubs and IP5 Alive school holiday club.

13.5.14 The 2011 Census provides an indication of general qualification levels of the population within SCDC, as summarised in Table 13.11. With the exception of Kesgrave West, the wards show a higher proportion of Level 4 qualification than the district, regional and national averages, notably Riverside and Kesgrave East (a much smaller percentage of the latter also has no qualifications). The statistics for Kesgrave East are thought to reflect the younger population profile in this ward, and likely employment at Adastral Park and other local sectors requiring a high level of skills and specialism (also see Table 13.12). Riverside and Kesgrave West are both relatively small wards, but both have a high percentage of older people. It could be speculated that the differences in qualifications between the two reflect the employment sectors for residents in these areas, but this would require further study to confirm.

Table 13.11 Educational attainment (residents 16 or over)

Area	Highest level of qualification (%)						
	No qualifications	1	2	3	4	Apprenticeship	Other
Martlesham Ward	19.0	11.3	15.7	11.4	33.7	4.8	4
Kesgrave East Ward	11.2	13.3	18.0	14.0	36.2	3.8	3
Kesgrave West Ward	30.7	12.5	15.4	10.2	19.4	7.2	4.7
Nacton Ward	16.2	12.6	16.3	12.6	33.8	4.6	3.9
Riverside Ward	16.2	7.4	16.2	7	47.1	2.8	3.3
SCDC	21.1	13.5	16.7	11.3	29.0	4.1	4.4
Suffolk	24.3	14.4	16.5	11.6	23.5	4.2	5.5
England & Wales	22.7	13.3	15.3	12.3	27.2	3.6	5.7

Sources: ONS/ Neighbourhood Statistics (Tables KS501EW and QS501EW)

Note:

Level 1: 1-4 O levels/CSEs/GCSEs (any grade), Entry Level, Foundation Diploma, NVQ Level 1, Foundation GNVQ, Basic / Essential Skills

Level 2: 5+ O levels / 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

Level 3: 2+ A levels/ VCEa, 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: Degree (e.g. BA, BSc), Higher Degree (e.g.MA, PhD, PGCE), NVQ Level 4-5, HNC, RSA Higher Diploma, BETC Higher Level, Foundation

Economy, Employment and Training

13.5.15 This section provides a description of current land and employment uses and key sectors across the site, local area and wider region, together with comparative data on the proportion of the population who are economically active and inactive, employed and unemployed.

13.5.16 The site currently comprises agricultural land (Agricultural Land Classification Grade 4 Poor i.e. is not classified as the Best and Most Versatile Land) (Ref.13.23) which is under partial occupation by a tenant farmer; an operational aggregates facility (Brett Aggregates), which is to vacate the Site on a phased basis by 2019; and a BT testing range. For access purposes the red line boundary also encompasses a section of the science and business park Adastral Park. Adastral Park is home to the BT Research and Development (R&D) headquarters and the Innovation Martlesham ICT cluster, the latter comprising 89 businesses including Cisco, O2, Nokia, Ericsson and Intel. Both are regionally important assets due to the number of jobs and type of employment; the BT facility is understood to contribute over £800 million per year to the local economy (Ref. 13.9). The campus style park currently employs approximately 4,000 people, of which around 90% are employed by BT. BT run graduate and apprenticeship schemes and the park also has strong links with further education facilities, including University College London, the University of Essex and Suffolk College.

13.5.17 Further to the north Martlesham Heath Business Park comprises predominantly light industrial uses and provides employment for approximately 600 people over more than 80 businesses. The north eastern part of the park has a retail presence with Beardmore Park and Tesco. Martlesham Heath also provides a local retail centre; larger facilities are located in Martlesham, Woodbridge, Ipswich and Felixstowe.

13.5.18 To the east of the site a number of small commercial operations are located along Newbourne Road, including B1, B2 and B8 units in the Seven Acres Business Park. Adjacent to the south west of the site Brightwell Barns provides office accommodation and G. Drivers Caravans provide caravan maintenance and repair services and the Holeshot Cafe is located adjacent to the A12.

13.5.19 At a district level the core strategy notes key employment sectors include transport and logistics, ICT, energy generation, agriculture and food production, and tourism (Ref Core Strategy). Table 13.13 provides information on the proportion of employed residents in various sectors. The presence of Adastral Park and Innovation Martlesham are highly likely to account for the higher levels of employment in Information and Communications within the Martlesham, Kesgrave East and Riverside wards.

Table 13.12 Employment according to Industry

Area	Residents aged 16-74 in employment	Information and Comms	Transport and Storage	Retail Trade	Public Admin and Defence	Human Health and Social Work	Education	Construction
Martlesham Ward	2,339	10.3	6.2	14.0	8.5	12.0	10.1	6.5
Kesgrave East Ward	5,704	9.2	7.5	13.3	8.6	14.0	9.7	6.5
Kesgrave West Ward	1,583	3.9	7.4	18.7	6.0	15.3	8.0	10.7
Nacton Ward	2,331	6.7	7.2	13.2	5.2	12.4	10.5	7.9
Riverside Ward	695	9.1	3.7	11.4	5.8	14.4	12.8	5.3
SCDC	58,257	5.2	9.7	14.1	6.8	12.2	9.7	7.1
Suffolk	351,760	3.2	6.0	16.1	6.3	12.2	8.7	8.4
England & Wales	26.5M	4.0	5.0	15.9	6.0	12.5	9.9	7.7

Source: Neighbourhood statistics (QS605EW) and ONS (KS605EW)

13.5.20 Whilst the numbers of residents who are economically active and employed are slightly above the national average for SCDC as a whole, there is significant variation across local wards to the site, as shown in Table 13.13 below. This generally correlates with local population demographics and the proportion of people at retirement age. Unemployment levels are consistently below the regional and national averages.

Table 13.13 Key Economic Activity Data for all residents aged 16-74 years

Area	All usual residents	Economically active, employed*	Economically active, unemployed	Economically inactive
Martlesham Ward	3,611	62.6	1.9	32.8
Kesgrave East Ward	7,301	75.4	2.6	18.8
Kesgrave West Ward	2,562	59.6	2.7	35.1
Nacton Ward	3,365	67.0	1.7	28.6
Riverside Ward	1,168	57.6	1.5	38.7
SCDC	88,250	63.9	2.7	30.8
Suffolk	525,463	64.9	3.6	28.9
England & Wales	41.1M	61.9	4.4	30.3

*includes people in part-time and full time employment or those who are self-employed

**includes people who are retired, students, long-term sick, looking after home and/or family etc.

13.5.21 At a regional level the SEP notes that whilst the employment rate for the region has been above the national average for the past decade, the economy can be classed as middle-ranking and productivity is relatively low, with a GVA per job presently some 10% below the national average.

Health

13.5.22 The Health Profile for Suffolk Coastal District (Ref.13.24) notes that the health of residents in the district is generally better than average; both male and female life expectancy is significantly better than the England average. Local priorities are stated to be ensuring more children are at a healthy weight (though child obesity levels are better than average for England), encouraging daily activity, maximising use of the natural environment and reducing smoking levels in the groups where they are highest.

13.5.23 NHS Ipswich and East Suffolk Clinical Commissioning Group (CCG) is a group of 40 GP Practices in Ipswich and the eastern part of Suffolk that replaced the primary care trust NHS Suffolk in 2013. The CCG is responsible for commissioning and managing local health care services, including those within the assessment study area. The Suffolk and North East Essex Sustainability and Transformation Plan (Ref.13.25) was published in November 2016. This sets out proposed changes to health and social care and was issued to respond to the increasing demand on family doctors; record numbers of people living with long term health conditions; and costs of treatment.

13.5.24 NHS digital statistics for 2016 indicate that within the Ipswich and East Suffolk CCG the average number of patients per practice is 9,996 (in comparison to the England average of 7,521) and the number of patients per GP is 1,701 (England average 1,364), which suggests that at a regional level GP resources are already likely to be at capacity.

13.5.25 In relation to healthcare facilities local to the site, the nearest hospital is the Ipswich Hospital approximately 5.3km directly to the west of the site; this includes an accident and emergency unit and maternity facilities. GP practices and capacity are detailed in Table 13.14 below. According to information on NHS Choices all are currently accepting new patients, though the number of patients per GP is over double the national average at Martlesham Heath.

Table 13.14 GP Practices and Resources

Surgery	Number of GPs	Registered Number of Patients
Framfield House, Woodbridge	7	12,208
Little St. John's Street Surgery, Woodbridge	5	6,559
Birches Medical Centre, Kesgrave	5	8,124
Martlesham Heath	2	5,990

Source: NHS Choices website, accessed Feb 17

13.5.26 Local dental practices are located in Martlesham Heath, Kesgrave and Woodbridge, with a mix of NHS and private practices.

13.5.27 At a county level One Life Suffolk provides free information and support to help local people become healthier. Local recreational and sports facilities, open space and green space, safety and access, which can all contribute to health and wellbeing of the local communities, is discussed in the following sections.

Recreation, Leisure and Tourism

13.5.28 Current pedestrian and cycle access to the site and local area is detailed in ES Chapter Transport 14. A footbridge at the northern edge of the site provides pedestrian and cycle access across the A12. Sustrans National Cycle Route 1 from Ipswich uses this footbridge, routing along Gloster Road and Felixstowe Road to the east of the A12, north towards Woodbridge. In the wider area Regional Route 41 runs along Waldringfield Road to the east of the site.

13.5.29 Limited public access to the site is currently available. The Public Rights of Way (PRoW) across the site and local area have been checked against the Definitive Map (as provided by the Highways Authority) and are presented as Figure 13.2.

13.5.30 An area of existing woodland, Spratts Plantation, is located within the site adjacent to the northern boundary and the eastern edge of Adastral Park. A public footpath follows the eastern edge of the Plantation and Adastral Park south, before crossing the site to Ipswich Road. A public bridleway runs along the southern edge of the site adjacent to Ipswich Road and around its south eastern corner to Newbourne Road. A public footpath continues around the east and northern edges of the site, connecting to Walk Farm Wood, located approximately 500m to the north of the site. A PRoW routes through the wood, which also forms part of the Martlesham Circular Walk (Ref. 13.26) and the Sandlings Walk. The latter is a long distance regional walk connecting Ipswich and Southwold, passing through Martlesham Heath, Woodbridge and Sizewell. Land to the west of the wood and adjacent to the Tesco store, is classified as Open Space under the Countryside and Rights of Way (CRoW) Act. A second area of designated Open Access land (Dobbs Corner) is located to the west of the site on the edge of Kesgrave; the Sandlings Walk passes through both.

13.5.31 At a national level the England Coast Path will be a new National Trail around the whole of the English coastline, including the Deben Estuary to the east of the site. Construction of the path is due to complete in 2020 but the route is opening in sections as they are finished. Construction works around the Deben are currently proposed to start in 2017-18 (Ref. 13.27).

13.5.32 The Martlesham Neighbourhood Plan (Ref.13.28) notes that within Martlesham Heath, the Centenary Play Area has been refurbished to Neighbourhood Equipped Area for Play (NEAP) standard and the Village Centre play area is to Local Equipped Area for Play (LEAP) standard. There is one play area within Martlesham to LEAP standard. Survey results for the neighbourhood plan indicated the Centenary Play Area and the Harry Higgins play area adjacent to the Martlesham Heath Pavilion are the most used of the local play areas.

13.5.33 The lake within the site, Swale Pit, is currently used by the Adastral Park Angling Club. Waldringfield Golf Club is located adjacent to the east of the site, to the east of Newbourne Road. A wide range of sports facilities and social clubs operate in the local area, including fitness clubs and swimming pools, tennis, cricket, football, sailing, other golf clubs, bowls, BMX (Jubilee Park) and an indoor skate park (Area 25), though the Martlesham Neighbourhood Plan notes that facilities for sports, including indoor sports and tennis are lacking in the parish. Allotments are available near Kesgrave at Lux Farm; allotments in Woodbridge are located next to Elmhurst Park but there is a waiting list for a plot.

13.5.34 Local community venues include the community hall and pavilion at Martlesham Heath (consultation responses and the Neighbourhood Plan indicate the hall is well used); the Old Martlesham Village Hall, a youth club and social club in Kesgrave, Royal British Legion halls at Kesgrave and Woodbridge and the village hall at Waldringfield.

13.5.35 The Moon and Sixpence, a short and long stay caravan park is located adjacent to the north east of Adastral Park, with access from Newbourne Road. The Falcon Park residential caravan park is located directly to the north of the site, to the east of Martlesham Heath Business Park.

Crime and Safety

13.5.36 The 2015 report on Suffolk Indices of Deprivation[29] notes that Suffolk remains a relatively low crime county and in the top 25% of regional areas, however the ranking for crime (including that for SCDC) has worsened in comparison to other districts and unitary authorities.

13.5.37 The LIA is covered by the Suffolk Constabulary Ipswich East and Woodbridge Safer Neighbourhood teams, with the boundary between the teams being the A12. Neighbourhood priorities for the local area are noted to be anti-social behaviour (ASB) around the Pavilion at Martlesham and ASB use of vehicles in Millennium Way, Jubilee car park, Kesgrave. Consultations to date have noted ASB on the existing pedestrian cycle bridge across the A12 (refer to Table 13.4).

13.6 Predicted Effects

Construction

13.6.1 There would be a permanent loss of the remaining farmland within the site, which is of a poor ALC grade and therefore would be a **negligible effect**. Bretts Aggregates are vacating the Site by 2019 so there would be a **negligible effect** on this business.

13.6.2 The construction works would create temporary and direct employment. Based on an estimated capital cost of the Development of £125 million and average gross output per construction industry employee of £49,911 (Source: ONS Statistics) the number of job years for the Proposed Development is estimated to be 2,504. This is equivalent to the creation of 250 FTE jobs during the construction phase. However, the labour flow through the project would change according to the phase of works and site activities e.g. finishing trades would start and finish on-site later than ground works (Ref.13.30). As the Proposed Development has a programme of three phases across 14 years this would also be likely to result in lower peak levels of employment (in comparison to the

Development being constructed in 1 or 2 phases). It is estimated that there would be a maximum of 75 workers on-site during the construction phase. Whilst employment may be created at a district level (i.e. medium receptor) this increase in employment would be temporary and low in terms of employment numbers, therefore the direct effect on employment would be a **minor beneficial effect**.

13.6.3 Construction of the Proposed Development would also result in indirect jobs created through the supply chain, and potentially a further number of induced jobs as a result of spend of earnings of those employed in the works on-site or in its supply chain. It is estimated that for every construction job created 1.21 indirect and induced jobs are created elsewhere in the supply chain and wider economy induced (Ref. 13.31), noting a range of multipliers are available and the lowest from these documents has been used as a conservative estimate), giving a total additional 302 FTE jobs during the construction phase. This increase in employment would again be likely to be created at a district level (medium receptor) but the temporary nature and scale of the increase would give a **minor beneficial indirect effect** on employment.

13.6.4 It is predicted that use of local and regional companies, where possible, for construction plant and materials, together with the increased spend in the local economy (on accommodation and subsistence) by construction workers would result in a temporary, no more than **minor beneficial economic effect.**

13.6.5 The PRoW which border and cross the site would be directly affected by the construction works, requiring temporary closure, and provision of well signposted route diversions. However the closures required would vary according to the phase of development, as summarised in Table 13.15.

Table 13.15 PRoW Access during the Construction Phase

Phase of Development	Footpaths Closed	Footpaths Open
Phase 1	Bridleway 10, 12 (part), 12A Footpaths 9,10, 30, 51	All others
Phase 2	Bridleway 12 (part) Footpath 9	All others
Phase 3	Bridleway 7,8, 11, 12 (part) Footpath 20, 23, 42, 43, 51 (part),	All others

13.6.6 As any diversion routes would pass close to the construction-site views from the diverted footpaths would alter, routes would generally be likely to increase in length, and users of the footpaths may be subject to temporary, intermittent disturbance and nuisance effects from the construction works. Similarly the National and Regional Trails in the vicinity of the Site may be subject to some nuisance effects. Given the temporary nature of the works and proposed implementation of a CEMP, this is predicted to be a **minor adverse effect** on local PRoW, trails and associated recreational users. Plans and details of the proposed diversion routes would be agreed with the statutory authorities and included in the Construction Environmental Management Plan (CEMP) for the works.

13.6.7 During the construction works some temporary and intermittent disturbance and nuisance effects on local residents and businesses e.g. Adastral Park, Moon and

Sixpence, Brightwell Barns, would be likely to result from a combination of noise (from construction activities and/or traffic), pedestrian severance, traffic delays or disruption and visual impacts. The significance of such effects on amenity would vary according to the phase of development, the specific works taking place and their location on-site and would also be dependent on the implementation of the CEMP. These cumulative (combined) effects are considered in detail in ES Chapter 15 (Cumulative Assessment).

Operation

13.6.8 There is an increasing demand for housing within SCDC in response to growing employment opportunities, the next generation of homeowners who are already located within the district (notably in Kesgrave East) and a trend for smaller household sizes. There is a need for more affordable housing and housing for older communities, together with a need to retain younger people within the district and region and encourage an intergenerational culture. Creation of 2,000 new homes with a range of sizes and tenures would be a significant impact on the housing supply at a local and district level, which would be a **moderate beneficial effect** (and a **minor to moderate beneficial effect** for affordable housing, assuming the lower range of 20% affordable housing was provided).

13.6.9 The increase in housing supply would be likely to temporarily depress house prices in the local area and wider district, though phasing of the development would reduce the likely magnitude of impact. In the long term the additional local facilities, education and healthcare provision and new green spaces and play areas would be anticipated to provide security in local house prices. Overall, a **short to medium term minor adverse effect** is predicted for existing homeowners, but conversely any reduction in housing prices would be of benefit to prospective homeowners, so would be a **short to medium term minor beneficial effect. A long term negligible effect** is predicted for both receptors.

13.6.10 The Illustrative Framework Masterplan for the Proposed Development retains Spratts Plantation and would provide significant new green infrastructure and recreational facilities for the existing and new communities as follows:

- Suitable Accessible Natural Green Space (SANGS) – 25.1 hectares;
- 3.3ha of outdoor equipped playgrounds and informal play areas (within the SANGS) together with additional play spaces within the residential areas;
- A sports ground; and
- Allotments/ community orchards (0.83 Ha).

13.6.11 The Proposed Development would also retain the existing footpaths within the site, which would be enhanced through planting and landscaping, upgrade paths to bridleways and create new informal footpaths to improve connectivity to the north and west, including trim trails / jogging paths. It would also include a new crossing of the A12, which currently acts as a significant barrier between the site and existing residential communities to the west.

13.6.12 Together these features would provide benefits at a local level for the existing and new communities, contributing to physical, mental and social wellbeing and helping to meet local health priorities in terms of increasing use of the local natural environment, ensuring more children are at a healthy weight and encouraging daily activity including

walking, cycling, running and other sports. These are preventative measures to help create resilient communities. Significant green space provision would also be provided in Phase 1 of the Proposed Development. The existing and new communities are classified as a medium receptor and a medium impact results in a **minor beneficial effect**.

13.6.13 D1 use is included in the Illustrative Framework Masterplan for the Proposed Development which could include a new sports / community hall as part of this allocation. School facilities may also be used to help create a community hub. This is predicted to result in a **minor beneficial effect** to the local community, though the specific facilities to be included in the final design are yet to be agreed.Direct employment opportunities would be provided within the Development, as follows

- B1 office space, 0.6 Ha;
- Primary Centre including A1 to A5, B1, C3, D1 and D2 uses;
- Secondary Centre including A1, A3 and A5 uses; and
- An all through school for primary and secondary education with an associated early year's facility and a freestanding pre-school facility.

13.6.14 Given the relatively small scale of the likely job creation this is predicted to be no more than a local impact, resulting in a **minor beneficial effect**, particularly as a proportion of the new residents may be employed within the site.

13.6.15 The Proposed Development would also result in indirect employment and beneficial impacts on the local economy, through increased demand for services from the new residents, which are not likely to be fully accommodated within the Development itself. This is considered to be an impact at a wider district level, which would be a **minor to moderate beneficial effect.**

13.6.16 The increase in local population associated with the new housing would result in a number of adverse and beneficial effects, which are described in turn below.

13.6.17 There is potential for a short to medium term increase in competition for jobs, though as noted in the policy and baseline there are plans to expand the ICT sector in the area and Innovation Martlesham, which could provide up to 2,000 jobs in the longer term and the construction and energy sectors may also expand in the medium to long term (refer to ES Chapter 15: Cumulative Effects for further details). Overall, it is considered this would result in intermittent short term **minor adverse effects** but long term would be a **negligible effect.**

13.6.18 Influx of a new community to the area in response to employment growth would contribute to economic growth targets, bring new skills and knowledge, strengthening and diversifying the existing skills base and increasing the local GVA. This would be an indirect long term **minor to moderate beneficial effect.**

13.6.19 The Proposed Development would increase demand for pre-school, primary, secondary school and sixth form places. Initial estimates, based on SCC's pupil figures for the new housing (note no allowance has been made for flats or specialist housing at this stage) are as follows:

- 200 pre-school children
- 500 primary school children

- 360 secondary school children
- 80 sixth form children

13.6.20 As noted in the baseline conditions there are a number of pre-school providers in the local area, and once additional demand exists some of these may seek to expand and other private, voluntary and independently run facilities may be established. However it is considered appropriate to meet some pre-school requirements alongside the new school and also to provide for a freestanding facility. There is some local capacity for meeting additional demand for school places before the school is established on-Site.

13.6.21 An area of 5.5 ha has been set for appropriate education provision within the Illustrative Framework Masterplan for the Proposed Development. This allows for the preferred provision of a new all through school on-site, to be constructed in the relevant phases of the development. This would allow on-Site demand to be met without unduly increasing pressure on existing facilities. Current proposals are that primary provision would initially be for a two form entry school but with space safeguarded to allow future expansion to a three form school (630 places), secondary education provision could provide four forms of entry (600 places), with sixth form provision envisaged to be made off-site. The appropriate provision to be included in the development would be agreed with the LEA to ensure that overall there would be a **negligible effect** on education.

13.6.22 Local GP surgeries are still accepting new patients and baseline information indicates there may be some capacity within one of the Woodbridge surgeries, however the remaining facilities already experience above average numbers of patients per GP and demand in the area is likely to be higher than average given the larger older population. Additional healthcare facilities would therefore be required as part of the Proposed Development, to avoid significant adverse effects on existing healthcare facilities and associated health and wellbeing, resulting from the increase in population. The Applicant's preference is to include a new healthcare facility within the primary centre of the Proposed Development and D1 use is included in the Illustrative Framework Masterplan to allow for this (and other facilities such as a dentist). However, the primary centre is currently proposed to be constructed in Phase 3 of the Proposed Development. On this basis there would be a **short to medium term minor to moderate adverse effect** on healthcare provision as there would be increased pressure on existing healthcare facilities from new residents in Phases 1 and 2.

13.6.23 Discussions are ongoing with NHS England and the CCG regarding local healthcare requirements and whether new provision would be on or off-Site. In either case the new provision agreed would be of a sufficient scale and quality to ensure that there would be a long term **negligible** effect on healthcare provision, both for the existing and new local communities.

13.6.24 The increase in population resulting from the Development has the potential to increase demands on the local police force and fire and rescue services. It is planned that the Proposed Development would create a high quality and safe residential environment, with careful consideration of building and open space layout, lighting, seating and accessibility, to minimise the potential for anti-social behaviour and crime. On this basis the Proposed Development should have a **negligible** effect on local crime and safety.

13.7 Mitigation

Design

13.7.1 Mitigation has been embedded into the Illustrative Framework Masterplan design through appropriate school provision (with allowance for future expansion) to be constructed in the first phase of development; creation of significant green infrastructure and access improvements; and new local centres with associated community facilities within the Proposed Development.

Construction

13.7.2 The CEMP would contain details of measures to minimise noise and dust, traffic disruption and visual intrusion that together may affect residential amenity and impact on local businesses during the construction works. It would set requirements for regular neighbourhood liaison to ensure the local communities are kept up to date on planned works, and any concerns or complaints are quickly addressed. The CEMP would also include details of the footpath diversions to minimise disturbance and disruption to recreational users of local footpaths.

13.7.3 Discussions regarding healthcare are ongoing with the CCG and NHS England. The outcome of these discussions will determine the scope of the new healthcare facilities to be provided as part of the development and the timing of construction of these facilities, to ensure there is no significant temporary adverse effect on existing healthcare facilities and to meet the requirements of SP20 to prioritise infrastructure, including 'health centre'. Similarly the timing of construction of community facilities will need to be considered, to ensure there is no increased pressure on existing facilities.

Operation

13.7.4 Discussions regarding education are ongoing with SCDC and SCC. These will continue to determine the most appropriate means of ensuring a good quality education for the local communities and the arrangements to be made for school provision to support the Proposed Development.

13.7.5 Further assessment (scope and methodology to be agreed) would be undertaken to inform the detailed design of the Proposed Development, focusing on consultations with local stakeholders to finalise the appropriate community facilities to be included in the Proposed Development i.e. those that would complement rather than compete with existing facilities and maximise likely health and wellbeing effects. This assessment would be used to develop a Communication and Engagement Plan, to be implemented as part of the Development. The plan would ensure continued informal dialogue with relevant statutory authorities and a network of local groups such as the Deben Estuary Partnership, Suffolk Health and Wellbeing Board, Kesgrave and Martlesham Youth Forum, Martlesham Allotment Group and local Parish Councils amongst others. It should also assist in agreement of ownership, responsibilities and maintenance requirements for the new community facilities, and assist integration of the new and existing communities.

13.7.6 Consultation would be undertaken with the Crime and Design officer at the detailed design stage, to ensure the new homes, commercial areas, school and any sheltered

accommodation and sports facilities included in the Development meet Secured by Design standards.

13.7.7 Consideration would be given to construction of new homes in accordance with the BRE Home Quality Mark and other relevant design guidelines such as the Well Standard and Lifetime Homes.

13.8 Summary of effects

13.8.1 The residual socio-economic effects of the Proposed Development are summarised in Table 13.16.

13.8.2 During construction there are minor adverse effects on recreational access across the site, and minor beneficial effects in relation to the jobs created directly and indirectly by the works. The works would also have the potential to positively affect the local economy if local suppliers are used, and construction workers spend in local areas. These effects are not significant.

13.8.3 The completed operational development would have largely beneficial residual effects, through significantly increasing the housing supply at a district level, retention of the existing woodland, provision of a new school and new formal and informal recreational space, with connectivity to existing communities and a focus on connectivity to the west and north (away from the Deben Estuary). Temporary adverse effects during the early phases of the completed Development would require further review and assessment at the detailed design stage, in order to be mitigated effectively.

13.8.4 Temporary effects on residential and business amenity (combinations of noise, dust, traffic, visual effects etc) during the construction works are addressed in ES Chapter 15 Cumulative Assessment.

Table 13.16 Summary of Residual Effects

Receptor	Construction Phase	Operational Phase
Land Use	Minor Adverse	n/a
Direct Employment	Minor Beneficial	Minor Beneficial
Indirect Employment	Minor Beneficial	Short term – Minor Adverse Long term – Minor to Moderate Beneficial
Economy and Growth	Minor Beneficial	Minor to Moderate Beneficial
Skills and Training	Minor Beneficial	Minor to Moderate Beneficial
Housing Supply	n/a	Moderate Beneficial
Affordable Housing	n/a	Minor to Moderate Beneficial
House Prices	n/a	Short to medium term Minor Adverse for existing homeowners and Minor Beneficial for

Receptor	Construction Phase	Operational Phase
		prospective homeowners. Long term negligible.
Health and Wellbeing – Green Spaces	n/a	Minor Beneficial
Health and Wellbeing – Sport and Community	n/a	Minor Beneficial
Public Rights of Way/ Trails / Local Recreation	Minor adverse	Minor Beneficial
Health and Wellbeing – GP and dentist facilities	n/a	Negligible
Pre-school and primary Education	n/a	Negligible
Secondary Education	n/a	Negligible
Sixth Form Education	n/a	Negligible

13.9 References

13.1 RSK for Carlyle Land Ltd and CEG, 2016, Adastral Park Scoping Report.
13.2 International Association for Impact Assessment, 2003, International Principles for Social Impact Assessment
13.3 SCDC, 2013, Suffolk Coastal District Local Plan, Core Strategy and Development Management Policies, Development Plan Document (DPD), including saved policies from the Suffolk Coastal Local Plan; SPGs
13.4 SCDC, Site Allocations DPD
13.5 SCDC, Leisure Strategy 2014-2024
13.6 The Landscape Partnership for SCDC, 2011, Green Infrastructure Strategy, Final Version;
13.7 SCDC, 2014, East Suffolk, Enabling Communities Strategy – a Suffolk Coastal District Council Strategy '*How we will support our local communities';*
13.8 East Suffolk, *East Suffolk Means Business,* East Suffolk Business Plan 2015 – 2023;
13.9 SCDC and WDC, East Suffolk Growth Plan, 2014 – 2025;
13.10Suffolk County Council (SCC), Joint Strategic Needs Assessment
13.11 SCC Joint Health and Wellbeing Strategy, (refresh for 2016 – 2019);
13.12 NALEP, SEP NALEP, Strategic Economic Plan V2, http://www.newanglia.co.uk/wp-content/uploads/2014/03/New-Anglia-Strategic-Economic-Plan-V2.pdf (last accessed 21/03/17)
13.13 NALEP, 2016, New Anglia Sector Skills Plan Construction;
13.14 ONS website
13.15 NOMIS website
13.16 National Planning Policy Framework
13.17 Suffolk Strategic Housing Partnership, Housing and Health Charter for Suffolk
13.18 http://www.healthysuffolk.org.uk/assets/JSNA/PH-reports/Population-Profile-of-Suffolk-County-April-2014.pdf accessed 10/01/17
13.19 http://www.healthysuffolk.org.uk/assets/JSNA/20150215-AMD-Infographics-Indices-of-Deprivation-2015-HR.pdf, accessed 17/11/16
13.20 Housing and Health Charter for Suffolk
13.21 SCDC Housing Land Supply Assessment 2016
13.22 Website Suffolk Family Services
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13.25 Suffolk and North East Essex Sustainability and Transformation Plan, November 2016.

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13.27 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/561860/ECP-east-map.pdf (accessed 22/03/17)
13.28 Martlesham Neighbourhood Plan
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13.30 Doug Forbes, Mohamed El-Haram, Malcolm Horner and Sandra Lilley, 2012, Forecasting the Number of Jobs Created Through Construction, in Smith, SD (Ed) Procs 28th Annual ARCOM Conference 3-5 September 2012, UK, Association of Researchers in Construction Management, 317-326.
13.31 HBF and Nathaniel Lichfield and Partners, 2015, The Economic Footprint of UK House Building

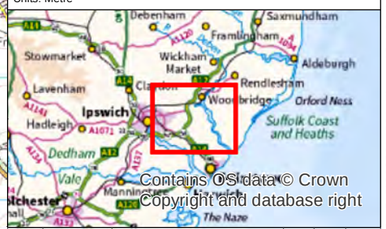
Legend:

- Indicative Site Boundary - Adastral Park
- 5km Distance Marker

Notes:
The site boundary displayed on this plan is indicative only, and has been derived from information displayed on '170301 Adastral Park 31677 - 01C Site Boundary 5000A1' drawing (Drawing 01, Revision C), created by BroadwayMalyan, 01.03.17.

No measurements should be taken from this plan.

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Metre



Rev	Date	Description	Drn	Chk	App
00	03/03/2017		JG	RC	AO

Adastral Park

RSK

TITLE:

Figure 13.1 Socio-Economic Local Impact Area

0 1 2
Kilometres

SCALE: 1:50,000 @ A3

REV 00

Document Path: P:\EIA\660000 - EPD National\660961 Adastral Park\08 Graphics\01 GIS\660961_001_Figure 13.1 Socio-Economic Local Impact Area.mxd

Legend:

- PRoW amendments as shown on Definitive Map
- Indicative Site Boundary
- Footpath
- Bridleway
- Recreational Route
- Open Access Land

Notes:
The site boundary displayed on this plan is indicative only, and has been derived from information displayed on '170301 Adastral Park 31677 - 01C Site Boundary 5000A1' drawing (Drawing 01, Revision C), created by BroadwayMalyan, 01.03.17.

No measurements should be taken from this plan.

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Metre

Rev	Date	Description	Drn	Chk	App
00	21/03/2017		JG	RC	AO

Adastral Park

RSK

TITLE:

Figure 13.2 Local Public Rights of Way

0 0.25 0.5
Kilometres

SCALE: 1:20,000 @ A3

N W E S

REV 00

Document Path: P:\EIA\660000 - EPD National\660961 Adastral Park\08 Graphics\01 GIS\660961_002_Figure 13.2 Local Public Rights of Way.mxd

14 TRANSPORT AND TRAVEL PLANNING

14.1 Introduction

14.1.1 This Chapter has been prepared by Brookbanks Consultants Ltd and sets out the results of an assessment of the traffic-related environmental effects of the Proposed Development. The purpose of this chapter is to assess those environmental effects that are potentially significant where a Proposed Development is likely to alter traffic flows.

14.1.2 The approach to the assessment has been based on the 1993 Institute of Environmental Assessment (IEA) publication Guidance Notes No. 1: Guidelines for the Environmental Assessment of Road Traffic and the Department for Transport (DfT) publication Guidance on Transport Assessment.

14.1.3 Data used in the assessment has been drawn from the Transport Assessment (TA) for the Proposed Development contained in Volume 2 of the Environmental Statement. The TA sets out transport issues relating to the Proposed Development, identifies any necessary interventions to mitigate the anticipated transport effects and to improve accessibility and safety for all modes of travel.

14.1.4 Following a summary of the potential effects considered, the chapter outlines the methodology that has been adopted as part of the assessment and then provides a description of the baseline conditions.

14.2 Scope and methodology

14.2.1 The methodology follows current best practice by assessing the impacts of the proposed development on transport modes and users, including: pedestrians, cyclists, public transport users and vehicle drivers and passengers.

14.2.2 For the purposes of this assessment the majority of the routes in the vicinity of the application site are considered to be sensitive as there are residential properties lining the carriageways and, there are potentially high volumes of pedestrian and cycle movements within the urban area.

14.2.3 The magnitude of each impact has been considered against the criteria within the Institution of Environmental Management and Assessment's (IEMA) guidelines, where possible. The significance of each potentially significant effect has also been considered and an assessment has been made as to whether the proposed development would result in adverse or beneficial effects. However, the IEMA guidelines state that:

'…for many effects there are no simple rules or formulae which define the thresholds of significance and there is, therefore, a need for interpretation and judgement on the part of the assessor, backed-up by data or quantified information wherever possible. Such judgements will include the assessment of the numbers of people experiencing a change in environmental impact as well as the assessment of the damage to various natural resources.'

14.2.4 The criteria used to determine the magnitude of impact and significance of effect for each of the traffic-related environmental effects take into account the advice given in the IEMA guidelines

14.2.5 as summarised below.

Severance

14.2.6 Severance is the perceived division that can occur within a residential area if 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 be affected as a result from an increase in traffic that could affect the difficulty in crossing a road. It can also relate to quite minor traffic flows if they impede pedestrian access.

14.2.7 The effects of severance can be applied to motorists, pedestrians or residents. The IEMA guidelines suggest that changes of traffic flow of 30%, 60% and 90% are regarded as producing 'minor', 'moderate' and 'major' changes in severance respectively. However, there are no predictive formulae which give simple relationships between traffic factors and levels of severance. The IEMA guidelines state that marginal changes in traffic flow are unlikely to create or remove severance.

Driver delay

14.2.8 Delays to existing traffic can occur at several locations within the local highway network as a result of the additional traffic that would be generated by a development. The IEMA guidelines 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.

14.2.9 The theoretical capacity of a particular junction can be determined by assessing the Ratio of Flow Capacity (RFC) for priority controlled junctions and Degree of Saturation for signalled controlled junctions. When an RFC value of 0.85 or more is experienced, or a degree of saturation of 90%, queuing and congestion are likely to occur during busy periods.

Pedestrian delay

14.2.10 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 are dependent upon the general level of pedestrian activity and general physical conditions of the crossing location.

14.2.11 Given the range of local factors and conditions which can influence pedestrian delay, the IEMA guidelines 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. However the IEMA guidelines do 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.

Pedestrian amenity

14.2.12 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.

14.2.13 The IEMA guidelines 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.

Fear and intimidation

14.2.14 The scale of fear and intimidation experienced by pedestrians is dependent on the volume of traffic, 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.

14.2.15 There are no commonly agreed thresholds by which to determine the significance of the effect. However, the IEMA guidelines note previous work that has been undertaken which puts forward thresholds that define the degree of hazard to pedestrians by average traffic flow, 18 hour/day heavy vehicle flow and average speed over an 18 hour day in miles per hour.

14.2.16 The IEMA guidelines 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.

Accidents and safety

14.2.17 Where a proposed 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 IEMA guidelines 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.

Significance Criteria

14.2.18 The below provides guidance for the criteria for determining the magnitude and significance of any identified effects, with these being based on the guidance provided within IEMA.

Table 14.1 Magnitude

Magnitude	Criteria
High	Changes in total traffic or HGV flows over 90%
Medium	Changes in total traffic or HGV flows of 60% - 90%
Low	Changes in total traffic or HGV flows of 30% - 60%
Negligible	Changes in total traffic or HGV flows less than 30%

Table 14.2 Sensitivity

Sensitivity	Criteria
High	Where the Proposed Development could be expected to have a very substantial environmental effect (either adverse or beneficial) on severance, driver stress and delay, pedestrian and cyclist amenity, fear and intimidation, and accidents and safety during the construction and operational phases
Medium	Where the Proposed Development could be expected to have a noticeable environmental effect (either adverse or beneficial) on severance, driver stress and delay, pedestrian and cyclist amenity, fear and intimidation, and accidents and safety during the construction and operational phases
Low	Where the Proposed Development could be expected to result in a small, barely noticeable environmental effect (either adverse or beneficial) on severance, driver stress and delay, pedestrian and cyclist amenity, fear and intimidation, and accidents and safety during the construction and operational phases
Negligible	Where no discernible environmental effect is expected as a result of the Proposed Development on severance, driver stress and delay, pedestrian and cyclist amenity, fear and intimidation, and accidents and safety during the construction and operational phases

Table 14.3 Assessment Matrix

	Magnitude of Impact			
Sensitivity	Negligible	Low	Medium	High
Negligible	Negligible	Negligible or Minor	Negligible or Minor	Minor
Low	Negligible or Minor	Negligible or Minor	Minor	Minor or Moderate
Medium	Negligible or Minor	Minor	Moderate	Moderate or Major
High	Minor	Minor or Moderate	Moderate or Major	Major or Substantial

14.2.19 The terms in the matrix in Table 14.3 have the following definitions:

Substantial: These beneficial or adverse effects are a fundamental consideration in the decision making process

Major: These beneficial or adverse effects are considered to be very important considerations and are likely to be material in the decision-making process.

Moderate: These beneficial or adverse effects may be important, but are not likely to be key decision-making factors. The cumulative effects of such factors may influence decision-making if they lead to an increase in the overall adverse effect on a particular resource or receptor.

Minor: These beneficial or adverse effects may be raised as local factors. They are unlikely to be critical in the decision-making process, but are important in enhancing the subsequent design of the Proposed Development.

Negligible: No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

14.3 Consultation undertaken

14.3.1 During the development of this chapter, Suffolk County Council (SCC) and Highways England (HE) have been consulted regarding the proposals. This is in addition to the Scoping Opinion issued by Suffolk Coastal District Council.

14.3.2 The discussions with SCC and the HE included the agreement to the methodology adopted in production of the Transport Assessment (TA). This included the agreement to the use of a Paramics traffic model to identify the transportation impacts. A TA has been produced to support this application and should be read in conjunction with this Chapter.

14.4 Statutory and planning context

National Planning Policy Framework

14.4.1 Chapter 4 of the NPPF 'Promoting Sustainable Transport' sets out the Governments expectations that development should maximise sustainable transport solutions. Paragraph 30 of the NPPF encourages solutions that support reductions in greenhouse gas emissions and reduce congestion. Local planning authorities should therefore support a pattern of development which, where reasonable to do so, facilitates the use of sustainable modes of transport.

14.4.2 Paragraph 32 identifies that all developments generating significant amounts of movement should be supported by a Transport Statement or Transport Assessment. Plans and decisions should take account of whether:

- The opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure;
- Safe and suitable access to the site can be achieved for all people; and
- Improvements can be undertaken within the transport network that cost effectively limit the significant impacts of the development. Development should

only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe.

14.4.3 Paragraph 35 of the NPPF identifies that plans should protect and exploit opportunities for the use of sustainable transport modes for the movement of goods or people. Therefore developments should be designed where practical to:

- Accommodate the efficient delivery of goods and supplies;
- Give priority to pedestrian and cycle movements and have access to high quality public transport facilities;
- Create safe and secure layouts which minimise conflicts between traffic and cyclists or pedestrians, avoiding street clutter and where appropriate establishing home zones; and
- Consider the needs of people with disabilities by all modes of transport.

14.4.4 A key tool to facilitate sustainable transport is the Travel Plan, as identified in Paragraph 36 of the NPPF. All developments which generate significant amounts of movement are required to provide a Travel Plan.

14.4.5 Paragraph 37 of the NPPF identifies that local planning policies should aim for a balance of land uses that minimise journey lengths for employment, shopping, leisure, education and other activities. Paragraph 38 notes that larger scale residential developments in particular should promote a mix of uses in order to provide opportunities to undertake day-to-day activities including work on-site.

14.4.6 When setting local parking standards for residential and non-residential development, Paragraph 39 of the NPPF identifies that local planning authorities should take into account:

- Accessibility of the development;
- The type, mix and use of development;
- The availability of and opportunities for public transport;
- Local car ownership levels; and
- An overall need to reduce the use of high-emission vehicles.

14.4.7 Paragraph 42-006 of the National Planning Practice Guidance states that the aims of a Travel Plan are to positively contribute to:

- Encouraging sustainable travel;
- Lessening traffic generation and its detrimental impacts;
- Reducing carbon emissions and climate impacts;
- Creating accessible, connected, inclusive communities;
- Improving health outcomes and quality of life;
- Improving road safety; and
- Reducing the need for new development to increase existing road capacity or provide new roads.

14.4.8 NPPG Paragraph 42-011 states that a Travel Plan should evaluate and consider:

- Benchmark travel data including trip generation databases;
- Information concerning the nature of the proposed development and the forecast level of trips by all modes of transport likely to be associated with the development;
- Relevant information about existing travel habits in the surrounding area;

- Proposals to reduce the need for travel to and from the site via all modes of transport; and
- Provision of improved public transport services.

HA Circular 02/2013 - The Strategic Road Network and the Delivery of Sustainable Development:

14.4.9 The Circular was published in 2013 and explains how the HA will engage with the planning system and provides details on how the HA will fulfil its remit to be a delivery partner for sustainable economic growth whilst maintaining, managing and operating a safe and efficient strategic road network.

14.4.10 The Circular identifies that development proposals are likely to be acceptable if they can be accommodated within the available highway capacity on the strategic road network, or they do not increase demand for use of a section that is already operating at over-capacity levels, taking account of any travel plan, traffic management and/or capacity enhancement measures that may be agreed. Furthermore it is noted that Paragraph 9 identifies that development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe.

14.4.11 Paragraph 25 identifies that the overall forecast demand should be compared to the ability of the existing network to accommodate traffic over a period up to ten years after the date of registration of a planning application.

14.4.12 Paragraph 27 identifies that where the overall forecast demand at the time of opening of the development can be accommodated by the existing infrastructure, further capacity mitigation will not be sought.

14.4.13 With regard to travel plans Paragraph 29 and 30 highlights that it may be possible to free up additional capacity within the road network so that the demand generated by a proposed new development, which would otherwise be unacceptable, can be accommodated.

14.4.14 Paragraph 34 identifies that at locations where there is insufficient capacity, the impact of the development will be mitigated to ensure that the strategic road network is able to accommodate existing and development generated traffic.

14.4.15 In relation to providing new access points, Paragraph 39 identifies that where appropriate, proposals for the creation of new junctions or direct means of access may be identified and developed at the Plan-making stage in circumstances where it can be established that such new infrastructure is essential for the delivery of strategic planned growth

Manual for Streets 1 and 2 (MfS):

14.4.16 The UK Department for Transport (DfT) and the Department for Communities and Local Government (DCLG), with support from the Commission for Architecture and the Built Environment (CABE), to develop Manual for Streets to give guidance to a range of practitioners on effective street design.

14.4.17 The Manual for Streets (March 2007) guidance on the planning, design, provision and approval of new streets, and modifications to existing ones. It aims to increase quality of life through good design which creates more people-oriented streets. The detailed

guidance applies mainly to residential streets although the overall design principles can be applied to all streets within urban areas.

14.4.18 A street is defined as "a highway with important public realm functions beyond the movement of motor traffic" – i.e. by its function rather than just the road hierarchy.

14.4.19 Manual for Streets has updated geometric guidelines for low trafficked residential streets, examines the effect of the environment on road user behaviour, and draws on practice in other countries. This research provides the evidence base upon which the revised geometric guidelines in the Manual for Streets are based, including link widths, forward visibility, visibility splays and junction spacing.

14.4.20 Manual for Streets 2 - Wider Application of the Principles is the result of collaborative working between the Department for Transport and the transportation industry.

14.4.21 The aim of the document is to extend the advantages of good design to streets and roads outside residential areas, largely covered in MfS1. By amending the way high streets and non-trunk roads are designed, the fabric of public spaces and the way people behave can be changed. It means embracing a new approach to design and breaking away from inflexible standards and traditional engineering solutions.

14.4.22 The new guide does not supersede Manual for Streets 1, rather it explains how the principles of the first document can be applied more widely.

14.4.23 Design Manual for Roads & Bridges: The DfT publish a large suite of documents known as the Design Manual for Roads and Bridges, which provides detailed standards and guidance on the provision of highway networks. The suite of documents provides a comprehensive manual which accommodates all current standards, advice notes and other published documents relating to the design, assessment and operation of trunk roads including motorways. The standards are routinely adopted by local highway authorities for their local highway network.

Suffolk Coastal Core Strategy

14.4.24 Suffolk's core strategy is one of the first documents being produced as part of the Local Plan for the Suffolk Coastal area. It sets out in strategic terms, the councils overall approach to future development for the period to 2027, generally where it should take place and the key factors that need to be taken into account when considering individual proposal for development. It includes an outline for delivering strategic development needs, including housing, employment, leisure and retail. The Core Strategy also includes details of site specific allocations or policies for the management of new development. These are set out in separate Development Plan Documents.

14.4.25 The strategic approach to development in the Eastern Ipswich Plan Area is divided in Strategic Policy SP20 into 3 sections – the area to be covered by the Martlesham, Newbourne & Waldringfield Area Action Plan; the main urban corridor of Kesgrave, Martlesham and Rushmere St Andrew; and the smaller settlements and countryside which surround these core areas.

14.4.26 Strategic Policy SP20 states that the strategy for the Martlesham, Newbourne and Waldringfield Area Action Plan is one:

- that contains well-planned, sustainable new housing of a mix of size, type and tenure linked to existing and proposed employment;

- where the planned direction of controlled growth is eastwards of the A12 to the south and east of Adastral Park;
- where opportunities for new employment provision have been maximised, with major national and international companies sitting alongside smaller ones, particularly those associated with the strategically important hi-tech business at BT;
- where the Martlesham Heath Business Campus including Adastral Park has been designated a Strategic Employment Area;
- where development has been phased and scaled to ensure that new or upgraded transport, utility and other social and community provision is provided in advance of, or parallel to, new housing and employment provision;
- that has created its own distinctive identity with smaller readily distinguishable villages, neighbourhoods and communities within the larger area;
- where public transport provision and foot and cycle paths have been upgraded and promoted to minimise the need to use private motor vehicles to access employment, schools and other key facilities;
- where priority has been given to creating a safe and attractive environment, including the provision of advanced planting and landscaping to create new settlement boundaries that blend with the surrounding landscape and contribute to biodiversity and the ecological network;
- that includes the retention of designated Sandlings areas on the edge of Ipswich because of their historic and biodiversity interests;
- that preserves and enhances environmentally sensitive locations within the Eastern Ipswich Plan Area and its surroundings; and
- that maximises opportunities to achieve access to green space, including the countryside.

14.4.27 The transport and community infrastructure studies completed 2009 provide the background evidence to work with service providers and others to secure the necessary transport and other infrastructure to serve the proposed employment and housing.

14.4.28 Specifically, on land to the south and east of Adastral Park, strategic open space in the form of a country park or similar high quality provision will be required to mitigate the impact of development at this site and the wider cumulative impact of residential development on the relevant designated European nature conservation-sites.

14.4.29 Infrastructure needs stated by Strategic Policy SP20 to be accorded priority include::

- Provision of and increased access to open space both on and off-site to meet the mitigation measures outlined in the November 2011 Appropriate Assessment. This includes enhanced wardening and monitoring of visitor impacts upon designated European nature conservation-sites;
- Improvements to the water supply network;
- Upgrades to the waste water treatment (foul sewage) network;
- Provision of strategic drainage to manage surface water drainage within the site;
- Education facilities to meet identified preschool; primary and secondary needs within the development area;
- Health centre;
- Measures to manage impact on the local road network including improvements to the A12 between its junction with the A1214 and Seven Hills Interchange; to the A1214 and the Foxhall Road corridor;
- Improved public transport provision including links to Ipswich;

- Improvements to the public rights of way network, including pedestrian and cycle links; and
- Adequate electricity supply including an element of decentralised energy provision.

14.4.30 To achieve the overall vision, core strategic policies have been identified. Those relating to transport intended to provide higher level of access to jobs and services in both urban and rural areas and improve connectivity with the rest of the region.

Suffolk Local Transport Plan (2011-2031)

14.4.31 The Suffolk local plan is prepared in accordance with the statutory requirements. It sets out long-term transport strategy for the next 20 years. The aim of this strategy is to promote and aid economic resilience and private sector led growth through the current period of downturn, placing Suffolk in a position to emerge strongly as the economy recovers.

14.4.32 A number of key urban areas have been identified for growth where transport interventions can have significant impact which includes Ipswich area. It is complemented by an implementation plan, presented in a separate document, which explains how the strategic priorities identified here will be delivered. Different interventions will be considered for different places. The common themes are identified for urban areas are:

- Reducing the demand for car travel – This strategy will help people to travel more sustainably into and around the town. The purpose of this is to reduce car travel in Ipswich during peak times which would balance the demand with the limited capacity that is available and make it possible to improve public realm;
- Efficient use of transport networks – The aim is to improve this by managing roads to minimise delays to buses, giving cyclists clear passage through traffic jams and by making it easier for people to walk across the road; and
- Improving infrastructure - Within the Ipswich area there is good public transport network connecting housing areas and employment sites. The Proposed Development will require additional bus lanes, interchange points and improved waiting facilities. Hence working with commercial bus operators will help in achieving this strategy.

14.4.33 The plan shows how transport will support and facilitate future sustainable economic growth by:

- Maintaining the local transport networks;
- Tackling congestion;
- Improving access to jobs and markets; and
- Encouraging a shift to more sustainable travel patterns.

14.4.34 Key issues to be addressed in Ipswich are as follows:

- Road condition;
- Urban realm improvements;
- Tackling congestion;
- Modernisation of bus stations;
- Reducing separation between town centre and waterfront;
- Better facilities for walking and cycling;

- Stronger neighbourhoods;
- Longer term – crossing for improved access to wet dock island site;
- Town centre masterplan;
- A14 improvements;
- Ipswich – Transport fit for the 21st Century;
- Extensive Air Quality Management Areas; and
- A14 Orwell Bridge and Seven Hills Interchange Congestion.

14.4.35 It is forecasted that there will be growth of 15,000 dwellings, with an additional 5,000 in neighbouring districts on the edge of the town. Most of this development in Ipswich will support regeneration of areas within the town, with a significant area of regeneration around the Waterfront and further development of education quarter.

14.4.36 Significant development in Ipswich, particularly employment. The development within the town should result in shorter journeys and will provide an opportunity to change the ways that people choose to travel. According to the traffic modelling it is anticipated that the level of traffic growth is likely to grow by 15% by 2021. This could cause additional pressure on the A12/A14 at Copdock, Seven Hills interchange and the Orwell Bridge.

14.4.37 The public transport in Ipswich is generally good, and provides good commercial services but there are some areas which are not served well. Currently, there is a lack of multi-operator ticketing which worsens this problem. The car park availability and pricing within the town is an important factor in the travel choices that need considering.

Parking standards

14.4.38 Parking standards for houses and apartments: For dwelling houses and apartments the council will aim to achieve the following minimum parking standards:

- Apartments; 1.5 spaces, where 1 space is allocated and another defined shared visitor space is provided for every 2 dwellings in communal parking areas;
- 2 bed units; 1.5 spaces, where 1 space is allocated and 1 space is provided for every 2 dwellings in defined bays within the public highway,3+ bed units; 2 allocated spaces per dwelling;
- Plus 1 visitor space per 4 dwellings unallocated and provided in defined bays within the public highway or private drive; and
- Integral or standalone garages will not be counted as a parking space unless they are an adequate size (currently 3x6 metres minimum clear internal dimensions).

14.5 Existing environment

Existing Travel Patterns

14.5.1 The site is largely located in the Martlesham Ward. A review of 2011 Census data has been carried out.

14.5.2 The distance travelled to work is indicated in Table 14.4 for residents aged 16 to 74 who were employed the week before the census.

Table 14.4 Distance travelled to work

Distance	Population	Percentage
Working at or from home	267	11.4%
Less than 2km	454	19.4%
2km to less than 5km	240	10.3%
5km to less than 10km	688	29.4%
10km to less than 20 km	287	12.3%
20km to less than 40km	128	5.5%
40km to less than 60km	31	1.3%
60km and over	31	4.7%
Other	111	5.7%
Total	2,339	100%

14.5.3 Based on the Census data provides an indication of the distance travelled to work. This indicates that 19.4% of working people travelled less than 2km from home with a further 10.3% travelling between 2km and 5km. This demonstrates that circa 1 in 5 commuter trips stay within the immediate vicinity of the site. Therefore, this demonstrates that travel by sustainable mode is likely.

14.5.4 The Census statistics have also been integrated to identify the mode share for the residents of the Martlesham Ward. This considers the existing travel patterns of all residents aged 16 to 74.

Table 14.5 Mode Share – resident population

Mode	Population	Percentage
Train	42	1.8%
Bus, minibus or coach	120	5.1%
Driving a car or van	1,554	66.0%
Passenger in a car or van	86	3.7%
Motorcycle, scooter or moped	18	0.8%
Taxi	3	0.1%
Bicycle	164	7.0%
On foot	193	8.3%
Work mainly at or from home	156	6.7%
Other method of travel to work	13	0.6%

14.5.5 This demonstrates that the most dominant mode of travel is by car, resulting in 66.0% of all the trips within the Martlesham ward. This is followed by travel by foot or cycling, again demonstrating that travel by sustainable modes is likely.

14.5.6 A review of the mode share of employees working in the 010 ‘super output areas - middle layer’ has also been carried out. This analysis is presented below.

Table 14.6 Mode Share – daytime population

Mode	Population	Percentage
Train	45	0.6%
Bus, minibus or coach	341	4.4%
Driving a car or van	5,389	69.9%
Passenger in a car or van	265	3.4%
Motorcycle, scooter or moped	87	1.1%
Taxi	9	0.1%
Bicycle	561	7.3%
On foot	312	4.0%
Work mainly at or from home	680	8.8%
Other method of travel to work	25	0.3%

14.5.7 This demonstrates that the most dominant mode of travel is by car, resulting in 69.9% of all the trips within the Martlesham ward.

Highway Network

14.5.8 Adastral Park is located to the east of the A12 which provides a main route to Lowestoft and Great Yarmouth in the north. Adjacent to the site, the A12 is a dual carriageway road subject to a 70mph speed limit. Through discussions with SCC, the aspiration to reduce the speed limit has been identified.

14.5.9 The A12 continuous to the south and connects to the A14. The A14 is a major international, national and regional route connection Felixstowe to the M6 and M1.

14.5.10 The A12 to the north connects to the A1214 at Martlesham heath and provides access to the route towards Ipswich. Foxhall, to the south of Adastral Park provides an alternative route into Ipswich from the east.

Pedestrians and Cyclists

14.5.11 At the present day, the development land does not have any significant traffic generators within the boundary. As such, there has been no material requirement for footway / cycleway provision on-site or to access the site.

14.5.12 To the north west of the site, there are existing pedestrian links to Martlesham Heath across A12 via a foot/cycle path to the north of the junction with Barrack Square and via subway near the roundabout with Anson Road. The route along Gloster Road and Barrack square has segregated footway/cycleway link. The footbridge and underpass also has cycleway which allows cycle paths in eastern Ipswich and towards the town centre.

14.5.13 There is a public footpath which runs from the north of Martlesham heath along Gloster Road and the western edge of, to Newborne Road to the south of the Park.

Public Rights of Way

14.5.14 Public Rights of Way (PRoW) are classified as highways and as such are protected routes. The 1949 National Parks and Access to the Countryside Act placed a duty on

every County Council in England and Wales to draw up and publish a definitive map and statement of PRoW in their area.

14.5.15 The Definitive Map is the legal record of the location and status of PRoW. The statement is a description of the PRoW shown on the definitive map.

14.5.16 There are four classifications of PRoW:

- Footpaths - by foot only;
- Bridleways - by foot, horse or bike;
- Restricted byways - by any form of transport that doesn't have a motor; and
- Byways open to all traffic - let you travel by any form of transport, including cars.

Public Transport – Road

14.5.17 The existing bus services that operate close to the proposed site are identified below. The bus route 66 currently serves high quality service to the existing park, which links Martlesham Heath-Grange Farm-Kesgrave - Ipswich. The bus service 173/174 (Woodbridge to Felixstowe) has just two services during peak hours. The rest of the buses also operate through Adastral Park.

Public Transport - Rail

14.5.18 The closest train station is located in Woodbridge. The stations provide excellent nodes for onward routes to Ipswich (having a journey time of circa 15 minutes) and Lowestoft (having a journey time of circa 1 hour 10 minutes).

14.5.19 The train station offers the following services:

- 72 space car park with accessible spaces open 24 hours;
- Self-service ticket machines;
- Manned help desk;
- Cash machine;
- Pay phones;
- Post box;
- Public WiFi;
- Refreshments; and
- Shops.

Accident Analysis

14.5.20 Data was obtained from Suffolk County Council pertaining to all personal injury road accidents (PIAs) reported as occurring during the five year period up to the end of August 2016 for all of the roads in the vicinity of the site.

14.5.21 The accidents are classed into one of three categories based on the severity of the most seriously injured casualty:

- Fatal injury: Injuries which cause death either immediately or any time up to 30 days after the accident;
- Serious injury: Injuries for which a person is detained in hospital as an in-patient or any of the following injuries whether or not the casualty is detained in hospital; fractures, concussion, internal injuries, severe cuts and lacerations, severe

general shock requiring medical treatment and injuries resulting in death more than 30 days after the incident; and

- Slight injury: Injuries of a minor nature such as sprains, bruises or cuts not judged to be severe, or slight shock requiring only roadside attention.

14.5.22 Eight accidents on minor roads unlikely to be frequented by development traffic were omitted from the analysis, leaving a total of 144 accidents on the roads in question. These accidents resulted in a total of 198 casualties. One accident resulted in fatal injury to a young child when a rear shunt occurred and an incorrectly strapped child seat failed. A further 16 incidents resulted in serious injury.

Table 14.7 Total number of PIAs by year and severity, with casualties

Period	Number of PIAs				Casualties
	Slight	Serious	Fatal	Total	
Year 1 to end Aug'12	20	3	0	23	35
Year 2 to end Aug'13	29	3	0	32	47
Year 3 to end Aug'14	34	4	0	38	45
Year 4 to end Aug'15	24	5	0	29	43
Year 5 to end Aug'16	20	1	1	22	28
5 year period total	127	16	1	144	198

14.5.23 The number of accidents appears to have risen in the second and third year but returned to the starting level by the fifth year. The most notable overall feature of the accidents is that over half of them (51%) involved a rear end shunt. It is also noted that 39 or 27% of the accidents were reported to involve at least one driver (or rider) aged 23 or under. 21% of all accidents involved at least one rider of a 2-wheeled vehicle.

14.5.24 A plot of the locations of the accidents indicated five distinct clusters at roundabouts on the A12.

Table 14.8 Total number of PIAs by year and severity, with casualties for each identified cluster of accidents

Period	Number of PIAs				Casualties
	Slight	Serious	Fatal	Total	
C1: A12 jw A1214	15	2	0	17	22
C2: A12 jw Anson Road	12	1	0	13	15
C3: A12 jw Eagle Way	9	3	1	13	17
C4: A12 jw Foxhall Road	15	0	0	15	21
C5: A12 jw A14(T)	21	3	0	24	36
5 year period total	72	9	1	82	111

Cluster 1 – A12 jw A1214 Main Road

14.5.25 This junction is shown as "Cluster 1" in Table 14.8. It includes the signalised junction at Portal Avenue, just west of the roundabout. A total of 17 PIAs were reported at this location during the 5-year study period, equivalent to 3.4 PIAs per annum. Of these none resulted in fatal injury but two resulted in serious injury, in both cases, to a motorcyclist.

14.5.26 Nine of the 17 accidents involved rear end shunts, but perhaps more significant than this is the fact that seven of them involved at least one 2-wheeled vehicle. In all, two pedal cycles and six motorcycles were involved. There are no clear common factors however indicating any particular site-specific problem for 2-wheeled vehicles.

14.5.27 The accidents are generally spread out around the junction although four did occur at the traffic signals at Portal Avenue just west of the roundabout and another cluster, of seven accidents occurred on the A12 southbound approach.

14.5.28 Overall, it is concluded that there are no specific problems at this location such as might lend themselves to ameliorative intervention.

Cluster 2 – A12 jw Anson Road

14.5.29 This junction is shown as "Cluster 2" in Table 14.8. A total of 13 PIAs were reported here during the 5-year study period, equivalent to 2.6 PIAs per annum. Of these none resulted in fatal injury but one did result in serious injury. The accidents are on a distinctly reducing trend with 5, 3, 3, 2 and 0 occurring during successive 12-month periods.

14.5.30 Almost half of the 13 accidents involved rear end shunts, with the other half occurring as a result of a vehicle changing lane. Eight of them occurred during the evening peak period. A fairly high proportion of the accidents occurred during the hours of darkness and on a wet road surface.

14.5.31 The accidents were generally spread out around the junction but with a concentration of five rear shunt accidents on the southbound approach. In view of the absence of any reported accidents in the final 12-months of the survey period it is concluded that there is no significant problem at this location.

Cluster 3 – A12 jw Eagle Way

14.5.32 This junction is shown as "Cluster 3" in Table 14.8. A total of 13 PIAs were reported at this location during the 5-year study period, equivalent to 2.6 PIAs per annum. Of these one accident resulted in fatal injury and three resulted in serious injury. The accidents also appear to be on a generally rising reducing trend with 1, 2, 3, 4 and 3 occurring during successive 12-month periods.

14.5.33 Nine of the 13 accidents involved rear end shunts, six on the northbound approach to the island. The only other notable pattern is that 5 of the accidents involved young drivers/riders aged 23 and under and a further two involved elderly drivers aged over 80 years old.

14.5.34 The fatal accident that occurred here was due more to a vehicle defect (poor fitting of a child seat) than any fault with the junction itself. The remaining accidents do not indicate any particular problem, being fairly typical of a busy roundabout such as this. There

may be some scope for improved advance signing of the junction on the A12 approaches together with larger chevron signs, but visibility is generally good and the benefits of such measures might be limited.

Cluster 4 – A12 jw Foxhall Road

14.5.35 This junction is shown as "Cluster 4" in Table 14.8. A total of 15 PIAs were reported at this location during the 5-year study period, equivalent to 3.0 PIAs per annum. Of these none resulted in serious or fatal injury and although the numbers did rise over the first three years, they reduced again in the final year.

14.5.36 Again, the accidents are characterised by a predominance of rear end shunt types (11 of the 15 accidents), with five occurring on the Foxhall Road approach and three on each of the A12 approaches. There are no other notable common features.

14.5.37 There are no clear indications that anything is amiss with the current layout that is contributing to the fairly high number of rear end shunts here.

Cluster 5 – A12 jw A14 (T) Seven Hills Roundabout

14.5.38 This junction is shown as "Cluster 5" in Table 14.8. A total of 24 PIAs were reported here during the 5-year study period, equivalent to 4.8 PIAs per annum. Of these none resulted in fatal injury but three did result in serious injury.

14.5.39 Yet again, the most (and only) notable common factor amongst the accidents occurring at this location is the predominance of rear end shunts. In this case, 79% of all of the accidents were of this type. The locations of the shunts were as follows:

- A14(T) eastbound off-slip = 2
- A14(T) eastbound left to A12 north = 1
- A12 southbound approach = 2
- A14(T) westbound off-slip = 7
- A1156 northbound approach = 6
- On circulatory carriageway=1

14.5.40 This is another case of drivers appearing not to be adequately warned of the need to slow down as they approach the roundabout. There are no obvious problems with the current layout but it could be improved with any or all of the following: better advance warning signs, countdown boards, direction signs, larger chevrons on the splitter and central islands and possibly also some yellow bar markings on the A14(T) off-slips.

Accident Summary

14.5.41 144 personal injury accidents were reported to have occurred within the study area during the most recent 5-year period for which information is available at the time of writing. This included one fatal accident. Overall there does appear to be a quite high proportion of accidents resulting from rear end shunts.

14.5.42 Five clusters of accidents have been identified, all at roundabout junctions on the A12. None of these junctions appear to be particularly defective in layout but all have potential for some improvements to enhance conspicuity and to warn drivers approaching the junction of its presence and the need to slow down. These measures, however, are indicated by the existing situation and not as a result of the Proposed

Development. Although the development will add traffic to the network there is no reason to suppose that this will significantly compromise the safety of the existing road system.

14.6 Predicted impacts

Short term Construction impacts

14.6.1 It is anticipated that construction activities will be undertaken over a period of time and due to the complexity and length of the construction programme it is not possible to accurately predict volumes of traffic that will be generated over the course of a normal working day. However, a qualitative assessment can be carried out as described below.

14.6.2 At this stage it is not possible to give an exact timetable of construction works, or a precise start and finish date. This is due to the fact that the proposals cannot commence until parcels of the site have been sold to a developer. This has not yet taken place. If it is assumed that some 200 dwellings were constructed in a year then it is likely that this could result in circa 75 dwellings being in the process of being constructed at any one time. This could result in around 75 tradesmen being on-site at any one time which would lead to 150 two way trips per day. It is assumed that there would be in the region of up to 10 HGV movements per day from vehicles accessing the site, which would lead to 20 two way trips per day.

14.6.3 It is considered that the effect of construction traffic on the surrounding highway network will be of no greater than minor adverse significance as the HGV movements will be scheduled to avoid the peak times of travel demand and the traffic generated by the tradesmen will not be discernible from general traffic. Furthermore, the effect of the construction traffic will be minimised as construction trips will not be routed along local roads and routes that are not designed to cater for such traffic.

Long term highway impacts

14.6.4 The information contained below indicates the locations where there is predicted to be significant increases in traffic solely as a result of the completed Proposed Development, i.e. that will exceed the IEMA threshold of a 10% increase along sensitive links.

Table 14.9 Two way traffic flow changes

Link	Without development		With development		Percentage	
	AM	PM	AM	PM	AM	PM
1 - West of A14 Roundabout	5547	6344	3647	6193	-34%	-2%
2 - South of A14 Roundabout	1252	1372	912	1321	-27%	-4%

3 - East of A14 Roundabout	3906	4738	2406	4528	-38%	-4%
4 - Bucklesham Access off A14 Roundabout	78	114	46	101	-41%	-11%
5 - North of A14 Roundabout	3663	3442	3335	4009	-9%	16%
6 - Newbourne Road - East of A12 Roundabout	391	331	809	1056	107%	219%
7 - A12 - North of Newbourne Rd Roundabout	3877	3925	3954	4456	2%	14%
8 - Ipswich Rd North	367	305	704	1003	92%	229%
9 - Foxhall Rd East of Dobbs Ln	1063	1558	1358	1808	28%	16%
10 - Barrack Sq - A12 Roundabout Approach	1172	945	1328	1240	13%	31%
11 - Eagle Way - West of Barrack Sq\A12 Roundabout	336	494	386	481	15%	-3%
12 - Barrack Sq -South of Gloster Rd	638	475	591	450	-7%	-5%
13 - Gloster Road - South of Gated Access	629	492	836	820	33%	67%
14 - A12 - North of Barrack Sq Roundabout	2611	3141	2848	3491	9%	11%
15 - Eagle Way - West of Anson Rd Roundabout	461	420	388	409	-16%	-3%
16 - Anson Rd - A12 Roundabout Approach	1183	1743	1353	1638	14%	-6%

17 - Anson Rd - Tesco Roundabout Western Approach	1141	1579	1309	1461	15%	-7%
18 - Anson Rd - Tesco Roundabout Eastern Approach	872	932	919	891	5%	-4%
19 - Gloster Road - South of Anson Rd	701	403	666	547	-5%	36%
20 - Anson Rd- East of Felixstowe Rd	426	296	407	285	-5%	-4%
21 - Felixstowe Rd North of Anson Rd	484	646	470	595	-3%	-8%
22 - A12 - South of Park & Ride Roundabout	3187	3281	3135	3614	-2%	10%
23 - Main Rd - North of Felixstowe Rd	819	1007	699	957	-15%	-5%
24 - Main Rd - South of Felixstowe Rd	350	402	252	398	-28%	-1%
25 - A12 - North of Park & Ride Roundabout	3113	3030	2929	3095	-6%	2%
26 - A1214 - West of Park & Ride Roundabout	1377	1302	1361	1473	-1%	13%
27 - A1214 - West of Dobbs Ln	1018	1057	1126	1217	11%	15%
28 - North Of Ropes Dr (East) Roundabout	71	65	66	64	-8%	-1%
29 - Ropes Dr (East) South of A1214	541	557	420	561	-22%	1%
30 - A 1214 - West of Ropes Drive (East)	612	617	796	756	30%	23%

31 - Ropes Dr (West) - South of A1214	1001	1199	743	1159	-26%	-3%
32 - A1214 East of Bell Ln	1601	1731	1385	1745	-13%	1%
33 - A1214 - West of Bell Ln	1362	1370	1260	1560	-7%	14%
34 - Bell Ln - South of A1214	291	278	354	419	21%	51%
35 - Foxhall Rd - West of Bell ln	1021	1482	1110	1511	9%	2%
36 - Monument Farm Ln - South of Foxhall Rd	54	64	46	51	-14%	-20%
37 - Foxhall Rd - East of Monument Farm Ln	1124	1563	1308	1783	16%	14%
38 - Hall Rd - South of Foxhall Rd	35	21	40	17	17%	-19%
39 - Dobbs Ln - North of Foxhall Rd	177	177	187	205	6%	16%

14.6.5 The following links would exceed the IEMA criteria

- North of A14 Roundabout;
- Newbourne Road - East of A12 Roundabout;
- A12 - North of Newbourne Rd Roundabout;
- Ipswich Rd North;
- Foxhall Rd East of Dobbs Ln;
- Barrack Sq - A12 Roundabout Approach;
- Eagle Way - West of Barrack Sq\A12 Roundabout;
- Gloster Road - South of Gated Access;
- A12 - North of Barrack Sq Roundabout;
- Anson Rd - A12 Roundabout Approach;
- Anson Rd - Tesco Roundabout Western Approach;
- Gloster Road - South of Anson Rd;
- A12 - South of Park & Ride Roundabout;
- A1214 - West of Park & Ride Roundabout;
- A1214 - West of Dobbs Ln;
- A1214 - West of Ropes Drive (East);
- A1214 - West of Bell Ln;
- Bell Ln - South of A1214;

- Foxhall Rd - East of Monument Farm Ln;
- Hall Rd - South of Foxhall Rd; and
- Dobbs Ln - North of Foxhall Rd.

Severance

14.6.6 The IEMA Guidance highlights that receptors are likely to experience significant effects in terms of severance when traffic flows change by 30% or more. It can be seen from the analysis that the following locations are predicted to experience such an increase:

- Newbourne Road - East of A12 Roundabout;
- Ipswich Rd North;
- Foxhall Rd East of Dobbs Ln;
- Barrack Sq - A12 Roundabout Approach;
- Gloster Road - South of Gated Access;
- Gloster Road - South of Anson Rd;
- A1214 - West of Ropes Drive (East); and
- Bell Ln - South of A1214.

14.6.7 The percentage increase reported along several of the identified roads reflects the relatively low traffic levels. Even with the inclusion of the development traffic, the traffic flows at these locations remain within the theoretical highway capacity thresholds.

14.6.8 Ipswich Road North, Newbourne Road, Barrack Street and Gloster Road are all adjacent to the development and the increase in traffic levels are not unexpected. The majority of these locations provide existing footways that cater for safe movements.

14.6.9 Ipswich Road North and Newbourne Road do not provide footways and the existing pedestrian flow along these routes is negligible. The delivery of the development will increase westbound pedestrian flows. However, the majority of the development generated pedestrian flow will be internal to the development. As such, these trips will utilise the on-site network.

14.6.10 Foxhall Road East of Dobbs Lane does not provide footways and the existing pedestrian flow along these routes is negligible. The walking strategy for the development will encourage trips to use the connections further north towards the Martlesham Heath area that is supported by walking routes. As the existing pedestrian flow is negligible on Foxhall Road, the increase in traffic flows will have a negligible effect.

14.6.11 A1214 west of Ropes Drive currently provides footway to the southern side of the road. The desire line will be east – west with little need to cross the A1214 at this location. Therefore, the increase in traffic flows will have a negligible effect.

14.6.12 Bell Lane south of A1214 has been identified through the low levels of existing traffic. There are crossing facilities provided along Bell Lane and as such the increase in traffic flows will have a negligible effect.

14.6.13 The effect on severance could be minor adverse without mitigation.

Driver delay

14.6.14 Delays to non-development traffic can occur on the network due to additional traffic generated by a development. The IEMA Guidance notes that these additional delays are only likely to be significant when the traffic on the network surrounding the development is already at, or close, to capacity.

14.6.15 The traffic levels within the vicinity of the site, once the development traffic is included are within the theoretical highway capacity. However, a review of the junctions within the road network close to the site has been reviewed. The results predict a minor increase in delays, this can be identified by the increase in queues predicted at several locations.

14.6.16 Therefore the effect on driver delay could be minor adverse without mitigation.

Pedestrian delay

14.6.17 In accordance with the IEMA Guidance, pedestrian delay is likely to occur when traffic affects the ability of people to cross roads. There are currently low levels of pedestrian activity in the vicinity of the site, although the level of activity is likely to increase following the delivery of the Proposed Development.

14.6.18 The strongest desire line for pedestrians lies between the site and the town centre. This movement is catered for by the existing facilities which will minimise pedestrian delay.

14.6.19 Therefore it is concluded that the impact on pedestrian delay is negligible.

Pedestrian amenity

14.6.20 In accordance with the IEMA Guidance, pedestrian amenity should only be considered significant in locations where the traffic flow is doubled.

14.6.21 The locations where the flow doubles are all adjacent to the development and these experience low levels of pedestrian activity.

14.6.22 Therefore the effect on driver delay could be minor adverse without mitigation.

Fear and intimidation

14.6.23 The primary factor in increasing levels of fear and intimidation for pedestrians and cyclists is high percentage changes in traffic volumes and HGVs. Due to the residential nature of the development there is not predicted to be any significant increase in the volume of HGV traffic on the network and so the magnitude of change is classified as negligible.

14.6.24 There are locations identified where traffic levels do increase beyond the 30% threshold, but this is a result of low levels of existing traffic.

14.6.25 Therefore, the effect of the Proposed Development on fear and intimidation is considered to be negligible.

Accident and safety

14.6.26 In accordance with the IEMA Guidance, an assessment of road safety should be considered if the character of traffic flow alters through increases in volume. The Proposed Development is not predicted to generate significant volumes of HGV traffic

and the TA demonstrates that traffic is not likely to increase significantly on any links that are not designed for the predicted levels. Therefore, the Proposed Development is unlikely to produce a change in character of the traffic on the surrounding road network.

14.6.27 Therefore, the effect of the Proposed Development on accidents and safety is considered to be negligible within the wider road network.

14.7 Mitigation

During Construction

14.7.1 It is considered that construction traffic will have a negligible impact. However to limit the impact of construction traffic a Construction Environmental Management Plan (CEMP) will be produced. The purpose is to reduce the risk of adverse effects of construction on sensitive environmental resources and to minimise disturbance to local residents.

14.7.2 The objective is to demonstrate that appropriate checking, monitoring and audit processes will be implemented to ensure works are undertaken in an appropriate manner, together with measures to ensure that appropriate corrective actions or mitigation measures are taken.

14.7.3 The CEMP shall include:-

- Details of the approved construction traffic routes;
- The times within which traffic can enter and leave the site;
- Specified on-site parking for vehicles associated with the construction works and the provision made for access thereto; and
- Details of the expected number of construction vehicles per day.

Operational effects

Highway interventions

14.7.4 The delivery of any substantial residential development has the potential to increase traffic levels on the surrounding road network. An assessment of the potential impacts associated with the Proposed Development has indicated the need for the following highway interventions:

- A12 / Foxhall Road / Newbourne Road – localised widening;
- A12 / Barrack Square / Eagle Way – localised widening;
- A12 / Anson Road / Eagle Way – localised widening;
- Gloster Road / Barrack Square – localised widening; and
- A12 / A1214 – optimised signal timings.

Walking and Cycling

14.7.5 Published good practice identifies five main requirements for pedestrian routes. Wherever possible these should be followed when planning for pedestrians within the Proposed Development:

- Convenience – follow desire lines without any undue deviation from route;
- Connectivity – link multiple origin and destinations;

- Conviviality – be pleasant to use;
- Coherence – be made legible through paving and/or signage; and
- Conspicuousness – promote security and safety allowing pedestrians to see and be seen by others.

14.7.6 The 'Guidance for Cycle Audit and Cycle Review' (The Institution of Highways and Transportation, 1998) determines five main requirements for cycle routes. It is highly crucial that these requirements are recognised if the promotion of cycling to the site as a viable and attractive alternative to car use is to be successful:

- Coherence: continuous and to a consistent standard;
- Directness: closely follow desire lines as much as possible;
- Attractiveness: in aesthetic as well as objective terms;
- Safety: designed to minimise risks for cyclists and others; and
- Comfort: well maintained smooth dry surfaces, flush kerbs and gentle gradients.

14.7.7 Overall consideration should be given towards the former Commission for Architecture and the Built Environment (CABE) principles of inclusive design, as highlighted below:

- Inclusive: so everyone can use it safely, easily and with dignity;
- Responsive: taking account of what people say they need and want;
- Flexible: so different people can use them in different ways;
- Convenient: so everyone can use them without too much effort or separation;
- Accommodating: for all people, regardless of their age, gender, mobility, ethnicity or circumstances;
- Welcoming: with no disabling barriers that night exclude some people; and
- Realistic: offering more than one solution to help balance everyone's needs and recognising that one solution may not work for all.

14.7.8 The Masterplan for the site will include numerous walking and cycling routes within the development to provide a comprehensive route network that will comprise both on and off road paths. This will include walking / cycling route adjacent to the main link road through the development. This would deliver the main spine through the development, from which spurs would then access the wider development. Highway crossing points will be designed to cater for all types of pedestrian users with the routes lit where appropriate.

14.7.9 Across the site the improvements would include the provision of adequate surfacing to reflect the characteristics of the area and lighting where appropriate. In areas adjacent to housing, this could result in illuminated tarmacked routes and in less built up areas more low engineered surfacing. The surfacing to be used will be appropriate to the type and quantum and usage for any given route.

14.7.10 The walking and cycling paths will connect the individual housing blocks into the main route through the site that will ensure full connectively and route choice throughout the development.

14.7.11 The on-site network will connect into the external walking and cycling network. The predominant walking and cycling desire lines is to be fully incorporated into the links from the development.

14.7.12 Walking and cycling trips to the west will be encouraged to travel through the development to make use of the high quality environs that will be delivered. The on-site routes will link into the A12 with suitable crossing facilities provided at the A12 site access points.

Public Transport

14.7.13 To maximise the opportunities to travel by public transport, it is proposed to improve the current routes that operate in the immediate area. Brookbanks have discussed the public transport opportunities with local operators to ensure that a long term viable solution can be delivered

14.7.14 It is considered a phased delivery of public transport enhancements is appropriate to secure long term viability. Through discussions with Ipswich buses, a public transport strategy has been developed, as indicated below.

14.7.15 Phase one: Initial diversion of existing Route 4 to provide peak and lunchtime facilities. There would be no cost associated with this initial diversion.

14.7.16 Phase two: Extension of Route 4 to operate throughout the day every 30 minutes. The estimated cost is identified as being £70,000 per annum, less revenue.

14.7.17 Phase three: Provision of a 20 minute frequency timetable with an extended route and operating day serving the development, and linked to route X5 via the full length of Foxhall Road to give a faster journey into town with potentially improved links to the train station. The estimated cost is identified as being £200,000 per annum, less revenue.

Travel Plan

14.7.18 To mitigate the increase in trips, a Travel Plan (TP) has been produced. The TP establishes mode share targets to reduce traffic effect on the road network and encourage a modal shift towards sustainable modes of travel. These targets are based on challenging, but achievable non-car and Single Occupancy Vehicle (SOV) mode share targets. The targets are based upon current practice in the site's environs and have regard to the location of the site. The targets take account of the local geography and existing transport provision.

14.7.19 Research has shown that TPs need to be managed by a travel plan coordinator, who has a clear brief with dedicated resources to manage the TP to ensure its objectives are met. It is the intention that the Travel Plan Coordinator will be in post for 5 years after 1st occupation of the Proposed Development.

14.7.20 The key to a successful TP is identifying the correct measures that will suit future residents of a development. It is unlikely that there will be sufficient attraction to a single measure; hence a combination of measures is considered the most suitable approach to pursue in this case. The Travel Plan F2 identifies possible measures, which could include:

- Welcome Packs;
- Travel induction sessions; and
- Support for Car share databases.

14.7.21 To address the environmental challenges posed by the proposed development, a green travel planning approach will be adopted. This will include:

- The provision of green infrastructure within the proposed development;
- The examination of existing public transport available to the proposed development;
- The provision of a network of footways and cycleways to compliment the existing Public Rights of Way in the vicinity of and crossing the proposed development.

14.8 Summary of effects

Construction Effects

14.8.1 As outlined within the Potential Effects section, there is the potential that the development could have a minor adverse impact. However with mitigation identified in the preceding chapter reduces the potential impact to negligible levels.

Operational Effects

14.8.2 As outlined within the Potential Effects section, there is the potential that the development could have a minor adverse impact. However with mitigation identified in the preceding chapter reduces the potential impact to negligible levels.

Residual Effects

14.8.3 It is considered that there are no residual effects.

Statement of Effects

14.8.4 The assessment has been undertaken in accordance with the IEMA guidelines, the details of which were discussed in an earlier section.

14.8.5 A full audit of the highway network surrounding the site has been undertaken as part of the assessment, the purpose of which was to identify locations that should be considered sensitive in accordance with the IEMA guidelines.

14.8.6 Traffic flow data for both the AM and PM peak hours has been obtained to form the level against which the impact of the development was assessed. The highway safety record of the roads surrounding the site has also been assessed to identify any problems that are likely to be exacerbated by the additional traffic generated by the development.

14.8.7 The assessment of the impact of construction traffic concluded that the minimal increase in traffic during the construction phase would have a negligible impact on the road network. Any potential impact would be mitigated by the introduction of a CEMP. This includes measures to coordinate the delivery times to ensure that vehicle movements are spread throughout the day, and the provision of vehicle washing facilities to ensure that dust and mud are not transported onto the highway.

14.8.8 A detailed assessment of the potential traffic related environmental effects and their significance has been undertaken. This concluded that there would not be significant environmental effects.

14.8.9 The following table summarises the residual effects:

Table 14.10 Summary of Residual Effects

Potential effect	Significance (pre-mitigation)	Mitigation measure	Significance of residual effect
Construction Stage			
Construction traffic	Minor adverse	CEMP	Negligible
Post-completion Stage			
Severance	Minor adverse	Improved facilities within the site and provision of appropriate linkages to the existing facilities within the local road network.	Negligible
Driver delay	Minor adverse	Financial contribution.	Negligible
Pedestrian delay	Negligible	Improved facilities within the site and provision of appropriate linkages to the existing facilities within the local road network.	Negligible
Pedestrian amenity	Minor adverse	As for Pedestrian delay above	Negligible
Fear and intimidation	Negligible	As for Pedestrian delay above	Negligible
Accidents and safety	Negligible	No specific mitigation required	Negligible

15 CUMULATIVE EFFECTS

15.1 Introduction

15.1.1 Cumulative effects can arise from the combined effect on a given receptor or resource of other development projects when considered in combination with proposed scheme. For example, a proposed industrial plant may be predicted to generate low levels of emissions to air, but when such emissions are considered in combination with predicted emissions from a nearby proposed bypass, these may result in exceedances in air quality standards.

15.1.2 Cumulative effects can also arise from the interaction of two or more environmental effects associated with the proposed scheme on a given receptor or resource. For example, a residential receptor may be exposed to air quality degradation and increased noise levels from a project that singly may be deemed acceptable, but in combination may result in an unacceptable level of nuisance.

15.2 Scope and Methodology

15.2.1 Following a review of the proposed scheme and the local environment, scoping identified that cumulative effects could potentially arise on environmental resources and receptors as the result of progression of the proposed scheme [in isolation] and [in combination with] other approved and/or committed developments in geographical proximity.

Cumulative Effects

15.2.2 Consultation was undertaken with Suffolk Coastal District Council in 2016 to identify committed developments with which the proposed scheme could potentially combine. The outcome of this consultation is presented below in Section 15.3 which contains details of agreed committed developments and their anticipated timescales.

15.2.3 Information gathered from consultation was reviewed to determine whether any resources and receptors identified as being potentially affected by these developments would also be affected by the proposed scheme.

15.2.4 Where potential overlap was identified, an assessment was made using available data to predict whether a cumulative effect would occur. In relation to some environmental aspects (e.g. landscape), the nature of the assessment has relied more on professional judgement using qualitative methods to identify potential cumulative effects.

15.2.5 The focus of the assessment was directed appropriately towards predicting the contribution that the proposed scheme would have in a given cumulative effect, and the overall significance of that effect.

Interactive Effects

15.2.6 In relation to interactive effects, the residual environmental effects of the proposed scheme were examined collectively to determine the potential for them to interact and generate a cumulative effect on identified resources and receptors.

Significance Criteria

15.2.7 The assessment has focused on identifying the likely significant cumulative effects, rather than reporting every potential interaction.

15.2.8 Factors considered in assessing the significance of cumulative effects have included determination of the type and sensitivity of receptors or resources potentially affected, development-related activities that could potentially affect their condition, their ability to absorb change, and the probability of such effects occurring.

15.3 Existing Environment

Environmental Resources and Receptors

15.3.1 Environmental resources and receptors have been identified as part of the environmental assessment of the proposed scheme. These are reported in Sections 6 to 15 of this Environmental Statement and principally comprise

- the local population (e.g. residents of private dwellings);
- users of public open space and recreational facilities (e.g. walkers);
- users of the local highway (e.g. drivers);
- ecological flora and fauna (e.g. plant and animal species);
- archaeological and built heritage assets (e.g. listed buildings);
- watercourses (e.g. rivers); and
- areas of intrinsic value (e.g. designated landscapes).

Committed Developments

15.3.2 Consultation was undertaken with Suffolk Coastal District Council in December 2016 to identify committed developments with which the proposed development could potentially combine. This information was reviewed with SCDC in March 2017.

15.3.3 SCDC confirmed that the following sites should be included in the cumulative assessment:

- DC/15/4672/OUT - Bell Lane, Kesgrave;
- DC/14/0991/OUT - Land off Woods Lane, Melton;
- DC/15/4788/OUT - Land And Buildings To The East Of Bridge Farm, Top Street, Martlesham;
- DC/15/1128/OUT - Land At Candlet Road, Felixstowe;
- DC/16/1919/FUL - Land At High Road, Trimley St Martin;
- C/10/1906 - Land South Of Main Road, Martlesham;

- C/12/1930 - Western Part Of Land At Trinity Park And Land At White House Farm, Felixstowe Road, Purdis Farm; and
- Melton Hill – Former SCDC Council Offices.
- Northern Quadrant – Adastral Park
- Sizewell C

15.3.4 For ease of reference we have referred to these sites as Sites A-J. Details of the proposed developments are set out below, and shown on Figure 15.1. Sizewell C is not shown on the figure due to its distance from the site.

Site A: Bell Lane, Kesgrave

15.3.5 A phased development of 300 dwellings, provision of land for primary school and associated landscaping and open space is proposed at Bell Lane, Kesgrave. The proposed development is situated approximately 3.5 miles to the east of Adastral Park. The application was refused on the 15th July 2016 and a Public Inquiry is expected in May/June 2017.

Site B: Land off Woods Lane, Melton

15.3.6 An outline planning application for up to 180 Dwellings with all matters reserved except for access has been allowed on appeal on the 2nd September 2015. The site is approximately 5 miles to the north east of Adastral Park.

Site C: Land and Buildings to the East of Bridge Farm, Top Street, Martlesham

15.3.7 An outline planning application for up to 215 residential dwellings (including up to 33% affordable housing), a Convenience Store with associated car parking was refused on the 3rd March 2016 and a Public Inquiry is taking place in March 2017. The proposed development is approximately 3 miles north east of Adastral Park.

Site D: Land at Candlet Road, Felixstowe

15.3.8 An application for Outline Planning Permission for up to 560 dwellings, including a Local Community Centre, a 60 Bedroom extra Care Home and 50 Assisted Living Units, 2 small Business Units and open space provision with associated Infrastructure was refused on the 12th June 2015, and is awaiting an appeal decision called in by the Secretary of State. The proposed development is approximately 8.5 miles south east of Adastral Park.

Site E: Land at High Road, Trimley St Martin

15.3.9 A proposed development for the erection of 69 new homes with associated access, landscaping and amenity space. Decision is pending, but is recommended for approval. The proposed development is approximately 7 miles south of Adastral Park.

Site F: Land South Of Main Road, Martlesham

15.3.10 A proposed development for the erection of 180 dwellings together with associated garages, parking, landscaping and access off Main Road and open space. The application was approved on the 4th July 2013 and is situated approximately 1.5 miles north of Adastral Park.

Site G: Western Part Of Land At Trinity Park And Land At White House Farm, Felixstowe Road, Purdis Farm

15.3.11 An Outline Application to enable improvements to Trinity Park to include: Residential development, public open space and associated infrastructure on 8.9HA on the western boundary of Trinity Park as well as two roundabouts to serve Trinity park on the A1156 Felixstowe, which was approved on the 10th July 2015. The proposed development is approximately 4.5 miles south west of Adastral Park.

Site H: Melton Hill – Former SCDC Council Offices

15.3.12 A proposed development for approximately 102 units. This is still in the pre-application stage. The potential development is approximately 5 miles north east of Adastral Park.

Site I: Northern Quadrant – Adastral Park

15.3.13 For access purposes the red line boundary, as shown on the Parameter Plans in Appendix A, also encompasses a section of Adastral Park science and business park which will provide access to the site from the northern roundabout. The land adjacent to this proposed access is known as the 'Northern Quadrant' and is also identified on the Parameter Plans in Appendix A. It is envisaged that this land will eventually be redeveloped to provide commercial office/R&D floorspace.

15.3.14 The 'Northern Quadrant' is not within the red line boundary for this planning application, and will be subject to a separate planning application at the relevant time. As such, the 'Northern Quadrant' is being assessed as a cumulative development, and is considered by each of the environmental specialists in their cumulative impacts assessment section.

Site J: Sizewell C

15.3.15 EDF Energy and China General Nuclear are taking forward proposals to build and operate a new nuclear power station on the Suffolk Coast. The new station would be located to the north of Sizewell B, the existing station. It is proposed that there would be two reactors, capable of generating enough energy to power 5 million homes.

Other Sites

15.3.16 The cumulative effect of the sites identified for development in the 'Felixstowe Peninsula Area Action Plan, Proposed Submission Document, Development Plan Document, April 2016' and SCDC's 'Site Allocations and Area Specific Policies, Proposed Submission Document, Development Plan Document, April 2016' have been reviewed. With the exception of Ecology and socio-economics, it is considered that the Proposed Development and these sites do not have any cumulative effects. The ecological cumulative effects are considered in Table 8.16 of Chapter 8 Ecology.

15.3.17 It is not considered that there is any other reasonably foreseeable development or other activity, the possible cumulative effects of which might need to be considered.

15.4 Mitigation

15.4.1 The declared residual effects for the proposed scheme in Sections 6 to 15 are those that are predicted to remain after taking account of environmental mitigation measures.

15.4.2 The majority of significant cumulative effects are predicted only to occur should implementation of the proposed scheme coincide with other committed developments (e.g. construction phase overlap and consequential demands on the local labour supply).

15.4.3 Mitigation for other development effects falls outside the scope of this EIA. However, it is recognised that local authorities responsible for such developments have the ability to influence the timing of developments and secure measures to avoid adverse effects occurring simultaneously.

15.5 Predicted Cumulative Effects

15.5.1 The matrix below shows which environmental aspects of our site will be affected by the progression of the cumulative developments identified above.

Development	Distance from Adastral Park (approx. metres)	EIA Topic								
		Air Quality	Archaeology and Cultural Heritage	Ecology	Flood Risk & Drainage	Ground Conditions & Contamination	Landscape & Visual	Noise	Socio-economics	Transport & Travel
Site A: Bell Lane, Kesgrave	5600	N	N	N	N	N	N	N	Y	N
Site B: Woods Lane, Melton	8000	N	N	N	N	N	N	N	Y	N
Site C: Top Street, Martlesham	4800	N	N	Y	N	N	N	N	Y	N
Site D: Candlet Road, Felixstowe	13600	N	N	N	N	N	N	N	Y	N
Site E: High Road, Trimley St Martin	11200	N	N	Y	N	N	N	N	N	N
Site F: Main Road, Martlesham	2400	N	N	N	N	N	N	N	Y	N
Site G: White House Farm, Felixstowe Road, Purdis Farm	7250	N	N	N	N	N	N	N	Y	N
Site H: Melton Hill – Former SCDC Council Offices	8000	N	N	N	N	N	N	N	Y	N
Site I: Northern Quadrant	-	N	N	N	N	N	Y	N	Y	N
Site J: Sizewell C	37000	N	N	N	N	N	N	N	Y	N

Air Quality

Site A: Land to East of Bell Lane, Kesgrave, Suffolk

15.5.2 There are no cumulative effects on air quality arising from Site A.

Site B: Land off Woods Lane, Melton

15.5.3 There are no cumulative effects on air quality arising from Site B.

Site C: Land and Buildings to the East of Bridge Farm, Top Street, Martlesham

15.5.4 There are no cumulative effects on air quality arising from Site C.

Site D: Land at Candlet Road, Felixstowe

15.5.5 There are no cumulative effects on air quality arising from Site D.

Site E: Land at High Road, Trimley St Martin

15.5.6 There are no cumulative effects on air quality arising from Site E.

Site F: Land South of Main Road, Martlesham

15.5.7 There are no cumulative effects on air quality arising from Site F.

Site G: Western Part of Land at Trinity Park and Land at White House Farm, Felixstowe Road, Purdis Farm

15.5.8 There are no cumulative effects on air quality arising from Site G.

Site H: Melton Hill – Former SCDC Council Offices

15.5.9 There are no cumulative effects on air quality arising from Site H.

Site I: Northern Quadrant

15.5.10 There are no cumulative effects on air quality arising from Site I.

Site J: Sizewell C

15.5.11 There are no cumulative effects on air quality arising from Site J.

Archaeology and Cultural Heritage

Site A: Land to East of Bell Lane, Kesgrave, Suffolk

15.5.12 There are no cumulative effects on below archaeological remains arising from Site A.

Site B: Land off Woods Lane, Melton

15.5.13 There are no cumulative effects on archaeological remains arising from Site B.

Site C: Land and Buildings to the East of Bridge Farm, Top Street, Martlesham

15.5.14 There are no cumulative effects on archaeological remains arising from Site C.

Site D: Land at Candlet Road, Felixstowe

15.5.15 There are no cumulative effects on archaeological remains arising from Site D.

Site E: Land at High Road, Trimley St Martin

15.5.16 There are no cumulative effects on archaeological remains arising from Site E.

Site F: Land South of Main Road, Martlesham

15.5.17 There are no cumulative effects on archaeological remains arising from Site F.

Site G: Western Part of Land at Trinity Park and Land at White House Farm, Felixstowe Road, Purdis Farm

15.5.18 There are no cumulative effects on archaeological remains arising from Site G.

Site H: Melton Hill – Former SCDC Council Offices

15.5.19 There are no cumulative effects on archaeological remains arising from Site H.

Site I: Northern Quadrant

15.5.20 There are no cumulative effects on archaeological remains arising from Site I.

Site J: Sizewell C

15.5.21 There are no cumulative effects on archaeological remains arising from Site J.

Ecology

Site A: Land to East of Bell Lane, Kesgrave, Suffolk

15.5.22 There are no likely effects on wintering birds as habitats are unlikely to support significant or notable wintering bird species. Effects on Skylark are also unlikely due to mitigation on site for breeding Skylark. Therefore there are no likely cumulative effects in combination with the proposed development.

Site B: Land off Woods Lane, Melton

15.5.23 There are no likely effects on breeding or wintering birds due to habitats on site being sub-optimal, therefore there are no likely cumulative effects in combination with the proposed development.

Site C: Land and Buildings to the East of Bridge Farm, Top Street, Martlesham

15.5.24 There are no likely effects on breeding birds due to unsuitable habitat. There is a possibility of minor negative cumulative effects in combination with the proposed development on wintering bird assemblage at site level.

Site D: Land at Candlet Road, Felixstowe

15.5.25 There are no likely effects on breeding or wintering birds due to habitats on site being sub-optimal, therefore there are no likely cumulative effects in combination with the proposed development.

Site E: Land at High Road, Trimley St Martin

15.5.26 There is a possibility of minor negative cumulative effects in combination with the proposed development on breeding and wintering bird assemblage at site level, excluding Shelduck.

Site F: Land South of Main Road, Martlesham

15.5.27 It is considered unlikely that there will be any ecological cumulative effects due to Site F and the proposed development.

Site G: Western Part of Land at Trinity Park and Land at White House Farm, Felixstowe Road, Purdis Farm

15.5.28 It is considered unlikely that there will be any ecological cumulative effects due to Site G and the proposed development.

Site H: Melton Hill – Former SCDC Council Offices

15.5.29 It is considered unlikely that there will be any ecological cumulative effects due to Site H and the proposed development.

Site I: Northern Quadrant

15.5.30 It is considered unlikely that there will be any ecological cumulative effects due to Site H and the proposed development.

Site J: Sizewell C

15.5.31 There are no cumulative effects on ecology arising from Site J.

Flood Risk and Drainage

Site A: Land to East of Bell Lane, Kesgrave, Suffolk

15.5.32 There are no cumulative effects on flood risk and drainage arising from Site A.

Site B: Land off Woods Lane, Melton

15.5.33 There are no cumulative effects on flood risk and drainage arising from Site B.

Site C: Land and Buildings to the East of Bridge Farm, Top Street, Martlesham

15.5.34 There are no cumulative effects on flood risk and drainage arising from Site C.

Site D: Land at Candlet Road, Felixstowe

15.5.35 There are no cumulative effects on flood risk and drainage arising from Site D.

Site E: Land at High Road, Trimley St Martin

15.5.36 There are no cumulative effects on flood risk and drainage arising from Site E.

Site F: Land South of Main Road, Martlesham

15.5.37 There are no cumulative effects on flood risk and drainage arising from Site F.

Site G: Western Part of Land at Trinity Park and Land at White House Farm, Felixstowe Road, Purdis Farm

15.5.38 There are no cumulative effects on flood risk and drainage arising from Site G.

Site H: Melton Hill – Former SCDC Council Offices

15.5.39 There are no cumulative effects on flood risk and drainage arising from Site H.

Site I: Northern Quadrant

15.5.40 There are no cumulative effects on flood risk and drainage arising from Site I.

Site J: Sizewell C

15.5.41 There are no cumulative effects on flood risk and drainage arising from Site J.

Ground Conditions

Site A: Land to East of Bell Lane, Kesgrave, Suffolk

15.5.42 There are no cumulative effects on ground conditions arising from Site A.

Site B: Land off Woods Lane, Melton

15.5.43 There are no cumulative effects on ground conditions arising from Site B.

Site C: Land and Buildings to the East of Bridge Farm, Top Street, Martlesham

15.5.44 There are no cumulative effects on ground conditions arising from Site C.

Site D: Land at Candlet Road, Felixstowe

15.5.45 There are no cumulative effects on ground conditions arising from Site D.

Site E: Land at High Road, Trimley St Martin

15.5.46 There are no cumulative effects on ground conditions arising from Site E.

Site F: Land South of Main Road, Martlesham

15.5.47 There are no cumulative effects on ground conditions arising from Site F.

Site G: Western Part of Land at Trinity Park and Land at White House Farm, Felixstowe Road, Purdis Farm

15.5.48 There are no cumulative effects on ground conditions arising from Site G.

Site H: Melton Hill – Former SCDC Council Offices

15.5.49 There are no cumulative effects on ground conditions arising from Site H.

Site I: Northern Quadrant

15.5.50 There are no cumulative effects on ground conditions arising from Site I.

Site J: Sizewell C

15.5.51 There are no cumulative effects on ground conditions arising from Site J.

Landscape

Site A: Land to East of Bell Lane, Kesgrave, Suffolk

15.5.52 It is considered unlikely that Site A would result in any potential significant cumulative landscape or visual effects. This is due to the distance and/or lack of intervisibility and location along sequential routes between sites.

Site B: Land off Woods Lane, Melton

15.5.53 It is considered unlikely that Site B would result in any potential significant cumulative landscape or visual effects. This is due to the distance and/or lack of intervisibility and location along sequential routes between sites.

Site C: Land and Buildings to the East of Bridge Farm, Top Street, Martlesham

15.5.54 It is considered unlikely that Site C would result in any potential significant cumulative landscape or visual effects. This is due to the distance and/or lack of intervisibility and location along sequential routes between sites.

Site D: Land at Candlet Road, Felixstowe

15.5.55 It is considered unlikely that Site D would result in any potential significant cumulative landscape or visual effects. This is due to the distance and/or lack of intervisibility and location along sequential routes between sites.

Site E: Land at High Road, Trimley St Martin

15.5.56 It is considered unlikely that Site E would result in any potential significant cumulative landscape or visual effects. This is due to the distance and/or lack of intervisibility and location along sequential routes between sites.

Site F: Land South of Main Road, Martlesham

15.5.57 It is considered unlikely that Site F would result in any potential significant cumulative landscape or visual effects. This is due to the distance and/or lack of intervisibility and location along sequential routes between sites.

Site G: Western Part of Land at Trinity Park and Land at White House Farm, Felixstowe Road, Purdis Farm

15.5.58 It is considered unlikely that Site G would result in any potential significant cumulative landscape or visual effects. This is due to the distance and/or lack of intervisibility and location along sequential routes between sites.

Site H: Melton Hill – Former SCDC Council Offices

15.5.59 It is considered unlikely that Site H would result in any potential significant cumulative landscape or visual effects. This is due to the distance and/or lack of intervisibility and location along sequential routes between sites.

Site I: Northern Quadrant

15.5.60 Whilst the proposed development within the Northern Quadrant would be potentially intervisible with the proposals to the south and east of Adastral Park, the existing development on the Northern Quadrant is one of commercial offices and research and development facilities which will be redeveloped to provide additional units that will be in keeping with the existing built development within an established landscape framework.

15.5.61 The intervisibility between the two sites will be localised due to the nature of the proposals and result in;

- Sequential views for users of Gloster Road when accessing the site to the north
- Potential cumulative views of both developments as part of the visual experience for users of Public Rights of Way to the north of the site.

15.5.62 Given the existing commercial character of Adastral Park and the level of existing development, the proposals of the development would not introduce any incongruous development into the landscape. Therefore it is not anticipated that there would be any potential significant cumulative landscape and visual effects with the Northern Quadrant redevelopment and the scheme is therefore considered to result in a **negligible** effects in regards to the landscape character and visual receptors.

Site J: Sizewell C

15.5.63 It is considered unlikely that Site J would result in any potential significant cumulative landscape or visual effects. This is due to the distance and/or lack of intervisibility and location along sequential routes between sites.

Noise

Site A: Land to East of Bell Lane, Kesgrave, Suffolk

15.5.64 There are no cumulative effects on noise arising from Site A.

Site B: Land off Woods Lane, Melton

15.5.65 There are no cumulative effects on noise arising from Site B.

Site C: Land and Buildings to the East of Bridge Farm, Top Street, Martlesham

15.5.66 There are no cumulative effects on noise arising from Site C.

Site D: Land at Candlet Road, Felixstowe

15.5.67 There are no cumulative effects on noise arising from Site D.

Site E: Land at High Road, Trimley St Martin

15.5.68 There are no cumulative effects on noise arising from Site E.

Site F: Land South of Main Road, Martlesham

15.5.69 There are no cumulative effects on noise arising from Site F.

Site G: Western Part of Land at Trinity Park and Land at White House Farm, Felixstowe Road, Purdis Farm

15.5.70 There are no cumulative effects on noise arising from Site G.

Site H: Melton Hill – Former SCDC Council Offices

15.5.71 There are no cumulative effects on noise arising from Site H.

Site I: Northern Quadrant

15.5.72 There are no cumulative effects on noise arising from Site I.

Site J: Sizewell C

15.5.73 There are no cumulative effects on noise arising from Site J.

Socio-Economics

15.5.74 Should the construction phase of any of the developments overlap with any of the construction phases for the proposed development there would be a cumulative effect in the number of temporary jobs created (both direct and indirect employment). If the construction works do not overlap there would still be a cumulative effect as workers could then be employed on more than one project, providing increased job security within the sector. Associated indirect benefits through workers spend in the local economy would also correspondingly increase. However, it is considered that the significance level for these identified effects would not increase i.e. remain minor beneficial, unless all developments were progressed, in which case the effects would be **moderate to major beneficial**, largely due to the scale of the Sizewell and East Anglia infrastructure projects.

15.5.75 Baseline information from the ES chapter indicates there is a requirement for 5,884 homes to be delivered within SCDC by 2027 to meet the Core Strategy target. With the exception of Sites I, J and K, once complete the developments would make a significant contribution to the Core Strategy target, provide a significant cumulative increase in the housing supply at a district and county levelShould all the residential developments be progressed the effect on housing supply would be **major beneficial.**

15.5.76 As stated in the ES chapter the increase in housing supply would be likely to temporarily reduce house prices. It is considered unlikely that all the proposed housing developments would come forward on a similar timescale and therefore a **medium term minor adverse effect** is predicted for existing homeowners, but conversely any reduction in housing prices would be of benefit to prospective homeowners, so would be a **medium term minor beneficial effect.**

15.5.77 The increase in population would result in an influx of skills to the area, increasing GVA; greater demand for local services and an associated increase in spending in the district economy. Cumulatively these are considered to be **moderate beneficial** effects.

Site A: Land to East of Bell Lane, Kesgrave, Suffolk

15.5.78 Once complete this development would provide a cumulative effect in relation to provision of green space and play areas and associated health and wellbeing effects. The level of predicted significance remains unchanged from the ES chapter, that is minor beneficial.

15.5.79 Direct employment would be provided through inclusion of a primary school within the Scheme. Whilst this would result in a cumulative employment effect with the Proposed Development, the level of significance would remain unchanged i.e. minor beneficial.

15.5.80 The primary school would meet on-site demand for school places and potentially provide additional capacity, though some capacity for this education level already exists in the local area so is considered to be a negligible effect. The scheme would increase demand for early years and secondary school provision; however it is assumed that the development agreement for Site A would include contribution towards such provision if this was not to be provided on-site, and therefore there would be no cumulative effect.

15.5.81 Similarly, once complete the cumulative increase in population from this development in combination with the Proposed Development would place increased pressure on existing healthcare and community facilities. It is assumed that the developer would agree with NHS England and the CCG on the suitable healthcare provision to be made, resulting in a negligible effect. However, without similar suitable mitigation for community facilities as part of the scheme, this is considered to be a **minor adverse** effect.

Site B: Land off Woods Lane, Melton

15.5.82 In addition to the effects noted at the beginning of this section, once complete the cumulative increase in population from this development in combination with the Proposed Development would increase the pressure on existing education, community and recreational facilities, notably within the Woodbridge area. It is assumed that the developer would agree with the LEA and CCG / NHS England on suitable education and healthcare provision to be made, resulting in a negligible effect. However, without similar suitable mitigation for community and recreational facilities as part of the scheme, this is considered to be a **minor adverse effect.**

Site C: Land and Buildings to the East of Bridge Farm, Top Street, Martlesham

15.5.83 Once complete this development would provide a cumulative minor beneficial effect in relation to provision of green space and play areas and associated health and wellbeing effects. The level of predicted significance remains unchanged from the ES chapter.

15.5.84 In addition to the effects noted at the beginning of this section, once complete the cumulative increase in population would increase pressure on existing education, healthcare and community facilities. It is assumed that the developer would agree with the LEA and CCG / NHS England on suitable education and healthcare provision to be made, resulting in a negligible effect. However, without similar suitable mitigation for

community facilities as part of the scheme, this is considered to be a **minor adverse effect.**

Site D: Land at Candlet Road, Felixstowe

15.5.85 Direct employment would be provided through inclusion of the business units, the care homes and assisted living within the Scheme. Whilst this would result in a cumulative employment effect with the Proposed Development, the level of significance would remain unchanged i.e. minor beneficial.

15.5.86 Given the distance between the Site and Site D, no cumulative effects are anticipated in relation to provision of open green space and associated health and wellbeing. Whilst there would be a cumulative increase in population within the district, new residents in this scheme would be likely to use local health, education and community facilities in Felixstowe and therefore no cumulative effects are predicted in relation to pressure on local facilities.

Site E: Land at High Road, Trimley St Martin

15.5.87 Given the scale and location of Site E, no significant cumulative socio-economic effects are anticipated.

Site F: Land South of Main Road, Martlesham

15.5.88 In addition to the effects noted at the beginning of this section, once complete the cumulative increase in population would increase pressure on existing local education, community and recreational facilities. It is assumed that the developer would agree with the LEA and CCG / NHS England on suitable education and healthcare provision to be made, resulting in a negligible effect. However, without similar suitable mitigation for community facilities as part of the scheme, this is considered to be a **minor adverse effect**.

Site G: Western Part of Land at Trinity Park and Land at White House Farm, Felixstowe Road, Purdis Farm

15.5.89 In addition to the effects noted at the beginning of this section, once complete this development would provide a cumulative minor beneficial effect in relation to provision of green space and play areas and associated health and wellbeing effects. The level of predicted significance remains unchanged from the ES chapter.

15.5.90 Whilst there would be a cumulative increase in population within the district, given the location of Site G new residents in this scheme would be likely to use local health, education and community facilities in Ipswich and therefore no cumulative effects are predicted in relation to pressure on local facilities.

Site H: Melton Hill – Former SCDC Council Offices

15.5.91 In addition to the effects noted at the beginning of this section, once complete the cumulative increase in population from this development in combination with the Proposed Development would increase the pressure on existing education, community and recreational facilities, notably within the Woodbridge area, resulting in minor to moderate adverse effects unless the Site H development agreement includes appropriate mitigation.

Site I: Adastral Park, Northern Quadrant

15.5.92 In addition to the construction effects noted at the beginning of this section should both developments be constructed on a similar timescale there is potential for cumulative temporary amenity effects on local receptors including Falcon Park residents and existing businesses within Adastral Park. If construction is ongoing within both sites at the same time there is potential for shorter periods of disturbance but of a higher magnitude, conversely if the construction works follow on impact magnitude would be lower but effects would be experienced for a longer period of time. Providing there is close liaison between the two construction teams, a programme of community consultation, implementation of CEMP and best practice measures cumulative effects should be no greater than minor adverse.

15.5.93 The direct employment created from the Northern Quadrant (and associated indirect employment) would result in a cumulative employment effect with the Proposed Development but this would be largely due to the Northern Quadrant.

Sites J and K: Sizewell C and East Anglia ONE

15.5.94 Construction of Sizewell C (if consented) and East Anglia One (and future phases, if consented) would require a significant number of skilled construction workers. East Anglia ONE is anticipated to create around 3,000 construction jobs and Sizewell C around 25,000 roles with a peak of approximately 5,600 workers on site (ref project websites). Construction of the onshore cables for East Anglia ONE began in early 2017 and the windfarm is currently predicted to be operational by 2020. The construction programme for Sizewell C is still in development (the project is at Stage 2 of consultation).

15.5.95 If the construction of the Proposed Development overlaps with either of these nationally significant projects, whilst there would be significant beneficial effects in relation to direct and indirect employment creation and associated spend in the regional economy, cumulatively this may create a temporary shortage of suitably skilled construction workers, which could result in delay and/or increased costs for some developments. Skills strategies and training programmes for the major projects and commitment to training for the smaller developments, together with liaison with the local authorities, local education and training partners, Suffolk Chamber of Commerce, NALEP and other relevant parties to ensure a co-ordinated approach, should ensure any significant effects are avoided. In the longer term, if construction workers choose to relocate to the area there is potential for **moderate beneficial effects** in terms of upskilling.

15.5.96 If the construction of the Proposed Development overlaps with either of these nationally significant projects there would be a significant increase in demand for workers accommodation and other facilities such as healthcare and sports. This would be temporary but over a number of years. During the peak construction period for Sizewell C 2,400 non-home based workers would be based at the campus to be constructed within the Sizewell site, reducing likely effects (ref Stage 2 consultation document). However, Martlesham is approximately 40 minutes drive from the Sizewell site and therefore the local area would be within commuting distance for construction workers. Without appropriate mitigation, which would need to be led by Sizewell C as the largest of the projects, there is potential for **moderate adverse effects** in the medium term,

relating to shortage of local accommodation for construction workers and increased pressure on local health and community facilities.

15.5.97 The cable route for East Anglia One passes to the east of the Site around Waldringfield (ref East Anglia ONE NTS) but as the onshore cable installation has already commenced, no overlap with Phase 3 of the Proposed Development is anticipated, and therefore no cumulative construction effects on residential and local business amenity are predicted.

15.5.98 The level of job creation provided by the operational Proposed Development would be small in comparison to the 900 jobs anticipated to be needed to operate and maintain Sizewell C (ref project website). There would therefore be a cumulative beneficial employment effect within the region, but this would be largely due to Sizewell C.

Other sites

15.5.99 Should a number or all of the allocated sites be developed on a similar timescale to the infrastructure projects and Proposed Development, as stated for sites J and K above, cumulatively this may create a temporary shortage of suitably skilled construction workers, which could result in delay and/or increased costs for some developments. Appropriate mitigation is described in 15.5.95.

15.5.100 Given the locations of the allocated sites in relation to the Proposed Development, providing each development agreement includes for appropriate healthcare, education and community / sports facilities, together with generous allowances for open space and play areas (ideally more than legal compliance) no significant cumulative effects are predicted other than those set out at the beginning of this section.

Transport

Site A: Land to East of Bell Lane, Kesgrave, Suffolk

15.5.101 There are no cumulative effects on transport arising from Site A.

Site B: Land off Woods Lane, Melton

15.5.102 There are no cumulative effects on transport arising from Site B.

Site C: Land and Buildings to the East of Bridge Farm, Top Street, Martlesham

15.5.103 There are no cumulative effects on transport arising from Site C.

Site D: Land at Candlet Road, Felixstowe

15.5.104 There are no cumulative effects on transport arising from Site D.

Site E: Land at High Road, Trimley St Martin

15.5.105 There are no cumulative effects on transport arising from Site E.

Site F: Land South of Main Road, Martlesham

15.5.106 There are no cumulative effects on transport arising from Site F.

Site G: Western Part of Land at Trinity Park and Land at White House Farm, Felixstowe Road, Purdis Farm

15.5.107 There are no cumulative effects on transport arising from Site G.

Site H: Melton Hill – Former SCDC Council Offices

15.5.108 There are no cumulative effects on transport arising from Site H.

Site I: Northern Quadrant

15.5.109 There are no cumulative effects on transport arising from Site I.

Site J: Sizewell C

15.5.110 There are no cumulative effects on transport arising from Site J.

15.6 Predicted Interactive Effects

15.6.1 The matrix below shows where there are likely to be Interactive Effects. The residual environmental effects of the proposed development were collectively examined to determine the potential for them to interact and generate a cumulative effect on identified resources and receptors. These effects are described in the appropriate topic chapters, and summarised in the matrix below.

	Air Quality	Archaeology and Cultural Heritage	Ecology	Flood Risk & Drainage	Ground Conditions & Contamination	Noise	Socio-Economics	Landscape & Visual Impact	Transport & Travel Planning
Air Quality		X	✓	X	X	X	✓	X	✓
Archaeology and Cultural Heritage			✓	X	X	X	X	X	X
Ecology				✓	✓	✓	✓	✓	✓
Flood Risk & Drainage					X	X	X	X	X
Ground Conditions & Contamination						X	X	X	X
Noise							✓	X	✓
Socio-Economics								✓	✓
Landscape & Visual Impact									✓
Transport & Travel Planning									

Air Quality and Ecology

15.6.2 The air quality assessment confirmed that there is potential for habitats on site to be adversely affected by dust through the construction phase of the proposed development, but that such effects can be reduced to negligible levels through deploying best practice measures during the construction phase including recommendations such as machinery and dust causing activities away from sensitive receptors, erecting solid screens or barriers around the site boundary and switching off engines when not in use.

15.6.3 The air quality assessment confirmed that the impact of NOx emissions and nitrogen deposition on local sensitive habitat sites has been assessed as negligible.

Air Quality and Socio-Economics

15.6.4 The interaction effect between air quality and socio-economics relates to the effect of dust on health. There is a large dust emission magnitude predicted during earthworks and construction, but the background PM_{10} concentrations are well within the air quality management objectives. This dust emission also poses an interaction effect in terms of the quality of life of existing residents. The best practice measures proposed to suppress dust during construction will reduce the residual effect between the two to neutral or slight negative at worst. Therefore, the residual interactive effect is not significant and does not require any additional mitigation.

Air Quality and Transport

15.6.5 Changes to transport and travel methods can impact on air quality. Transport related air quality impacts due to the proposed development have been assessed as negligible.

Ecology and Flood Risk and Drainage

15.6.6 The Flood Risk and Drainage chapter concludes that there will be no significant adverse environmental effects as a result of the proposed development and through the implementation of a Sustainable Drainage System the greenfield runoff rates will be significantly reduced post development. The Sustainable Drainage System will also offer an opportunity to expand and enhance the wetland habitats available on the site and consequently secure positive impacts in terms of ecology.

Ecology and Ground Conditions

15.6.7 The production of a Construction and Environmental Management Plan (CEMP) incorporating appropriate mitigation such as 'Prohibition of any temporary construction discharges without approval of the Environment Agency' and 'Discharges of waters resulting from construction activities will generally be directed to foul sewers, subject to approval of the drainage authority' will ensure that the proposed development will not result in any significant adverse pollution effects on ecological receptors during either the operational or construction phases of the development. Suitable habitat buffers have also been incorporated into design scheme of the development to restrict the possibility of contamination or pollution effects on retained and adjoining habitats.

Ecology and Noise

15.6.8 The noise assessments carried out did not identify any significant adverse impacts on human receptors with no residual effects anticipated. However, it is assumed that there will be potential temporary disturbance to the habitats and associated species through construction activities which will be mitigated for within the Construction and Environmental Management Plan (CEMP) and is discussed further within the Noise chapter of this ES.

15.6.9 The noise levels associated with the increased vehicle movement as a result of the proposed development will also create noise disturbance to the local fauna, particularly in those parts of the site that are currently remote from the A12. The effect of such 'urbanising' influences on the site has informed the ecological impact assessment and contributes to conclusions with regard to those species expected to be displaced.

Ecology and Socio-Economics

15.6.10 The proposed development has been designed to include substantial provision of public open space and recreational facilities to meet the anticipated demand of the increased population, whilst also including facilities identified as deficient within the area. The provision of these facilities will encourage new and existing residents to utilise the site for their recreational needs whilst also reducing vehicle movements and the demand on surrounding facilities.

Ecology and Transport

15.6.11 This issue is primarily interactive with ecology through any increases in vehicle movements generating noise and air quality impacts. These are discussed under the relevant sections above.

Noise and Socio-Economics

15.6.12 The interaction effect between noise and socio-economics relates to quality of life of existing and future residents and users. There is potential for construction noise impacting on existing residents, and operational noise affecting the internal environment of buildings located within the proposed site. Best practice mitigation measures will be accommodated for noise impacts during construction, which will reduce the residual effect between the two to neutral or slight negative at worst (during construction). Therefore, the residual interactive effect is not significant and does not require any additional mitigation.

Noise and Transport

15.6.13 The creation of a new road network will change the noise profile of the area, and the development of new homes creates new noise receptors. This is assessed is Chapter 12 of this ES.

Landscape and Visual and Transport

15.6.14 The introduction of new roads and new junctions changes the landscape and views. This is fully assessed in Chapter 11 of this ES.

Socio-Economics and Transport

15.6.15 The interaction effect between transport and socio-economics related to quality of life of existing and future residents. However, the pre-mitigation impact is expected to be negligible and therefore no mitigation is required to address the interactive effect.

Legend:

- Indicative Site Boundary - Adastral Park
- 1km Distance Marker
- 2km Distance Marker
- 3km Distance Marker
- 4km Distance Marker
- 5km Distance Marker

Cumulative Sites (Planning Applications):

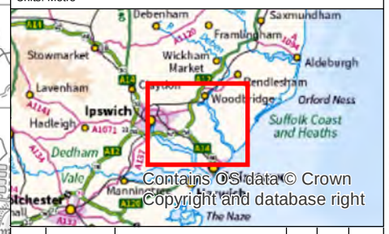
1. C/10/1906
2. C/12/1930
3. Former SCDC Council Offices
4. DC/14/0991/OUT
5. DC/15/1128/OUT
6. DC/15/4672/OUT
7. DC/15/4788/OUT
8. DC/16/1919/FUL

Notes:
The site boundary displayed on this plan is indicative only, and has been derived from information displayed on '170301 Adastral Park 31677 - 01C Site Boundary 5000A1' drawing (Drawing 01, Revision C), created by BroadwayMalyan, 01.03.17.

Cumulative Sites (Planning Applications) displayed on the plan have been derived from information displayed on the East Suffolk (Suffolk Coastal and Waveney Councils) Public Access website, accessible at: http://publicaccess.eastsuffolk.gov.uk/online-applications/spatialDisplay.do?action=display&searchType=Application

No measurements should be taken from this plan.

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Metre



Rev	Date	Description	Drn	Chk	App
00	24/02/2017		JG	RC	AO

Adastral Park

RSK

TITLE:

Figure 15.1 Cumulative Sites

0 1 2
Kilometres

SCALE: 1:60,000 @ A3

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Document Path: P:\EIA\660000 - EPD National\660961 Adastral Park\08 Graphics\01 GIS\660961_003_Figure 15.1 Cumulative Sites.mxd

16 SUMMARY OF ENVIRONMENTAL COMMITMENTS

16.1 Introduction

16.1.1 The assessment of the proposed scheme has identified a number of impacts that would arise as a result of progression of the proposed scheme. Mitigation measures have accordingly been identified and developed to counter adverse impacts and reduce the significance of residual effects on the receiving environment.

16.1.2 Environmental mitigation measures identified during the EIA process are reported in Sections 6 to 14 of this Environmental Statement. Subject to the granting of planning consent, these measures will form a schedule of commitments under the terms of any contract(s) for the construction and future maintenance of the proposed scheme.

16.1.3 Mitigation has been embedded into the masterplan design through appropriate school provision (with allowance for future expansion) to be constructed in the first phase of development; creation of significant green infrastructure, access improvements and new local centres with associated community facilities.

16.1.4 Environmental commitments are scheduled in Table 16.1 below.

Section of the ES	Activity/Potential Impact	Mitigation/Management/Monitoring Action
Air Quality	Construction	• The dust emitting activities outlined above can be effectively controlled by appropriate dust control measures and any adverse affects can be greatly reduced or eliminated. • Prior to commencement of demolition/construction activities, it is anticipated that an agreement on the scope of a dust management plan (DMP) for the construction phase will be reached with the local authority to ensure that the potential for adverse environmental effects on local receptors is minimised. The DMP should include inter alia, measures for controlling dust and general pollution from site construction operations, and include details of any monitoring scheme, if appropriate. Controls should be applied throughout the construction period to ensure that emissions are mitigated. • The dust risk categories identified have been used to define appropriate, site-specific mitigation methods. More detailed, site-specific mitigation measures are contained in Appendix G in **Annex 6,** which is located in Volume 2 of this ES. There are no 'negligible' risks assigned to any activities, however a selection of mitigation measures are usually recommended as good practice. • The traffic effects of the Proposed Development during the construction phase will be limited to a relatively short period and will be along traffic routes employed by haulage/construction vehicles and workers. Any effects on air quality will be temporary i.e. during the construction and demolition period only and can be suitably controlled by the employment of mitigation measures appropriate to the development project.

	Operation	• The development is predicted to increase the amount of exposure to poorer air quality without mitigation. • It is therefore recommended that mitigation measures will likely be required to include locating ventilation inlets as high up on each proposed building as possible to avoid air quality issues from road traffic sources. • Operational mitigation measures could include building design measures such as mechanical ventilation with non-openable windows, consideration of rear ventilation and/or movement of non-habitable rooms closer to the locations of pollution sources.
Ecology	Potential to cause the unintentional spread of non-native invasive species during the construction phase.	Removal of non-native invasive species through a spraying and monitoring regime over two years to ensure all non-native invasive species have been eradicated prior to works commencing.
	Potential for direct impacts on breeding habitats associated with mature trees and shrubs	Removal of potential nesting habitat during construction will be carried out outside the bird breeding season where possible. If unavoidable an inspection of the affected area could be carried out by suitably qualified ecologist to reduce the scope for effects with legal implications
	Loss of important habitats and species present at the site and negative impacts on nearby designated sites.	Creation of 25.1ha of SANGS to provide alternative natural recreational space for new residents along with high quality ecological habitats for birds, notable plants, reptiles, bats, badgers, invertebrates and hedgehogs. An ecological management plan will ensure the long-term perpetuity of these habitats / species.

	Damage to adjacent Martlesham Soakaway Acid Grassland CWS	Fencing and safe chemical storage to prevent physical damage to adjacent Martlesham Soakaway Acid Grassland CWS CEMP to prevent pollution effects Recreation impacts prevented through fencing and interpretation boards
	Damage / loss of Rare and Notable Plants	Recreate habitat for rare / notable plants within retained / enhanced habitat and translocate individuals within construction footprint.
	Loss of bat roosts	Natural England EPSL obtained and compensatory roosts created, Sensitive lighting scheme to be implemented Installation of bat boxes throughout scheme
	Reduction in bat foraging activity	Creation of new habitats, enhancements of retained habitats, bat friendly planting scheme and an ecological management plan implemented to ensure the long-term perpetuity of the bat assemblage Sensitive lighting scheme employed throughout site, particularly around habitats of importance, i.e. woodland, newly created SANGS greenspaces, lake. Dark corridors to be retained for light sensitive species on site.
	Killing/Injury of Badger, Reptiles, Toads and Hedgehog	Reduced speed levels on roads particularly where crossing with greenspaces. Sensitive vegetation clearance along important areas e.g. north/eastern boundaries, woodlands, grasslands guided through CEMP.

	Loss of bird habitat / disturbance to important breeding, migratory and/or wintering species	Management plan to recreate heathland, enhance woodland and scrub, and sensitively manage grassland Creation of new and replacement habitat and nesting opportunities/features including sand martin bank Creation and maintenance of low impact, disturbance-free zones
	Loss/damage to badger setts, sett building habitat	Natural England licence obtained to close active setts Foraging habitats retained and enhanced around boundaries, woodland and new heathland Fragmentation minimised through reduced speed levels, low lighting levels and retained green corridors
	Loss of important invertebrate assemblage	Ecological management plan to create open grassland habitats with extensive structural and physical variety, with on-going management to maintain early seral habitat conditions
	Killing/injury of reptiles and loss of reptile habitat	Create reptile receptor site. Translocation of individuals from reptile areas to receptor site. Enhancement of SANGS areas for reptiles Ecological management plan for newly created habitats and receptor site
	Fragmentation for Hedgehogs	Sensitive lighting scheme and reduced speed levels across site Connectivity through newly created gardens through cut-outs in fences.

Ground conditions and contamination	Contamination: Direct contamination of the soil and potential groundwater contamination due to earthwork operations and potential spillage of fuel oils and site stored materials during construction activities.	Disturbance of the ground during construction operations has the potential to contaminate soil and both ground and surface waters due to discharge of solids into water or by the short term mobilisation of any background contaminants within the soil matrix. The potential environmental effect of suspended solids discharges to watercourses and ground waters will be mitigated by adequate site controls developed by way of a Construction and Environmental Management Plan (CEMP. All contractors working on site will be required to adopt proposed means of mitigation outlined. Specific matters covered in the CEMP will include: • Prohibition of any temporary construction discharges without approval of the Environment Agency. • Earthworks to be completed in a manner that protects the water quality environment and ecological interest of the area. The nature of the works and the proposed implementation methods will be agreed with the Environment Agency in advance and all works will accord with the recommendations of EA Pollution Prevention Guidance for Works in, Near or Liable to Affect Watercourses. • Discharges of waters resulting from construction activities will generally be directed to foul sewers in the surrounding areas, subject to approval of the drainage authority. • All fuels oils and potentially contaminating substances to be stored in bunded tanks or suitable hard paved and protected areas as are appropriate. • All works will be completed in accordance with the Environment Agency documents, PPG 6 Working at Construction and Demolition Sites and PPG21 Pollution Incident Response Planning together with current best practice measures for the management of construction activities. • All surplus construction and demolition materials to be removed from site and reused, recycled, or disposed, in respective order of preference. It will be incumbent on the selected contractor to assess working practice related risks and impacts before implementation and control such by employing industry good practice techniques. Furthermore, the contractor will be required to develop emergency spillage, flood, fire and contamination control procedures such that any inadvertent incidents are immediately controlled to minimise the potential impact. As a result of the development proposals and mitigating measures being implemented, no significant adverse environmental effect will result from the Project.

Noise	Construction/ Demolition Noise and Vibration	Application of the CEMP
Socio Economics	Construction	Implementation of a CEMP, to include neighbourhood liaison
		Timing of construction of healthcare and community facilities to be agreed with relevant bodies to ensure no adverse effects
	Operation	Agreement with LEA on the most appropriate school provision to be included in the Development.
		Agreement with CCG and NHS England on appropriate healthcare to be provided as part of the Development and appropriate timing for construction.
		Development and Implementation of Communication and Engagement Plan for the Development, to ensure continued dialogue with network of relevant local groups.
		Consultation with Crime and Design officer, new facilities and spaces to be built to Secured by Design Standards
		Consideration of design guidelines such as the BRE Home Quality Mark, Well Standard, and Lifetime Homes.
Landscape and Visual Impact	*Review Landscape and Visuals document.*	
Transport	Construction traffic	Mitigation measures for the construction stage are set out in detail in the CEMP and CLP and therefore the mitigation of construction impacts are the application of these plans. Specific measures covering construction impact mitigation include: • No parking provision for construction staff to encourage the use of sustainable modes of transport • Commitment of participation in any forums that will be established as part of the Construction Logistics Strategy (CLS) currently developed by TfL for the local area • Co-ordination of timescales with consented scheme developers, where possible, to share facilities and thus reduce vehicle mileage

	Trip generation of operational site	Mitigation Measures for operational development include: • Delivery and Servicing Plan (DSP) • Workplace and residential Travel Plans (TPs) • Provision of enhanced pedestrian and cycle environment, including active frontage to provide natural surveillance, good permeability across the site with high quality pathways to ensure a minimal perception of severance, lighting on site to create safe environment, attractive public realm • Installation of wayfinding signs to aid pedestrian movement • Provision of sufficient cycle parking facilities on site • Limited car parking provision

17 DRAFT ENVIRONMENTAL MANAGEMENT PLAN

17.1 Introduction

17.1.1 This chapter describes the arrangements for management of the detailed design and construction stage of the project by the Main Works Contractor. These arrangements will ensure that mitigation measures in this ES, legislative and contractual requirements, and environmental best practice are implemented.

17.2 Environmental Management during Construction

17.2.1 One of the key mechanisms for environmental management during the construction stage is the Construction Environmental Management Plan (CEMP) and associated subject plans. These are described in more detail in this section.

17.2.2 The purpose of the CEMP is to:

- provide a mechanism for ensuring that measures to mitigate potentially adverse environmental impacts identified in this ES are implemented;
- ensure that good construction practices are adopted throughout the construction of the proposed development;
- provide a framework for mitigating unexpected impacts during construction;
- provide assurance to third parties that their requirements with respect to environmental performance will be met;
- provide a mechanism for ensuring compliance with environmental legislation and statutory consents; and
- provide a framework for compliance auditing and inspection to enable contractors to be assured that their aims with respect to environmental performance are being met.

17.2.3 The CEMP is a document that continuously evolves throughout the life of the project. It will be developed as further consultations and surveys take place, and detailed design and working method statements are prepared.

17.2.4 The following additional plans should be produced in support of the CEMP:

- Site Waste Management Plan (SWMP) which will include how the waste hierarchy (Eliminate, Reduce, Re-use, Recycle, Dispose) will be applied during the construction;
- Materials Management Plan (MMP);
- Pollution Prevention Plan (PPP);
- Water Management Plan (WMP);
- Traffic Management Plan (TMP); and

- Emergency Response Plan (ERP).

17.2.5 These plans will provide a system to monitor and audit environmental performance. The plans will detail the practical methods required to ensure work is completed in accordance with current best practice, the mitigation measures identifies in this ES and legislative and regulatory requirements. The plans should be agreed with the local planning and highways authorities, Natural England (NE), the Environment Agency (EA) and others as appropriate.

17.2.6 In addition to the above, project-specific method statements and a variety of detailed site-specific plans should be produced to cover the detailed construction methods to be employed for all main construction activities. Where appropriate these should be discussed and agreed with relevant statutory and non-statutory consultees before construction commences.

17.2.7 Well-trained and environmentally aware personnel are a key factor in ensuring that all aspects of the project are executed with minimal impact to the environment and that the highest standards of environmental management are met. Specific personnel should be trained to cover on-site environmental duties and emergency response.

17.2.8 A comprehensive programme of training should be implemented.

Site Inductions

17.2.9 All project personnel should be appropriately briefed about project-specific environmental impacts and mitigation measures at an induction course before they are allowed onto the site. This briefing should cover such aspects as:

- guidance on the significance and sensitivity of environmental features near the proposed development application Site;
- the environmental objectives and policies of the contractor;
- the potential environmental effects of construction;
- responsibilities for environmental monitoring and reporting;
- procedures for responding to environmental incidents and emergencies; and
- procedures to manage significant aspects – waste, fuel, pollution prevention etc.

Method statement briefings and toolbox talks

17.2.10 All site supervisors should be briefed on specific method statement requirements before work commences. A series of toolbox talks should also be given to all staff during the course of the project by appointed environmental manager/officers. These are usually done each week on site and concentrate on reinforcing practical measures. The programme should be adjusted to suit any site-specific issues that may arise. Typical toolbox talk topics are:

- safe handling and refuelling of plant and machinery;
- precautions to prevent sediment-laden run-off from entering watercourses;
- disposing of water from excavations;
- waste storage and segregation and the potential planning and waste management

- licensing implications of reuse; and
- precautions for protected flora and fauna in areas adjoining the application site.

Emergency Exercises

17.2.11 The Emergency Response Plan (ERP) should be subject to exercises during construction and these should include environmental elements to assess staff awareness of environmental incident management.

Environmental Labelling

17.2.12 The main works contractor should erect notices on site to indicate environmentally important and/or sensitive areas that could potentially be affected by the construction works, including proximity to sensitive sites and those containing protected species. These notices may indicate that some areas are "out of bounds" for construction traffic and personnel, and any such areas should be fenced off.

17.2.13 Monitoring of the environmental effects of construction enables the effectiveness of environmental mitigation to be evaluated. It also allows environmental problems to be identified and responded to at an early stage. Monitoring will also help the contractor to identify and implement environmental improvements that will contribute to the overall environmental performance of the project.

17.2.14 The initial identification of areas of potential environmental sensitivity is contained within this ES. The main works contractor should ensure that a programme of monitoring, both during and after construction, is instigated. The most likely topics for an environmental monitoring programme during (and in some cases, following) construction will include:

- noise levels at sensitive receptors including adjoining residential areas;
- quality of water discharges, for example from the dewatering of excavations;
- drainage;
- dust generation;
- ecological features, particularly species and their habitats which are protected under the Wildlife and Countryside Act 1981 or the Conservation (Natural Habitats etc) Regulations 1994 (such as badgers and water voles); and
- traffic movements and the condition of public highways.

17.2.15 It should then be established whether any changes are the result of the development and require mitigation techniques, or a result of natural variation.

17.2.16 Further requirements for monitoring will be identified with consultees during the detailed design stage.

17.2.17 Environmental near misses and incidents should be recorded and investigated and appropriate corrective actions put in place. The main works contractor should operate a policy of self-reporting of environmental incidents and be responsible for ensuring that any non-conformances are recorded and dealt with, in accordance with the procedures detailed in the CEMP.

Environmental Auditing

17.2.18 The main works contractor should undertake a programme of weekly environmental inspections and monthly environmental audits to record performance and identify any corrective actions required.

17.2.19 The environmental adviser for the main works contractor should also carry out appropriate environmental inspections and monitoring of the contractor's environmental performance in the form of monthly audits. Formal audits will be against an audit checklist, which will form part of the CEMP. The checklist will provide a mechanism to monitor and assess compliance against all the requirements and standards stated by the main works contractor. In addition, the contractor's management teams should conduct regular site inspections.

17.2.20 Where problems are identified, the corrective action should be identified by the inspector and corrective action undertaken by the contractor within a defined time frame.

17.2.21 Both inspection and auditing results should be reported to the main works contractor. They will play an important part in reviewing and updating the CEMP as the project develops.

17.2.22 The main works contractor should prepare a Safety, Health and Environmental (SHE) Policy, and establish an accident and environmental incident reporting procedure.

17.3 Environmental Management during Operation

17.3.1 The environmental management of the Proposed Development once the Site has been developed and is occupied will be largely dictated by legislation and relevant guidelines at the time of occupation.

17.3.2 Throughout the design of the proposed indicative masterplan, design standards and sustainability requirements have been incorporated, resulting in a proposed development that would meet all current environmental requirements.

17.3.3 Environmental management measures that should be implemented by the end user of the site include:

- a Household Refuse Collection Plan for the Site;
- a Commercial Waste Collection Plan for the retail, restaurant and office units on Site;
- a Travel Management Plan to enhance the sustainability of the Site;
- management of any CHP provision; and
- maintenance of the Sustainable Urban Drainage System (SUDS) developed for the Site.

17.4 Summary of Environmental Management Commitments

17.4.1 It is the intention of Commercial Estates Group to ensure that the findings of this ES are implemented by the eventual purchaser of the Site, in such a way that the impact on the

environment of the design, construction and operation of the proposed development is kept to a minimum.

17.4.2 The most effective form of mitigation is to design the project to avoid environmental impacts at source. Many environmental impacts will be avoided by commitment to the use of particular construction techniques and mitigation measures.

17.4.3 A Construction Environmental Management Plan (CEMP), which this chapter provides a preliminary framework for, would achieve the following aims:

- identify and implement the mitigation measures identified in the ES;
- the identification of targets and limits to which the construction works would be controlled, so that disruption, nuisance and environmental effects are minimised; and
- a framework for monitoring and auditing works against the targets, so that should these not be met due either to incorrect implementation of mitigation measures or accidents, for example, appropriate corrective action is taken to ensure that the construction works are adjusted to meet the targets.

17.4.4 The aim of the CEMP is to set out a framework for the implementation of identified mitigation measures, together with specific procedures and limitations, which would ensure that such impacts are controlled or eliminated.

17.4.5 The CEMP, when prepared, and plans of the works as appropriate, should be submitted for review prior to commencement of the works.

17.4.6 The CEMP should include the following:

- identification of roles and responsibilities of key staff in relation to environmental management of the Site, including the main contractor;
- available details of the phasing of the works (i.e. project programming), including information on works that may be carried out by sub-contractors;
- details of construction activities highlighting any operations likely to result in adverse environmental affects, with an indication of the mitigation measures to be employed;
- reference to, and provision of a framework for compliance with, all legislation which will be relevant to the construction phase;
- prohibited or restricted operations (locations, hours, etc.);
- control limits or target criteria for environmental issues, where practicable
- any requirement for monitoring and record-keeping e.g. audits of CEMP control measures;
- the mechanism for the public to register complaints and the procedures for responding to complaints;
- provisions for reporting, public liaison, prior notification etc. especially where dispensations are required;

- details of construction activities highlighting any operations likely to result in disturbance and/or working outside the core working period, with an indication of the expected duration of each phase and key dates;
- possible departures from the target criteria, and the detail of how any impact will be minimised, or possible complaints addressed;
- details of proposed routes for heavy goods vehicles (HGVs) travelling to and from the site;
- details of plant to be used;
- details of all works involving interference with a public highway, including temporary carriageway/footpath closures, realignment and diversions; and
- housekeeping procedures and environmental control measures.

17.4.7 The CEMP should be agreed with the relevant authorities. Contractors would be required to demonstrate how they would work within these provisions. Where departures are inevitable, prior identification is required, such that other mitigation measures can be examined.

17.4.8 The CEMP will address, inter alia, control of noise and dust, hours of working, control of water run-off, vehicle routing, road/footpath closures or diversions and waste disposal.

17.4.9 The CEMP should provide the necessary level of management and control of construction practices. This includes advance notice of operations and duration of work that may cause noise, disruption to access, or other effects.

17.4.10 It is concluded that with the intended measures in place, and from adherence to the CEMP designed for the Site, the proposed development may be constructed without significant long-term adverse effects on the immediate and wider environment.

CARLYLE LAND
LIMITED

ceg:

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housing & development consultants

RSK

SES
SOUTHERN ECOLOGICAL SOLUTIONS

TG Tyler Grange

Land south and east of Adastral Park