On behalf of Urban&Civic

Urban&Civic

Waterbeach Barracks & Airfield, Cambridgeshire
Planning Application

Environmental Impact Assessment
Scoping Report

June 2016

Prepared by
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with:
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Bradley Murphy Design
Resource & Environmental Consultants
Beacon Planning
Oxford Archaeology East
Tim O’Hare Associates
1.0 Introduction

1.1 This Scoping Report has been prepared on behalf of Urban&Civic (U&C) to support a request to South Cambridgeshire District Council (SCDC) for a formal Scoping Opinion under Section 13 of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 2011 (the EIA Regulations).

1.2 U&C is appointed by Defence Infrastructure Organisation (DIO) as the development manager for Waterbeach barracks, airfield and associated land (Waterbeach Barracks & Airfield) and is tasked with promoting mixed use redevelopment of the site. Appendix 1 presents a plan of the site.

1.3 The EIA Regulations require that any proposed development falling within the description of a ‘Schedule 2 development’ will require an EIA where such development is likely to have “significant” effects on the environment by virtue of factors such as its nature, size or location (Regulation 2). The proposed development falls within the description of a Schedule 2 development as the site area is greater than the threshold of 0.5ha given under Schedule 2 Section 10 (b) with respect to Infrastructure Projects that may require the submission of an Environmental Statement (ES). It is considered by U&C that significant effects are likely to arise from the implementation of the proposals and that an EIA will be required.

1.4 This Scoping Report has therefore been prepared to assist SCDC in identifying the issues which should be addressed in the EIA by considering what effects the project could have on the environment and which of these are likely to be significant. The Scoping Report sets out the proposed framework within which the EIA will be undertaken and the topic areas, proposed methodology and information that will be contained within the ES. SCDC will need to take into account the views of consultees on this Scoping Report in issuing a formal Scoping Opinion.

1.5 The purpose of the EIA is to identify likely “significant effects” that may arise, by comparing the baseline conditions with the predicted situation once the proposals are in place. The significance of effects during the construction phase of the development is also considered. It is also relevant to consider any significant effects which can be reasonably predicted as likely to arise from the development proposals in combination with other reasonably foreseeable proposals in the environs. Where significant effects are identified, the EIA process should then establish mitigation measures to avoid or reduce these impacts.
The Consultant Team

1.6 This report has been prepared by David Lock Associates (DLA) on behalf of U&C in conjunction with Peter Brett Associates, Bradley Murphy Design, Resource & Environmental Consultants, Beacon Planning and Tim O’Hare Associates. DLA will coordinate the EIA and the preparation of the ES. DLA is a member of the Institute of Environmental Management and Assessment (IEMA), an organisation established to promote best practice in EIA and related disciplines. The EIA will be undertaken in accordance with the best practice guidelines issued by the IEMA. A number of specialist consultancies will be undertaking assessment of the environmental effects. The following table sets out the proposed content of the ES showing the various contributions:

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1.7 Energy conservation, water management and waste minimisation will be addressed in separate strategies and reports.

Scope of the ES

1.8 The ES will be made up of Volume 1: Text; Volume 2: Plans and Appendices; and a separate Non-technical summary. The assessments will be based upon a Parameter Plan, or Plans; and a description of development which will include maximum amounts of development.

1.9 The ES will contain a description of the site and the proposals; and will outline the planning policy context. Policy considered will include the National Planning Policy Framework (NPPF), Planning Practice Guidance (PPG), and adopted and emerging South Cambridgeshire Local Plan policies. Waterbeach Parish Council is also
preparing a Neighbourhood Plan which will be relevant to the consideration of the proposed development if it has reached a sufficiently advanced stage of production and depending upon the extent to which there are unresolved objections to relevant policies. Specific policies relevant to particular topics will be considered in the topic chapters concerned.

1.10 The topic-specific chapters will be organised in a consistent format and will cover:

- **Introduction:** An overview of the topic under consideration.
- **Assessment Methodology:** The proposed scope and method of the assessment, including approaches to surveys and data, criteria used to assess significance and any uncertainties or limitations encountered.
- **Legal and policy framework:** Legislation, policies and guidance in relation to the specific topic concerned.
- **Baseline conditions:** A description of the current baseline conditions and how those might change if the development does not proceed (the projected future baseline).
- **Potential effects:** Identification of likely significant effects in the absence of any mitigation measures, at construction stage and post-completion.
- **Mitigation measures:** Proposed measures to avoid or reduce the potential adverse effects arising from the proposed development.
- **Residual effects:** Identification of the residual effects once mitigation measures have been taken into account and identification of the significance of those residual effects.
- **Cumulative effects:** An assessment of any effects in combination with those arising from other reasonably foreseeable projects in the environs of the site. Appendix 2 identifies the projects that are proposed to be taken into account in this assessment. These projects have been identified on the basis of their proximity to or inter-visibility with the site. This includes the potential for development to the east of Waterbeach Barracks and Airfield on other land within the Waterbeach New Town allocation, as set out in Policy SS/5 of the Proposed Submission South Cambridgeshire Local Plan (see paragraph 2.15). The transport assessment will take account of a wider range of reasonably foreseeable projects included in relevant strategic transport models, including projects located along the A10 corridor. The noise and air quality assessments, insofar as they are underpinned by data arising from the transport assessment, will also take account of that wider range of projects.
1.11 The assessments will consider the significance of the effects identified with reference to the magnitude of the impact and the sensitivity of the receptor. Four levels of significance will be identified: major, moderate, minor and negligible. These evaluations will be specific to each discipline in the ES and will involve the use of recognised standards, industry guidance and professional judgement.

1.12 An outline of the main alternatives will be included. It is proposed to limit this to a high level (not topic by topic) consideration of potential alternative uses of the site, amounts of development and options for accessing the proposed development. The advanced stage of the emerging Local Plan, which proposes to allocate the site broadly for the development being put forward, means it is not appropriate for the applicant to study potential alternative sites.
2.0 The Site and the Proposed Development

Site Location and Surrounds

2.1 The site is located immediately north of Waterbeach village approximately 5km from the northern edge of Cambridge and 8km north of Cambridge city centre (grid reference TL494664).

2.2 To the north lies Denny Abbey, the Farmland Museum and agricultural land. To the west is the A10 Ely Road beyond which (to the north-west) is Cambridge Research Park (CRP). There is a waste management park (operated by Amey Cespa) to the north of CRP. Waterbeach Village lies immediately to the south of the site with a mixture of residential and commercial properties adjoining the southern boundary off Denny End Road. To the east are predominantly open arable fields typical of the Fen landscape, beyond which lies the London to Kings Lynn railway line. There is also a Water Recycling Centre (sewage treatment works) to the east operated by Anglian Water and accessed off Bannold Drove.

2.3 A number of villages lie within 5km of the site including Landbeach, Chittering, Milton, Cottenham, Impington, Horningsea and Clayhithe.

2.4 The site is close to major transport infrastructure. There is a railway station in Waterbeach approximately 1.5 km from the site served by the London to Kings Lynn rail line (providing rail access to the wider national rail network). The A10 road which intersects with the A14 route at the Milton Junction 5km to the south of the site. Access to the site is currently taken off Denny End Road.

Site Description

2.5 The site can be described as predominantly previously developed land (brownfield), comprising a mixture of buildings and structures associated with its former military use both as a barracks and previously an airfield. This includes disused residential blocks, offices, hangars, workshops and other structures. Areas of hardstanding exist including what remains of the airfield and taxiways and an internal road network. No buildings on the site are listed for their historic or architectural interest. There is also a former golf course, playing fields and a lake (all associated with its military use), woodland areas, tree belts and individual trees. Military uses ceased in March 2013.

2.6 Land to the north, and to the east beyond the former barracks and airfield site, is used for agricultural purposes, being under arable cultivation. The airfield hardstanding is used for open storage of straw bales (SCDC planning permission reference S/0592/13/FL). U&C secured planning permission for the use of the existing sports
hall, squash courts and museum for the wider community in July and August 2015 and has a site office in the old watch tower building (S/1305/15/FL & S/1274/15/FL). These permissions run until 2020.

2.7 The site is broadly flat falling within 3m-6m on the whole. Most of the site falls within Flood Zone 1 (low probability - less than 1 in 1000 annual probability of flooding), but small parcels on the western edge lie within Flood Zone 2 (medium probability - 1 in 100 to 1 in 1,000 annual probability of flooding) or 3 (high probability - higher than a 1 in 100 annual probability of flooding) according to Environment Agency flood risk maps.

2.8 Denny Abbey is a Scheduled Monument (SM13219) with Grade I and II listed buildings. There are other Scheduled Monuments within 2 km at Waterbeach Abbey and Car Dyke (2 parts). There are five other listed buildings (all Grade II) to the north and west but outside the Scheduled Denny Abbey area. There are other non-designated heritage assets within or adjoining the site as well as listed buildings, scheduled monuments and a Conservation Area in Waterbeach village.

2.9 There are no Special Protection Areas (SPAs), Special Areas of Conservation (SACs), Ramsar sites or Sites of Special Scientific Interest (SSSI) within 2km of the site. Cam Washes SSSI lies about 2.7km north east of the site; Wicken Fen SSSI, SAC and Ramsar site lies approximately 5km to the north east of the site; and Upware Pits SSSI is about 5.3km to the north east of the site.

Planning Policy Context

2.10 The national context is provided by the National Planning Policy Framework (NPPF) and Planning Practice Guidance (PPG). The Development Plan for South Cambridgeshire comprises: South Cambridgeshire Local Development Framework, which includes the Core Strategy Development Plan Document (DPD) (CS DPD) (January 2007), the Development Control Policies DPD (DCP DPD) (July 2007), the Cambridgeshire & Peterborough Minerals and Waste Plan (July 2011) and ‘Saved’ Local Plan 2004 Policy CNF6.

2.11 The emerging South Cambridgeshire Local Plan was submitted to the Secretary of State for Communities and Local Government via the Planning Inspectorate on 28 March 2014. The joint Examination into the Proposed Submission South Cambridgeshire Local Plan and the Cambridge City Local Plan was suspended in July 2015 and is set to resume in June 2016. Proposed Modifications and the Sustainability Appraisal were consulted on in November 2015. Once adopted, the Local Plan will form an up-to-date Development Plan for the District.
2.12 Of relevance is Policy SS/5 through which SCDC is proposing to allocate land at Waterbeach for a strategic allocation of 8,000-9,000 dwellings. There are objections outstanding in relation to this policy including the boundary and the size of the development.

**Development Framework Document**

2.13 In consultation with a range of stakeholders including SCDC, statutory consultees and the local community, a Development Framework Document (DFD) is being prepared by U&C in conjunction with adjoining landowners. This document is intended to contain a vision and a framework to guide the development proposals across a number of land ownerships at Waterbeach including the Waterbeach Barracks and Airfield Site. To inform the preparation of the DFD, a range of baseline work has been undertaken and engagement with the local community and statutory consultees has occurred. The final DFD could inform the intended planning application and the Local Plan examination.

**The Proposed Development**

2.14 U&C is undertaking local community and stakeholder engagement to inform the development proposals. At this stage, a preliminary description of development is provided to set out the likely maximum extent of the proposed development for EIA scoping purposes. This is important in being able to provide flexibility for the emerging development proposals and to allow consideration of the likely significant effects. Accordingly, the following preliminary description of development is proposed:

*The development of up to 6,500 residential dwellings; mixed use town and local centres comprising retail and services, commercial and employment uses, assembly & leisure and non-residential institutions; secondary and primary schools; open spaces; woodlands; new access points; associated facilities and supporting infrastructure for transport and utilities; associated demolition of buildings and structures; and necessary groundworks.*

2.15 The submission of an outline planning application for the proposed development is intended with full details for defined primary infrastructure relating to the first phase of new development (a hybrid application). The area likely to be defined as the first phase is north of the existing lake and disused runway with access from the Cambridge Research Park roundabout on the A10. Defined primary infrastructure details for phase 1 are likely to include: the proposed access junction to the A10, primary and
secondary highways, key parks and green spaces (outside of development parcels), SuDS and earthworks.

2.16 The site is part of the wider proposed allocation as explained in paragraph 2.11. The land to the east of the site is also being promoted (by RLW Estates) and it is reasonably foreseeable that this could come forward for development, such that this land will be considered as part of the assessment of cumulative effects. The draft policy refers to a potential for 8,000-9,000 dwellings within the allocated area as a whole but work undertaken by both promoters confirms a reasonable capacity of 10,000 dwellings exists. Up to 10,000 dwellings will be assumed for cumulative assessment purposes but, where necessary, sensitivity testing above this quantum of development may also be undertaken.

2.17 The current temporary uses on the site (office, community uses) will be assumed to cease in 2020. The open storage of straw will be assumed to continue on site until construction commences. The assessment will also need to take into account any further planning permissions on the barracks site associated with the re-use of existing buildings.

2.18 The development is envisaged to be delivered over approximately a 20-year period with construction commencing in 2018, first completions in 2019 and development completion estimated in around 2040.

2.19 The off-site infrastructure improvements required in association with the proposed development are currently being investigated. The EIA will identify and assess any likely significant effects of any such improvements.
3.0 Socio-economic Effects

3.1 This chapter of the ES will consider the socio-economic issues relating to the proposed development. Likely impacts on social and economic conditions will arise directly from the residential population, new housing and other economic and social facilities.

3.2 Published statistical information and bespoke research sources will be consulted to establish existing conditions and indicate where the development is likely to have an impact in the future. Consultation with appropriate bodies will be undertaken to establish current baseline conditions with respect to facilities and capacities. Planning policies and other local strategies relevant to the provision of housing, employment and social facilities will be identified. Baseline information and data will be obtained and reviewed at various geographical scales including Housing Market Area wide, district wide and more locally (Waterbeach parish and village). This will cover:

- Population and housing statistics;
- Crime, health and education statistics;
- Employment data and principal employment locations; and
- Social and community facilities.

3.3 Regarding demographics, housing and other socio-economic data, our initial assessment has identified the following baseline conditions:

3.4 Waterbeach village itself is a settlement of about 2,000 dwellings and 4,450 people. It has a good range of local shops, a primary school, private nurseries, several community meeting places (known to be well used), a GP surgery and care homes. It also has limited library facilities. There is current capacity at the primary school, nearest secondary school and GP surgery. There is a stated deficit of formal and informal open space in Waterbeach (except for allotments) and a lack of indoor leisure facilities. It also does not have any emergency services, nor is there a secondary school or a supermarket within the village (although both are within 5km). Within 1km of the site there are commercial and industrial areas employing an estimated 600+ people and this could rise significantly once the Cambridge Research Park is completed. Within 5 km an estimated 5,000 plus people are employed, especially on the northern fringe of Cambridge, including at the Science Park.

3.5 The assessment of the socio-economic impacts arising from the development is proposed to cover the following:

- impacts on local population and the housing market;
• impact of new and on existing social and community facilities including education, health, community facilities, emergency services, recreational facilities and open space;
• employment (including construction and completed development jobs); and
• wider economic and social impacts.

3.6 The socio-economic impact of the proposed development will be evaluated by:

• projecting the likely population and demographic mix of the development;
• assessing the levels of housing required in the area, including affordable housing needs;
• assessing the effect of the economically active elements of the residential population on the labour market and employment (including construction jobs, direct and indirect jobs); and
• assessing the effect of the development on social infrastructure, including education, health, community facilities, recreational/leisure facilities and emergency services.

3.7 Published sources of economic and social data will be used alongside consultations with the District Council, County Council and other services providers (e.g. Clinical Commissioning Group) where necessary. As a result of these assessments, any necessary mitigation measures will be identified to ensure adequate and/or enhanced facilities and services provision for both existing and future residents of the area. Residual impacts will then be evaluated. The cumulative effects will be considered in combination with the other reasonably foreseeable development proposals in the environs identified in Appendix 2.

3.8 The socio-economic effects of the proposed development are anticipated to be largely beneficial, subject to the timely delivery of additional social and community infrastructure made necessary by the development, to avoid undue pressure being placed on existing local infrastructure. That timely delivery can be secured by suitably worded conditions on any grant of planning permission, as well as by appropriate thresholds for infrastructure delivery/contributions within the Section 106 Agreement attached to any permission.
4.0 Landscape and Visual Effects

4.1 This chapter of the ES will identify and describe the nature and significance of the effects likely to arise on the existing landscape character and the visual amenity of people.

4.2 While the methodology used throughout the EIA will be adhered to for consistency, it will be refined in the Landscape and Visual Impact Assessment (LVIA) to ensure the assessment accords with the principles of best practice set out in the following relevant published guidance:

- GLVIA3 Statement of Clarification 1/13 (2013), Landscape Institute;
- Approach to Landscape Character Assessment (2014), Natural England; and
- Landscape Institute Advice Note 01/11, Photography and photomontage in landscape and visual impact assessment (2011), Landscape Institute

4.3 While linked, an assessment of the effects of development on landscape character and visual amenity are treated separately in LVIA. The overall approach used to identify and assess landscape and visual effects is summarised as follows:

- Determine the scope of the assessment;
- Collate baseline information through desk study research and field based survey work, select appropriate landscape and visual receptors and establish their value;
- Review the proposed development and determine the susceptibility of landscape and visual receptors to the nature of development proposed;
- Combine value with susceptibility to determine the sensitivity of landscape and visual receptors to the nature of development proposed;
- Judge the magnitude of impact likely from the proposed development and combine with sensitivity to judge the likely significance of effect without mitigation measures;
- Describe mitigation measures to avoid / reduce the magnitude of adverse impact;
- Assess the significance of residual effects following implementation of mitigation; and
- Identify those effects that are considered important to decision making.
4.4 The LVIA will include an assessment of the likely effects both during the construction stage and following the completion of the development.

4.5 The LVIA will include an assessment of effects during the winter and summer, along with an assessment of effects during the daytime and night time. For the latter, a formal Lighting Impact Assessment will be carried out and appended to the ES, the scope of which is included in Section 11.0 of this Scoping Report.

4.6 The LVIA will also include a review of relevant legislation and pertinent national and local planning policies.

4.7 A preliminary study of the landscape character and visual amenity surrounding the site has been carried out, based on a radius of 5km from the centre of the site. Given the topography and extent of intervening vegetation and built form, it is considered that any effects beyond 5km would be insignificant and so would not be included as part of the assessment.

4.8 The preliminary study included a review of the following existing landscape character assessments, which describe national, regional and county character within the study area:

- The East of England Landscape Typology (landscape-east.org.uk);

4.9 The site lies on the boundary between the following character areas, which will be considered as part of the LVIA:

- National Character Areas: ‘The Fens’ and ‘Bedfordshire & Cambridgeshire Claylands’
- Regional Character Areas: ‘Planned Peat Fen’ and ‘Lowland Village Farmlands’
- County Character Areas: ‘Fenlands’ and ‘Western Claylands’

4.10 While providing a clear and concise description of the wider landscape character within the study area, it is considered unlikely that the published national and regional assessments will provide a level of detail sufficient to assess the nature of effects likely to arise at a local level. Therefore, a local landscape character assessment will be
undertaken by Bradley Murphy Design, based on current best practice guidance. The local landscape character assessment will also consider likely effects on existing attributes of the landscape such as; land use, ecology, landform/topography, hydrology, vegetation cover and access.

4.11 The contribution made by designated features to the value and character of the landscape will also be considered within this part of the assessment. Care will be taken to avoid double counting of effects assessed elsewhere within this EIA, such as heritage or ecology.

4.12 Features of note within 2km of the site boundary include the following:

- Denny Abbey Scheduled Monument and associated listed buildings, located directly to the north of the site;
- Waterbeach village including Waterbeach Conservation Area, listed buildings and Waterbeach Abbey Scheduled Monument located directly to the south of the site;
- Car Dyke Scheduled Monument, part located 500m beyond the north-west boundary of the site and part located over 1km to the south of the site (connected via an undesignated section of the dyke running along the west boundary of the site); and
- Shrunken Medieval Village of Landbeach Scheduled Monument and Landbeach Conservation Area and associated listed buildings, located over 1km to the south-west of the site.

4.13 Within 5km of the Site, there are also conservation areas at Cottenham, Milton, Histon and Impington and Horningsea, along with a number of scheduled monuments and two Sites of Special Scientific Interest (SSSI) (Cam Washes and Stow Cum Quy Fen). It is currently considered that these sites will not be impacted by the proposed development. However, this will be considered further as part of the landscape assessment.

4.14 As part of the preliminary study, a Zone of Theoretical Visibility (ZTV) was modelled digitally to define the scope of the visual impact assessment. Likely visual barriers were included, with the ZTV used to identify those areas of the landscape that theoretically would be visually connected to the proposed development.

4.15 Key visual receptors (places with potential views of the site) include the following:

- Denny Abbey, located directly to the north of the site;
- The village of Waterbeach, located directly to the south of the site;
- The village of Landbeach, located over 1km to the south-west of the site;
- A small number of individual farmsteads and residential properties scattered throughout the landscape surrounding the site;
- Cambridge Research Park, directly to the north-west of the site;
- The waste management park, north of Cambridge Research Park;
- Fen River Way National Trail, running alongside the River Cam, over 1.2km to the south-east of the site;
- Ouse Valley Way National trail, over 3km to the north of the site;
- A small number of footpaths, bridleways and byways surrounding the site;
- The A10 Ely Road, which runs along the west boundary of the site; and
- A small number of roads associated with the surrounding settlements or rural lanes crossing the agricultural landscape.

4.16 There are also a number of settlements within 5km of the site including Chittering, Cottenham, Horningsea and Milton. It is currently considered that these settlements will not be impacted by the Proposed Development. However, this will be considered further as part of the visual impact assessment.

4.17 The ZTVs have been laid over these receptors to inform the selection of viewpoints intended for use as a basis to the visual assessment. These locations are illustrated in Appendix 3 and would also be used as part of the Lighting Assessment, used to inform the LVIA of the likely effects on views at night.

4.18 The contribution made by designated features to the value of visual receptors will also be considered as part of the visual impact assessment.

4.19 The final selection of viewpoints to be used as a basis for the visual impact assessment will be agreed in consultation with the Landscape Officer at SCDC.

4.20 An assessment of cumulative effects will be carried out as part of the LVIA, to consider any likely increase in effect as a result of the proposed development in combination with the proposals listed in Appendix 2.

4.21 The LVIA will determine the sensitivity of landscape and visual resources. The initial indication is that the sensitivity of the landscape ranges from Low or Very Low (in areas associated with business parks and the airfield) to High or Very High (in areas associated with Denny Abbey and the Fens), with the sensitivity of visual receptors also ranging from Very Low (on roads and in areas containing no designation) to High or Very High (for tourist destinations, residential receptors or designated locations such as scheduled monuments).
Potential significant landscape and visual effects are as follows:

- Temporary visual effects during the construction phase;
- Loss of landscape features such as trees and woodland;
- Effects on landscape character resulting from the proposed development; and
- Visual effects on nearby receptors.

Mitigation measures would include development of a comprehensive green infrastructure strategy to include provision for screening and softening of the development where required to minimise adverse effects on landscape character and visual amenity, while providing suitable visual links between the proposed development and the surrounding landscape.
5.0 Ecology and Nature Conservation

5.1 This chapter of the ES will identify and describe the nature and significance of the effects likely to arise in relation to ecology and nature conservation.

5.2 In accordance with the CIEEM (Chartered Institute of Ecology and Environmental Management) Guidelines for Ecological Impact Assessment (EIA) (2016), a comprehensive baseline assessment will be carried out to collate existing ecological information and to allow a confident prediction of the significant effects of the proposed development on the Key Ecological Receptors (KERs) associated with the site. Where significant effects are predicted, the assessment will set out the required level of mitigation to reduce the impacts wherever possible. In addition, where legally protected species are present but no significant impacts are anticipated, the required level of mitigation will also be set out to ensure no contravention of the relevant legislation.

5.3 A KER is defined as a receptor that is sufficiently important to be a material consideration in the decision-making process and where impacts on that receptor could generate a significant environmental effect.

5.4 A number of site surveys have been undertaken to confirm the presence or likely absence of notable habitats, species or assemblages from within the zone of influence. Studies completed and being undertaken include:

- Desk study – investigation of local record centres, web-based data sets and other information sources to identify statutory sites, non-statutory sites and other designated features of nature conservation interest (e.g. priority habitat, ancient woodland etc.) within the site and in close proximity and to collate existing species records for the site;
- Extended Phase 1 Habitat Survey – detailed mapping of site habitats and compilation of species list, photographic record and detailed target notes of features of interest. The site supports a range of habitats including notable features such as wetland areas associated with ponds and the lake, hedgerows, a range of woodland blocks and trees, semi-improved neutral grassland areas and species-rich unimproved neutral grassland;
- Building inspections – to assess structures within the site for potential and actual signs of use by bats, birds and other notable species. Building inspections have been completed and a number of potential bat roosting features have been identified with further bat survey work planned for spring 2016. Common pipistrelle and brown long-eared bat roosts have been
confirmed within the barrack buildings and hibernating bats (Natterer’s and brown long-eared bats) have been found in former bunker features on the airfield;

- Breeding Bird Surveys – monthly transects during the breeding season to confirm breeding species and the presence of rare/notable species and assemblages. A good range of bird species have been recorded to date including grassland, woodland and wetland species. Notable species include breeding Barn Owl and Kingfisher;

- Amphibian Surveys – to assess the presence of great crested newt and other amphibian species within suitable waterbodies present at the site. The golf course supports a medium population of great crested newt and a small population of newts was also confirmed to the north of the main lake in a small pond feature. The site also supports a range of common amphibians including smooth newt, common toad and common frog;

- Reptile Surveys – targeted surveys of suitable areas for the presence of reptile species. Common lizards are present in good numbers across the site, associated with unmanaged areas, grassland bunds and the edge of the lake. A small population of grass snake is also present on site;

- Bat Emergence Surveys – evening surveys at potential or confirmed roost sites informed by the findings of the building inspections. A number of surveys have been undertaken confirming the presence of common pipistrelle roosts associated with buildings in the former barracks area. Further surveys at potential bat roosting features will be undertaken in 2016;

- Bat Activity Surveys – walked transects and static detector surveys to assess bat activity at the site and species present. The surveys to date have identified a range of foraging bats associated with key habitat areas including the main lake and golf course area;

- Botanical Surveys - detailed surveys of species-rich areas and waterbodies to identify rare and notable plant species. Surveys have confirmed species-rich grassland areas, notable plant species associated with ponds and the lake and identified other floristic areas of interest (e.g. patches of floristic interest along the edges of the runway and internal roads);

- Invertebrate Surveys - detailed field surveys to assess invertebrate assemblages and to identify the presence of rare/notable species and high value habitats. Surveys to date have found small areas of interest associated with the lake and more diverse grassland areas including the presence of notable water beetles;
• Wintering Bird Surveys – monthly transects to assess the presence of notable species and/or assemblages of birds have been undertaken and have confirmed no significant numbers of notable wintering birds. A range of birds were recorded including species such as snipe, woodcock and short-eared owl;
• Mammal Surveys – specific assessments of site habitats for field signs of and confirmed presence of species such as badger, brown hare, otter and water vole; and
• Tree mapping and assessment – including a BS5837 tree survey and assessments of bat roost potential.

5.5 The process used to determine which of those habitats, species or assemblages are identified as KERs for the purpose of the impact assessment is described below.

5.6 The zone of influence is the area within which the impacts of the proposed development could influence ecological receptors. This will be determined on the basis of the desk-based review of ecological features in the wider vicinity of the site, together with the findings of the detailed field surveys, the likely overall impacts and the outcome of stakeholder consultation/discussions. The zone of influence will vary with each species and feature identified as a potential KER.

5.7 The CIEEM EcIA guidelines (2016) recommend that the value or potential value of an ecological resource or feature should be determined within a defined geographical context. These guidelines recommend that the following frame of reference be used (or adapted to meet local circumstances):

• International and European;
• National;
• Regional (East of England);
• Metropolitan, County, vice county or other local authority wide; and
  (Cambridgeshire);
• Local.

5.8 In accordance with the CIEEM guidelines, the assessment will focus on those activities that could potentially generate significant effects on KERs. Effects on receptors of lower value will not be assessed in detail but such receptors may be considered in wider biodiversity and green infrastructure design proposals. Some receptors of lower value may still warrant detailed consideration during the design and mitigation of the
proposed development on the basis of legal protection (e.g. badgers) or other issues such as local biodiversity priorities/initiatives.

5.9 Once the ecological receptors have been identified and valued, the potential effects on such receptors will be considered to assess how they may be affected by the proposed development.

5.10 The impact assessment will consider the likely activities associated with the proposed development, the potential biophysical changes that could be predicted as a result of the activities and the area over which those changes may impact on a receptor. The effects will be considered for both the construction and post-completion stages. They will be characterised and described following the parameters set out in the CIEEM guidelines:

- Positive or negative
- Magnitude
- Extent
- Duration
- Reversibility
- Timing and Frequency

5.11 A preliminary assessment of likely effects of the proposed development will be undertaken to identify where significant effects on KERs would occur and where impacts on KERs and other receptors are considered unlikely to generate a significant effect. This will allow receptors to be scoped in or out of the final detailed assessment with a full justification for those decisions provided.

5.12 A significant effect is defined as one which is likely to affect the integrity or conservation value of a KER. Where a significant effect is predicted, the value of the receptor will be used to assist with the determination of the geographic scale at which the effect is significant.

5.13 The significance of likely effects upon KERs will be assessed both before and after consideration of the proposed mitigation measures, the latter forming the assessment of the residual effects of the proposed development.

5.14 The Ecological Impact Assessment will also include a detailed assessment of potential direct and indirect impacts on statutory designation sites in the locality. The following sites will be considered in detail within the assessment and in the case of European Sites a separate section will be produced entitled ‘Information for Habitats Regulations Assessment’.
• The Cam Washes Site of Special Scientific Interest (SSSI) is approximately 2.7km to the north-east;
• Wicken Fen SSSI, Special Area of Conservation (SAC) and Ramsar site is approximately 5km to the north-east; and
• Upware South Pit SSSI is approximately 5.3km to the north-east.

5.15 The South Cambridgeshire Local Plan Submission Habitats Regulations Assessment Screening Report (ENVIRION, 2014) reviewed the potential impacts of the emerging Local Plan on European Sites. With regard to Wicken Fen the study included a detailed review of potential impacts associated with the plan allocations and concluded that there would be no likely significant effects on the site either alone or in combination with other reasonably foreseeable projects and plans. The assessment included Local Plan strategic allocations including Waterbeach New Town (Policy SS/5). The impacts reviewed included land take by development, impacts on protected species outside the protected sites, recreational pressure and disturbance, and water quantity and quality. A key conclusion was that there would be no allocations within 5km of the site and as such it was not considered that the level of public use of Wicken Fen would increase greatly as a result of the proposed allocations.

5.16 The detailed HRA review as part of this EIA will consider the findings of the Local Plan HRA screening and review each potential impact with regard to the final scheme design and phasing.

5.17 Impacts on the nearby Cam Washes SSSI will also be reviewed in detail to ascertain whether a significant impact would be anticipated. There are no direct links to the SSSI from the proposed development site and the site itself is likely to deliver large areas of alternative accessible public open space as the phases of the development proceed. The impact assessment will include a detailed review of the proposed development in terms of scale and location and will identify any significant impacts in relation to statutory sites.
6.0 Cultural Heritage

6.1 This chapter of the ES will consider the effects of the proposed development upon cultural heritage within the site and in the surrounding area.

6.2 Cultural heritage includes the man-made features which are considered to make a positive contribution to the area. These include listed buildings, scheduled monuments and any other structures or features considered to make a positive contribution to the area.

6.3 None of the structures, buildings or features within the site are designated heritage assets. To the north is Denny Abbey, which constitutes a Scheduled Monument, two Grade I Listed Buildings and a Grade II Listed Building. There are other designated heritage assets within the wider surrounding area (see sections 2 and 4 above).

6.4 The site is predominantly brownfield land consisting of buildings and structures relating to the World War 2 RAF Waterbeach site and later post-war Army barracks. In addition, there are numerous undesignated archaeological features relating to Romano-British occupation, Denny Abbey and military use of the site.

6.5 Desk top research on the heritage assets on the site and in the surrounding area at sufficient distance to be potentially affected by the proposed development will be undertaken to enable an understanding of their heritage significance and to determine the extent and importance of their setting. This will enable the baseline condition and the sensitivity of the cultural heritage environment to be established.

6.6 As part of this desk top research, cartographic data sources will be reviewed. An assessment of the effects of the proposed development will be undertaken. Proposed mitigation measures will be taken into account, leading to a prediction of the residual effects of the proposed development upon cultural heritage.

6.7 The assessment of effects will be undertaken in line with standard EIA procedures, and will follow the significance-based approach of the National Planning Policy Framework, guidance set out in Historic England’s Good Practice in Planning Advice Note 3: The Setting of Heritage Assets and BS 7913:2013, along with the framework for the environmental assessment process set out in the Design Manual for Roads and Bridges Vol II Section 3 Part 2 HA 208/07 Cultural Heritage.

6.8 Information on the Scheduled Monuments and Listed Buildings will be taken from the National Heritage List for England and the Cambridgeshire Historic Environment Record. Archival information held in the local record office will be reviewed if considered necessary and historic maps, including tithe, enclosure and Ordnance
Survey maps, will be consulted. Relevant journals and books will also be referenced. All of the above will be supplemented by field survey.

6.9 Consultation will be undertaken with SCDC, CCC and Historic England to ensure that the key cultural heritage issues are identified and fully considered during the assessment.
7.0 Agriculture and Soil resources

7.1 This chapter of the ES will assess the effects of the proposed development on soil resources (both topsoil and subsoil), agricultural land quality and agricultural holdings utilising agricultural land on the site.

7.2 A detailed soil resource survey and Agricultural Land Classification (ALC) survey was carried out in August 2015. This involved examining soils with a hand-held soils auger and a spade and describing the soil profiles using the Soil Survey Field Handbook: Describing and Sampling Soil Profiles (Ed. J.M. Hodgson, Cranfield University, 1997). Each soil profile was ascribed an ALC grade following the Agricultural Land Classification of England and Wales: Revised Guidelines and Criteria for Grading the Quality of Agricultural Land, October 1988. A number of samples of topsoil and subsoil were collected on site and sent to an accredited laboratory for testing against relevant parameters in BS 3882: 2015. The findings of the soil resource survey and ALC will be provided in technical appendices to accompany the ES chapter.

7.3 As there are currently no standard criteria for assessing the significance of the effects of the proposed development on soil resources, agricultural land quality and agricultural holdings, a bespoke Impact Assessment Matrix and criteria for assessing the magnitude of the impact and sensitivity of the receptor will be provided.

7.4 Where significant adverse effects on soil resources and agriculture are identified, then appropriate mitigation measures to avoid, reduce or offset the adverse effects will be proposed. In particular, the assessment will follow the approach of the Defra Code of Practice for the Sustainable Use of Soil on Construction Sites (2009) to mitigate against adverse effects on soil resources.
8.0 Transport

8.1 The transport assessment within the EIA will be undertaken within the wider context of a formal Transport Assessment (TA) of the proposed development. In order to establish the exact scope of works and the parameters for assessment, discussions have commenced with officers of CCC and Highways England (HE).

8.2 The TA will be prepared in accordance with the Travel Plans, Transport Assessments and Statements in Decision Taking section of the Planning Practice Guidance.

8.3 Baseline transport data will be assembled which will account for existing public transport facilities, existing pedestrian and cycle network facilities, current traffic flows, accident records and any planned transport improvements.

8.4 The transport effects of the proposed development will be assessed by using standard industry tools to assess junction capacity, delay, queues and journey times across an area of the local highway network to match that to be agreed as part of the ongoing discussions on the scope of the TA.

8.5 In order to assess the required capacity of new accesses and to develop an access strategy suitable for each phase of the proposed development, Peter Brett Associates (PBA) has developed a flexible spreadsheet-based Trip Generation Model that is continuously being updated. This model will be used to supplement any outputs that may be obtained from the Cambridge Sub Regional Model (CSRM). As the PBA model is in spreadsheet form, any changes in development quanta can be incorporated and accommodated with relative ease. The tool also has the flexibility to account for the internalisation and linking of trips which is a known and accepted phenomena of large comprehensive development schemes. The methodology is based on latest DfT guidance on the formulation of trip forecasts.

8.6 Distribution and assignment strategies will be agreed with CCC and this will again be supplementary to its own CSRM tool.

8.7 Using predicted trip generation and distribution figures, the assessment of impact of the proposed development on the transport networks will be considered and the appropriate mitigation developed.

8.8 A significant amount of survey data has been compiled and this will be used to establish a base set of demands across the transport networks in the vicinity of the site. However, PBA and U&C are also aware that CCC, in partnership with Cambridge City Council and SCDC, is in the process of undertaking a study of the A10 corridor and that as part of this work baseline transport conditions within that corridor will be
established. U&C understand the logic of working to this consistent baseline for its analysis going forward but programme changes to this study may preclude this data from being available and as such the previously commissioned observed data sets will be used where necessary.

8.9 As part of the transport assessment within the EIA, the traffic impacts of the proposed development will be determined for the agreed assessment years (opening year and design year). The significance criteria advised in the Guidelines for Environmental Assessment of Road Traffic 1993 will be used to consider the effects of the development. Its effects on severance and delay, amenity, fear and intimidation, and accidents and safety will be assessed, in accordance with those guidelines.

8.10 In addition to assessing post-completion effects on the transport network, an assessment of the likely number and type of lorry movements and any necessary pedestrian and traffic management measures will be made in order to predict and, where possible, mitigate any likely significant effects during the construction period.
9.0 **Air Quality**

9.1 This chapter of the ES will set out the findings of a detailed air quality assessment. The assessment will cover two potential air quality issues:

- The impact of the proposed development on the surrounding area, during both the construction and post-completion stages; and
- The impact of existing local pollution sources on the development site itself.

9.2 Existing local air quality, likely future air quality in the absence of the proposed development and likely future air quality if the development proceeds will all be assessed.

9.3 SCDC has declared an Air Quality Management Area (AQMA) along the A14 between Bar Hill and Milton located approximately 4.7km south west of the site. This AQMA has been declared for exceedances of the annual mean nitrogen dioxide objective.

9.4 SCDC operates three automatic monitoring stations at three sites within the District, which measure nitrogen dioxide (NO₂) and particulate matter (PM₁₀). In addition, SCDC operates several diffusion tubes in the area. There is no air quality monitoring in close proximity to the site; the closest monitoring location - 3 Garner Close, Milton - is located approximately 3km south of the site.

9.5 The annual mean NO₂ concentrations measured at all the monitoring locations were below the relevant objective over the 2010 - 2014 time-period.

9.6 The annual mean PM₁₀ concentrations measured at Impington was above the relevant objective between 2010 and 2013. However, the concentrations were significantly below the relevant objective in 2014 and this data is more consistent with the measured NO₂ data. Concentrations at Orchard Park were well below the relevant objectives over the 2010 - 2014 time-period.

9.7 In addition to these measured concentrations, estimated background concentrations for the grid squares covering the site have been obtained from the national maps provided by Defra. The background concentrations are well below the relevant objectives.

9.8 The principal air pollutants of concern with respect to the proposed development will be:

- nitrogen dioxide (NO₂)
- fine airborne particles (PM₁₀ and PM₂.₅)
9.9 The main local sources of these pollutants are likely to be road vehicles (nitrogen dioxide, PM10 and PM2.5) and construction activities (dust and PM10). Professional experience indicates that any impacts associated with other air pollutants will be negligible.

9.10 There is a water recycling centre located approximately 580m to the south east of the site. It has a 400m safeguarding zone around it for odour. Given its distance from the site boundary, there are unlikely to be any significant odour effects from this facility and therefore the impact of odour from the works will be scoped out of the air quality assessment.

9.11 The waste management park, located approximately 800m north of the north western boundary of the site, accommodates a number of potential odorous activities including a landfill, in-vessel composting, open windrow composting, a MBT (Mechanical Biological Treatment) plant and a waste transfer building. In addition, it has the potential to expand activities in the future. A qualitative assessment of the potential odour impacts on the development site will be undertaken and will inform the development of the masterplan for the site.

9.12 Existing local air quality will be defined within the study area drawing upon monitoring carried out by SCDC, Cambridge City Council and East Cambridgeshire District Council with the information provided within the councils’ Air Quality Review and Assessment reports.

9.13 Air quality will be assessed at a range of worst-case receptors. For construction activities these will be existing properties closest to the proposed development. For traffic-related impacts these will be the existing and proposed residential properties that are closest to busy roads, in particular those close to junctions, where traffic emissions are greatest and within the A14 AQMA.

9.14 The potential impacts of dust during construction will be assessed, making reference to the IAQM (Institute of Air Quality Management) guidance on the assessment and control of dust from demolition and construction. There are no statutory objectives for dust; it is therefore common practice to provide a qualitative assessment based on the size of the site, regional meteorological conditions and experience of the distances over which impacts may occur.

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1 Guidance on the assessment of dust from demolition and construction. IAQM
9.15 The assessment of operational road traffic impacts will be undertaken using the ADMS Roads detailed dispersion model. Modelling will be undertaken where there is a significant change in traffic in accordance with EPUK/IAQM guidance on the assessment of air quality\(^2\).

9.16 Model outputs will be verified against local air quality monitoring data as agreed with Kenny Abere of SCDC by e-mail on 27th March 2015. The modelling will make use of mapped background concentration data provided by Defra and of traffic flow projections. Air quality will be assessed in relation to the national air quality objectives established by the Government to protect human health. The significance of identified impacts will be determined making reference to criteria defined in the EPUK/IAQM guidance.

9.17 All practical and reasonable measures which can be implemented to mitigate any detrimental impacts associated with construction and operation of the proposed development will be considered and presented within the Air Quality chapter.

9.18 An assessment of the impact of the development alone, and in combination with nearby reasonably foreseeable proposals (Appendix 2), will be made.

\(^2\) Land-Use Planning & Development Control: Planning for Air Quality. EPUK/IAQM
10.0 Noise and Vibration

10.1 The noise and vibration assessment will consider likely impacts from noise and vibration generated during the construction/demolition stage and following completion of the Proposed Development. Impacts will be evaluated both for any existing surrounding sensitive receptors as well on the various elements of the proposed development itself.

10.2 The main sources of environmental noise around the site are vehicle movements on the A10 to the west and train movements on the railway line to the east. Noise sources other than transportation noise include industrial noise to the west of the A10.

10.3 This element of the EIA will include the following main work stages:

- Liaising with the Environmental Health Department at SCDC;
- Establishing the existing baseline noise climate by undertaking a baseline noise survey;
- Using SoundPlan ver. 7.4 to build computer based 3D acoustic noise models which will be validated with the results from the baseline noise survey and further populated with traffic data and other relevant information for the proposed development;
- Assessing changes in noise levels at existing receptors due to development traffic along the local road network;
- Considering construction noise and vibration impact; and
- Providing an ES chapter and associated appendices / figures with regard to noise and vibration in an appropriate format

10.4 SCDC will be consulted in order to establish survey locations and duration, detailed scope and methodologies and any SCDC specific guidance / policies.

10.5 A baseline noise survey measuring A-weighted broadband Leq, L10, L90 and Lmax will be undertaken in order to establish the existing noise climate across the site and at the nearest existing noise sensitive receptor(s) (NSR) outside the site. The survey will be carried out in general accordance with BS 7445-1:2003 (ISO 1996-1:2003) description and measurement of environmental noise – Part 1: Guide to Quantities and Procedures. The survey will cover both daytime and night time periods with monitor locations shown on the plan at Appendix 4.

10.6 3D computer based acoustic models of the site and surrounding areas will be constructed using SoundPlan Ver 7.4 to predict propagation of noise from:
• The road network;
• Any plant related to commercial and leisure facilities that are part of the proposed development (in the absence of detailed plant noise emission data, appropriate limits will be set);
• Construction to the nearest NSR(s), proposed residential dwellings and other NSR(s).

10.7 The modelling will cover both daytime and night time periods, and will be in accordance with the guidelines set out in ISO 9613-1:1993 Acoustics – Attenuation of sound during propagation outdoors – Part 1: Calculation of the absorption of sound by the atmosphere; ISO 9613-2:1996 Acoustics – Attenuation of sound during propagation outdoors – Part 2: General Method of Calculation; and Calculation of Road Traffic Noise (CRTN): 1988. The models will provide noise contour plots to illustrate the noise propagation.

10.8 The results of the validated noise models will be compared and used for assessments of the following matters in accordance with relevant legislation, standards and guidance:

• Internal Noise Levels (residential & commercial);
• Incident Noise Levels at Outdoor Amenity Areas;
• Ventilation;
• Plant Noise (from development);
• Vibration;
• Demolition / Construction Noise & Vibration; and
• Impact on existing off site NSRs.

10.9 Mitigation will be proposed where the required noise criteria are exceeded. Potential mitigation measures include: use of setback distances from noise sources; orientation of dwellings to prevent noise-sensitive rooms overlooking those sources; and noise barriers. If these measures are not sufficient (for example, if visual constraints prevent a barrier height sufficient to mitigate noise to first floor windows), glazing and alternative ventilation may be required.
11.0 Lighting


11.2 A desktop review of the site and surrounding area has been undertaken to identify potential light sensitive receptors and to establish the appropriate Environmental Zone classification for the site as defined by the ILP's Guidance Notes for Obtrusive Light (2011).

11.3 It is anticipated that there is limited potential for existing obtrusive artificial lighting within the site and that it should be classified as Environmental Zone E2, rural, low district brightness.

11.4 Existing and future light sensitive receptors have been identified taking into account ILP Guide 04 (2013). The site is not subject to any national or local landscape designation or sensitive statutory habitat as identified in ILP Guide 04. Receptors that are potentially sensitive to artificial lighting resulting from the proposed development include:

- Residents: local residents at Waterbeach village;
- Road Users: motorists and cyclists on the A10 and public rights of way (i.e. Bannold Drove Track);
- Views of the site: views as agreed with SCDC's landscape officer for the LVIA;
- Ecology: habitats used by light sensitive protected species such as bats; and
- Heritage: Denny Abbey to the north of the site.

11.5 Cambridge Airport is over 6 km from the site and therefore under Civil Aviation Authority guidance (2003), the aerodrome does not need to be included as a receptor within the lighting assessment.

11.6 The Lighting Assessment methodology will comprise the following:

- Identify potential existing obtrusive light within and around the site;
- Establish the minimum construction and operational lighting required to safely and securely construct and operate the proposed development;
- Set out design recommendations to minimise obtrusive light both during construction and following completion;
- Describe potential and residual effects as a result of obtrusive light.
11.7 The existing lighting conditions and locations of sensitive receptors will be established through a night-time survey and discussions with the project's ecologist and landscape architect. During the survey night-time views will be recorded in photographs of representative viewpoints which will be selected from the viewpoints agreed for the LVIA.

11.8 The operational artificial lighting requirements for the proposed development will be defined taking into account the relevant standards and guidance. They will also need to conform to the lighting limitations set for Environmental Zone E2 (ILP, 2011).

11.9 In general, construction artificial lighting tends to lead to more obtrusive lighting than operational lighting because of its temporary nature, and the type of artificial lighting equipment used. Effects on sensitive receptors potentially resulting from construction artificial lighting include glare and light intrusion. However, these effects can be minimised through appropriate design and control measures.

11.10 Following construction of the proposed development, sensitive receptors within close proximity of the site could be affected by light intrusion and glare of poorly designed or controlled luminaires. There is also potential for adverse effects from sky glow on sensitive receptors located further from the site. However, these effects can be mitigated through appropriate design and control measures.

11.11 A qualitative description of the prevailing artificial lighting conditions (taking into account the weather conditions), potential screening and the site topography will also be recorded. The viewpoints will include those agreed with SCDC for the LVIA and any other viewpoints that may be considered by the assessor to be of relevance to the assessment.

11.12 The assessment will support and form an appendix to the Landscape and Visual Effects chapter of the ES.
12.0 Hydrology, Flood Risk and Drainage

12.1 This chapter of the ES will present an assessment of the likely hydrological, drainage and water quality effects that the proposed development may have on the surrounding area. The assessment will include a summary of the current conditions found within the area and identify mitigation measures, where appropriate, to deal with any potential significant effects that might arise as part of the development.

12.2 The Environment Agency’s flood zone maps identify the majority of the site to be within Flood Zone 1: Low Probability of flooding with a less than 1 in 1000 annual probability of fluvial flooding (<0.1%). Small parts of the site along the western boundary are identified to be within Flood Zone 2: Medium Probability of flooding having between a 1 in 100 and 1 in 1000 annual probability of fluvial flooding (1% - 0.1%). Small parts along the western boundary of the site are also identified to be within Flood Zone 3: High Probability of flooding having a 1 in 100 or greater annual probability of fluvial flooding (>1%). Some parts along the western boundary of the site are identified to be within Flood Zone 3: High Probability but benefiting from flood defences. A sequential approach will be adopted to locate more vulnerable land uses within Flood Zone 1.

12.3 The site has a large lake located in its western part. Car Dyke watercourse runs along the western boundary of the site. Near the eastern boundary of the site, there is a balancing pond and a series of other ponds within the grounds of the old golf course. Some eastern parts of the site drain to Winfold Ditch that runs perpendicular to the site’s eastern boundary. Winfold Ditch discharges into Bannold Drain. Waterbeach Internal Drainage Board (IDB) currently maintains the ditches and drains in the vicinity of the site with the use of Bottisham Lock Pumping Station located approximately 1km east of the site near the River Cam and Cam Pumping Station located approximately 7.5km north east of the site. Existing drainage infrastructure on the site will be utilised wherever possible. Waterbeach IDB permitted a discharge to its drainage network of 1.1l/s/ha.

12.4 Anglian Water (AW) sewer records confirm the existence of surface water and foul water sewers within parts of the site and its vicinity. There is a water recycling centre (WRC) located to the east of the site that serves Waterbeach village and is operated by AW. In a pre-development enquiry, AW confirmed that the current WRC does not have capacity to treat foul water effluent from the proposed development and further hydraulic modelling will need to be carried out by AW to identify alternative solutions.
12.5 The proposed development is likely to result in an increase of impermeable areas across the site. As part of the planning application, a foul and surface water drainage strategy for the site will be formulated.

12.6 The surface water drainage strategy will seek to minimise the risk of surface water run-off from the proposed hard standing areas by directing surface water into a series of attenuation features prior to its discharge into the Waterbeach IDB’s drains at the agreed rate. The surface water drainage strategy should seek to improve the site’s existing hydrology. Increase in the volume and rate of surface water run-off from the proposed development could increase the risk of flooding downstream unless sufficient steps are taken within the site to prevent this from happening.

12.7 A fundamental principle of sustainable development in terms of drainage is the reduction of surface water run-off from development. Sustainable Drainage Systems (SuDS) will be used to mimic existing surface water drainage and provide betterment, where appropriate, to the overall run-off from the site. SuDS can be used to improve water quality. It is proposed that SuDS are used throughout the development and an allowance is to be made for adequate space for water on the site. Appropriate allowances for climate change will be incorporated into the drainage designs.

12.8 Foul water generated by the proposed development will either be discharged to an upgraded WRC or a new WRC. This is to be agreed with AW. The proposed development could potentially clash with some of the existing AW surface water and foul water sewers crossing the site. If this is found to be the case the relevant infrastructure is likely to be abandoned and/or diverted.

12.9 A previous study by Mott MacDonald (Water Cycle Study for Denny St Francis) highlights clear opportunities and constraints for the integration of the proposed development into the receiving water environment. The proposed development can be refined to ensure it complies with the strategic surface water scheme being promoted by Waterbeach IDB and further measures incorporated into the design that contribute towards a sustainable drainage solution.

12.10 A Flood Risk Assessment (FRA) and Drainage Strategy will be required that will inform the ES chapter. This will be prepared in consultation with the EA, Waterbeach IDB, CCC, AW and other relevant bodies.

12.11 The methodology adopted within the FRA and Drainage Strategy will take into account the requirements of the National Planning Policy Framework (NPPF) and Technical Guidance and CCC’s Surface Water Guidance and will involve the following:
• Assessment of flood risk from all potential sources.
• Review of up to date data from the EA, Waterbeach IDB, CCC, AW and other parties where necessary.
• Consideration of climate change for the lifetime of the proposed development.
• Assessment of suitable SuDS features in accordance with the management train and hierarchy of SuDS.
• Review of necessary treatment stages and future maintenance requirements for the proposed drainage strategy.
• Mitigation of the potential detrimental impacts of surface and foul water run-off from the proposed development upon receiving receptors, including watercourses, lakes, groundwater and the existing drainage network.
• Identification of risks to sensitive receptors from the proposed development and the likely impacts, magnitude of change and significance of impact during both the construction and operational phases.
13.0 Ground Conditions

13.1 A Ground Conditions chapter will be prepared to address the ground conditions and environmental setting on and off the site that may offer environmental liabilities and impacts to both on and off site receptors.

13.2 The chapter will address the impact from construction and following completion on:

- Land, surface and groundwater quality
- Mineral Sterilisation
- Groundwater and surface water regime
- Potential for re-use of site-won materials

13.3 The chapter will also address the impact on the proposed development from:

- Off-site sources of contamination
- On site land, surface and groundwater contamination
- Unexploded Ordnance (UXO) and radioactivity
- Previous land use, buried structures etc.

13.4 Current baseline conditions will be presented based on desk study and ground investigation data and the impact from and to the proposed development during construction and following completion will be assessed.

13.5 The site is situated in a moderately sensitive geo-environmental setting with surface water and a secondary aquifer present, although there are no significant groundwater abstractions in the area, no source protection zones and no significant European designated environmental receptors on or in close proximity to the site.

13.6 End users are considered to be particularly sensitive in terms of land quality with risks through potential exposure to contaminated soil, groundwater and surface water together with soil gas/vapour and UXO.

13.7 Discussions will be held to define the scope of work with SCDC and the Environment Agency. The work will be a combination of desk based studies and ground investigations, both those previously undertaken and future work that will be carried out.

13.8 The basic requirements of the assessment are set out in the Model Procedures for the Management of Contaminated Land (CLR11), Annex A of BS 5930 and section 6.2 of BS 10175.
13.9 The assessment will include the following:

- An assessment of the risk of exposure to potential historical contamination and ground gas through excavation during development works;
- An assessment of the risk of creating contaminant – receptor linkages between users of the proposed development and any existing, site-derived contaminants;
- Consideration of potential effects associated with the introduction of contaminant pathways through excavation and construction works and introduction of materials during development, including pathways linked to ground and/or groundwater containing potential contamination;
- An assessment of leaching of contaminants into controlled waters on or beneath the site and to surface ditches, as well as of the risk of off-site migration of contaminants within groundwater and site drainage impacting off-site surface water receptors;
- Consideration of changes to the distribution of land uses which may increase exposure to site workers; and
- Consideration of the location of buildings and services which may create pathways and may be affected by existing and introduced contaminant sources.

13.10 A qualitative assessment of the identified potential pollutant linkages will be used to identify potentially significant effects of the proposed development. Each pollutant linkage will be assigned a risk classification based on a combination of the magnitude of the impact and the probability of its occurrence or likelihood of the pollutant linkage.

13.11 For each of the identified receptors that could be affected by the proposed development, the likelihood of these being significant effects will be reviewed in the context of the magnitude or consequences and other characteristics of the environmental changes that are expected to be caused by the development.

13.12 Appropriate measures to mitigate potentially significant effects will be identified based on our previous experience and relevant guidance. It is evident from the previous work carried out at the site that some form of remediation will be required. The mitigation proposals will be discussed with SCDC and the Environment Agency, as appropriate. Following the design of agreed mitigation measures, the residual effects of the proposed development on the land and water environment will be assessed.
14.0 Utilities

14.1 This ES chapter will assess the effects of the proposed development on utilities, specifically electricity, gas, potable water and telecommunications.

14.2 The additional utility demands arising from the proposed development have been estimated with reference to the draft proposals for the Site and the PBA load demand estimating model. This model uses industry standard references such as the Metric Handbook Planning and Design Data (5th Edition - 2015) and BSRIA Rules of Thumb (5th Edition – 2011) to estimate the number of persons using the proposed development at peak time and the impact this will have on the surrounding utility networks. Budget quotations were then requested from each of the utility providers to identify the costs the developer will face to allow these new site connections to be delivered.

14.3 The utility networks operators in the area were identified from the statutory undertakers list and contacted for their asset records within the site boundary and surrounding areas. These were then combined with the Ministry of Defence (MoD) asset records onto a single constraints plan for the site.

14.4 Assessments undertaken to date indicate that there is sufficient capacity to supply electricity at the commencement of the proposed development. Upgrades may be required to the 132kV electricity supply network at Horningsea Grid and the delivery of a new 132kV substation to release capacity from the primary substations connected to the Histon, Peterborough and Fulbourn Grid sites to enable the whole of the proposed development to be supplied.

14.5 The assessment of the site asset records has indicated a number of existing electric, water, sewer, gas and telecom assets throughout the site, which will require diversion and removal prior to the development. Asset records indicate that there are no significant assets that would be deemed particularly complicated to divert (such as High Pressure gas pipes or electrical assets at 132kV or above). As the site is predominantly previously developed land, there could be potential underground utility assets which may not be identified from records provided.
15.0 Conclusion

15.1 A concise concluding chapter of the ES will summarise the main effects of the proposed development, identify any significant effects transcending the assessed topics and determine the overall balance between adverse and beneficial effects.
Appendix 1: Site Location Plan
Appendix 2: Sites included in assessments of Cumulative Effects
Appendix 3: LVIA Viewpoint Locations
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NOTE:
THIS VIEWPOINT LOCATION PLAN SHOULD BE READ IN CONJUNCTION WITH FIGURE 14: VIEWPOINT LOCATIONS 2
NOTE: THIS VIEWPOINT LOCATION PLAN SHOULD BE READ IN CONJUNCTION WITH FIGURE 13: VIEWPOINT LOCATIONS - 1

1. DENNY END ROAD / WATERBEACH BARRACKS ENTRANCE
2. WATERBEACH CEMETERY
3. ELY ROAD - A10
4. ABBEY PLACE, WATERBEACH
5. COOD ROAD / NIGHT ROAD, WATERBEACH
6. LEFTT LANE PLAY AREA, WATERBEACH
7. STIRLING HOUSE BUSINESS CENTRE
8i. BANNOLD DROVE (BYWAY 247/14)
8ii. BANNOLD DROVE (BYWAY 247/14)
8iii. BANNOLD DROVE (BYWAY 247/14)
9. HINGE FARM COTTAGE, LONG DROVE
10. 247/1 PUBLIC FOOTPATH, WATERBEACH
11. CROSS DROVE
12. FEN RIVERS WAY - BOTTISHAM LOCK
12i. FEN RIVERS WAY - THE WASHES
12ii. FEN RIVERS WAY - SWAFFHAM LOCK
13. TITHE BARN / SHRUNKEN MEDIEVAL VILLAGE OF LANDBEACH
14. GREEN END / NEW FARM
15. (SEE FIGURE 15)
16. CAMBRIDGE RESEARCH PARK
17. DENNY ABBEY (CAUSEWAY)
18. ELY ROAD / DENNY ABBEY ENTRANCE
19. DENNY ABBEY (REFECTORY)
20. DENNY ABBEY (COURTYARD)
21. DENNY ABBEY (SOUTH FACADE)

Bradley Murphy Design Ltd
5 The Courtyard
Hatton Technology Park
Dark Lane
Hatton
Warwickshire
CV35 8XB

Client

Purpose of Issue

Description

Drawing Title

Date Drawn

Job No.

Checked

Scale

Approved

Sheet Size

Revision

Date

18/02/2015

LC

JP

RM

A3

URBAN & CIVIC INFORMATION

WATERBEACH BARRACKS

FIGURE 14 : VIEWPOINT LOCATIONS - 2

BMD.15.001.LVIA.FIG.014

METRES

0

1000

2000
Appendix 4: Noise Monitoring Locations
Industrial & Business Site

Legend
- Noise Survey Locations
- Vibration Survey Locations
- Site Boundary

Waterbeach - Noise and Vibration Survey Locations

Urban and Civic

Drawn: YO
Checked: MM

03/05/2016
1:14,800 @ A4

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