

Langtree PP and Panattoni

Six 56 Warrington

Addendum to Environmental Statement

Part 2 – Landscape and Visual Impact

Technical Paper 4

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Report Author	Pete Coe CMLI
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I. Introduction

- 1.1. This document now constitutes part of an addendum to the Environmental Statement originally submitted to Warrington Borough Council (WBC) in March 2019 to accompany the outline planning application for warehouse development (Use Class B8 with ancillary BI(a) offices) and associated infrastructure at the Application Site referred to as Six 56 Warrington.
- 1.2. Since the submission of the planning application, consultation responses have been received from key consultees and further discussions have taken place with the Council and their key consultees (namely WBC Highway Officers, Highways England (HE) and their consultants Atkins, WBC Environmental Protection Officers, Historic England and WBC Conservation Officer and Ramboll landscape designers acting on behalf of WBC).
- 1.3. Further clarification and information has been provided in line with requests by HE and WBC Highway's Officer relating to the design of the mitigation and the WMMTM traffic model.
- 1.4. Environmental Protection have concerns with exposure to high noise levels that will be experienced at existing properties on Cartridge Lane and sensitive receptors within the site comprising Bradley Hall Cottages and Bradley View to potentially unacceptably high noise levels, even with mitigation in place, based on the worst case estimates of the proposals as illustrated on submitted masterplan and parameters plans.
- 1.5. Landscape Consultants Ramboll's acting on behalf of the Council have also recommended further supplementary information, including an assessment of potential effects on the visual amenity of properties in the vicinity, in order to provide greater transparency to the LVIA and its findings and to aid WBC in its determination of the application.
- 1.6. Consequently, the indicative masterplan and parameters plans have evolved to address comments raised by these key consultees and reduce the noise impacts on sensitive receptors within the site with realignment of estate roads. Further assessments have also been undertaken in respect of noise and vibration and landscape and visual impacts and cultural heritage. This addendum therefore includes additional and updated information to address the comments raised by key consultees. Part 2 of this addendum includes addendums to the following technical papers:

- Traffic and Transportation
- Water Quality and Drainage
- Landscape and Visual Impact
- Ecology and Nature Conservation
- Socio Economic
- Noise and Vibration
- Cultural Heritage

- 1.7. This addendum should however be read in conjunction with the original ES submitted to WBC in April 2019 as the other technical papers (Ground Conditions and Contamination; Socio-Economic, Air Quality, Utilities, Energy, Waste and Agricultural Land and Soils) have not been amended or subject to change and as such are not included within this addendum, but still remain valid and still form part of the ES for the planning application. See Appendix 18 of the ES Part 1 Addendum which provides Consultants confirmation that there are no changes to the significance of impacts in the Ground Conditions and Contamination; Socio-Economic, Air Quality, Utilities, Energy, Waste and Agricultural Land and Soils Technical Papers arising from the updated project description presented in this ES Addendum.
- 1.8. In order to make the addendum more understandable and to avoid extensive cross referencing, changes have been integrated within the original text of this technical paper to form a single addendum to the ES. Wherever changes or additions have been made to the text of the original technical paper, the text has been underlined and anything that is no longer relevant or valid has been struck through but retained within the text. A log is also included within Appendix 4.7 of this technical paper addendum so that the text to be removed (i.e. the text struck through within the paper) is identified and a reason for its removal provided.
- 1.9. LAYER Landscape Architecture Ltd (LAYER) has been instructed by Langtree Property Partners and Panattoni to undertake a Landscape and Visual Impact Assessment (LVIA) to support the ES and planning application for the Six56 Warrington site (see **Figure 1 - Site Location of Appendix 4.1**). The LVIA forms one of a number of technical papers that

have been prepared as part of an Environmental Impact Assessment of the development, required by the Local Planning Authority (LPA), Warrington Borough Council (WBC).

- I.10. The structure of the LVIA follows an order, which is consistent with other technical papers that have been prepared. Following an examination of the documents and consultations undertaken for the LVIA, the methodology and approach is explained together with references to relevant best practice and technical guidance. The baseline focuses on describing the existing landscape resource and visual amenity value of the Site and its surroundings prior to assessing the potential effects of the Proposed Development. It draws on the results of the Scoping exercise previously undertaken and takes on board comments received from consultees.
- I.11. The LVIA links closely with the Noise and Vibration, Technical Paper 7 and Cultural Heritage, Technical Paper 9 with regards to landscaping treatment to mitigate noise and visual impact on the setting of the Scheduled Ancient Monument and nearby residential properties. These papers should be consulted for further information and detail.
- I.12. The potential landscape and visual effects are considered during the construction and operational phases followed by an examination of the likely residual effects during both phases. Cumulative effects are considered separately for a number of developments, which have been agreed with the LPA, some of which have been deemed necessary to include in the LVIA. The paper closes with a summary of synergistic effects and a conclusion. All assessments carried out within the LVIA have been undertaken in accordance with the Guidelines for Landscape and Visual Impact Assessment Third Edition (GLVIA3).
- I.13. LAYER is a registered practice of the Landscape Institute and the report has been authored and checked by Chartered Members of the Landscape Institute (CMLI).

Study Area

- I.14. The study area has been derived through data collection and review collated during the baseline stage. Primarily it has been determined through a combination of:
- establishing the Zone of Theoretical Visibility (ZTV)
 - reviewing existing landscape character studies; and

- reviewing planning designations around the Site.

I.15. Following a review of the above for the purpose of the LVIA a study area of 2.0 kilometres measured from the centre of the Site was established as being appropriate which is shown in **Figure 1 of Appendix 4.1** For the purpose of the Cumulative Assessment, this was determined through agreement with the WBC following scoping and the Sites shown for inclusion are shown in **Section 9** and **Appendix 11** of the **Environmental Statement Addendum Part One Report** with those deemed necessary for inclusion in this **Addendum LVIA** stated in **Section 10** of this report.

I.7 A digital ZTV has been derived from using landform and bare earth data. The bare earth view represents a worse case scenario as it is based only on terrain modelling and does not account for buffers such as buildings and existing vegetation. To refine the ZTV, field studies were undertaken and viewpoints have been selected and agreed with the LPA to demonstrate where some or all of the Proposed Development is likely to be visible, as well as to clarify where it will not. For views from distances greater than 2.0 kilometres, it is likely that development of the size and type being considered will exert a less than dominant feature in the landscape to the naked eye.

2. Documents Consulted

2.1. National and Local Planning Policies have been reviewed as part of the baseline stage. This has identified relevant planning designations and policies pertinent to the Site and the development being considered. Key documents are as follows:

- National Planning Policy Framework 2018 (The Framework);
- Warrington Local Plan Core Strategy (July 2014);
- Design Construction SPD Updated February 2016;
- Environmental Protection SPD May 2013.

2.2. The above documents and policies are reviewed and commented upon from the point of view of establishing the landscape baseline and determining how they should influence the landscape strategy and masterplan.

National Planning Policy Framework (2018)

National Planning Policy Framework (February 2019)

2.3. The updated Framework replaces the first Framework, which was published March 2012 and includes minor clarifications to the revised version, published in July 2018. It sets out the Government's planning policies for England and how these should be applied. In ensuring that the planning system contributes to achieving sustainable development para.9 of the Framework states that *'Planning policies and decisions should play an active role in guiding development towards sustainable solutions but in doing so should take local circumstances into account, to reflect the character, needs and opportunities of each area'*.

2.4. Under the section 3 Plan-making, para.20d states that *'conservation and enhancement of the natural, built and historic environment, including landscapes and green infrastructure and planning measures to address climate change mitigation and adaption'*.

- 2.5. Under section 6 Building a strong, competitive economy, para. 84 refers to ensuring that development is *'sensitive to its surrounding'* where sites to meet local business and community needs in rural areas may have to be found adjacent to or beyond existing settlements.
- 2.6. Section 8 Promoting healthy and safe communities, refers to the needs for *'accessible green infrastructure'* in para.91c and para.96 states that *'Access to a network o high quality open spaces and opportunities for sport and physical activity is important for the health and well-being of communities'*.
- 2.7. Section 11 Making effective use of land states in para.117 that *'Planning policies and decisions should promote an effective use of land in meeting the need for homes and other uses, while safeguarding and improving the environment and ensuring safe and healthy living conditions'*. In para.118a it states that planning policies and decisions should *'encourage multiple benefits from both urban an rural land, including through mixed use schemes and taking opportunities to achieve net environmental gains - such as developments that would enable new habitat creation or improve public access to the countryside'*. The Framework supports the use as much use of possible of previously-developed or brownfield land providing this does not conflict with other policies within the Framework such as causing harm to designated sites of importance for biodiversity.
- 2.8. Within Section 11 sub heading Achieving appropriate densities, para.122d states that planning policies and decisions should make efficient use of land and take into account *'the desirability of maintaining an area's prevailing character and setting...or of promoting regeneration and change'* and in para.122e *'the importance of securing well-designed, attractive and healthy places'*.
- 2.9. Section 12 Achieving well-designed places, para.125 states that design policies *'should be developed with local communities so they reflect local aspirations and are grounded in an understanding and evaluation of each area's defining characteristics. Neighbourhood plans can play an important roles in identifying the special qualities of each area and explaining how this should be reflected in development'*. Para.127b states that planning policies and decisions should ensure that developments are *'visually attractive as a result of good architecture, layout and appropriate and effective landscaping'*; para127c that they are *'sympathetic to local character and history, including the surrounding built environment and landscape setting...'* and in para.127d that they *'establish or maintain a strong sense of place...to create attractive, welcoming and distinctive places to live, work and visit'*.

- 2.10. Furthermore, Section 12 para.128 refers to the need to consider ‘design quality’ throughout the evolution and assessment of proposals and in para.130 states 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 areas and the way it functions...’*.
- 2.11. In Section 15 Conserving and enhancing the natural environment, para.170 states that *‘Planning policies and decisions should contribute to and enhance the natural and local environment by: a) protecting and enhancing valued landscapes sites of biodiversity or geological value and soils...’* and b) *‘recognising the intrinsic character and beauty of the countryside and the wider benefits from natural capital and ecosystem services - including the economic and other benefits of the best and most versatile agricultural land and of trees and woodland’* and d) *‘minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures’*.
- 2.12. In para.171 of the Framework it states that *‘Plans should...take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries’*. Furthermore, in para.172 it states that *‘Great weight should be given to conserving and enhancing landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty...planning should be refused for major development other than in exceptional circumstances and where it can be demonstrated that the development is in the public interest’*.
- 2.13. In para.180 of the Framework it states that *‘Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the Site or wider areas to impacts that could arise from the development’*. Para 180b says that policies and decisions should *‘identify and protect tranquil areas which have remained relatively undisturbed by noise...’* and in para.180c *‘limit the impact of light pollution...’*

National Planning Practice Guidance

- ~~2.14. Planning Practice Guidance (PPG) is to be updated, where necessary, to reflect the changes in the new Framework published in July 2018. It is understood that guidance with respect to topics such as Design, Natural Environment, and Open space are still relevant even though originally drafted to support the first Framework. Under PPG with respect to the Natural~~

~~Environment, it is stated that one of the core principles in the NPPF is that ‘planning should recognise the intrinsic character and beauty of the countryside’ and that where appropriate ‘landscape character assessments should be prepared to compliment Natural England’s National Character Area profiles’. Both national and local landscape character assessments are reviewed in the baseline section 5 Baseline Information, of this report.~~

- 2.15. ~~Under PPG with respect to Design, the importance of good quality design as an integral part of sustainable development is recognised and that ‘development should seek to promote character in townscape and landscape by responding to and reinforcing locally distinctive patterns of development, local man-made and natural heritage and culture, while not preventing or discouraging appropriate innovation’. It also recognises that a well-designed space has a distinctive character, which often makes a place special and valued.~~
- 2.16. ~~The Department for Communities and Local Government (DCLG) has also launched a National Planning Practice Guidance web-based resource to support the Framework.~~
- 2.17. ~~Advice relevant to Landscape and Visual matters includes guidance on Design, Natural Environment and key points to take into account when considering character and landscape. A core principle of the Framework is that planning should recognise the intrinsic character and beauty of the countryside. The preparation of Local Character Assessments is supported to complement Natural England’s National Character Area Profiles, both of which will be discussed in greater detail in Section 5, Baseline Information.~~

Local Planning Policy

- 2.18. Local Planning Policies referred to in the introduction have been reviewed. Extracts (shown in italics) from these documents and policies are provided and commented upon from the point of view of establishing the landscape baseline as well as suggesting how they could influence the Masterplan design and emerging landscape strategy. The key planning designations pertaining to the Site and the surrounding study area is illustrated within **Figure 2 of Appendix 4.1.**

Warrington Local Plan Core Strategy (July 2014)

- 2.19. The Strategy forms part of a Local Planning Framework, which consists of a suite of documents, which include, as well as the Strategy, further Local Plans, a Policies Map and Supplementary Planning Documents. Warrington’s Local Plan Core Strategy (July 2014)

(WLPCS) sets out a planning framework for guiding the location and level of development in the Borough up to 2017. The Strategy contains a series of visions, which relate to thematic issues and specific places together with strategic objectives followed by a series of core, Borough wide and place specific policies for guiding investment and development in accordance with the vision and objectives. The Strategy also contains more Detailed Management Policies in respect of specific issues for use in determining planning applications.

- 2.20. The Site currently lies within Green Belt which is covered under section 17 The Countryside and its Constituent Settlements of the Strategy under the sub heading Place Making. Stated objectives include *'protect and enhance the character of the countryside, its natural beauty, the diversity of its landscape, its heritage and wildlife value, its natural resources and its contribution to the quality of life in the borough as a source of recreation enjoyment (Objective G14)'*.
- 2.21. The Site, however, is located adjacent to the area of the Appleton and Stretton Trading Estates, which focus on transport related storage, warehouse and distribution uses. The objective is to ensure that this continues to be the predominant land use *'whilst ensuring that development minimises travel by private car and encourages the use of more sustainable modes of transport'*. Whilst the designation of Green Belt is to offer protection from inappropriate development, as defined by national policy, the Strategy identifies the role that the countryside has to play in the Borough's economy and infrastructure, it states that *'support needs to be afforded to maintaining and where possible growing the rural economy'* whilst recognising that *'additional pressures on the countryside need to be carefully managed if its character, appearance and the many functions it performs are to be protected and enhanced'*.
- 2.22. Policy CS I Overall Spatial Strategy – Delivering Sustainable Development states that development must accord with national and local planning policy frameworks and includes a list of material considerations it must have regard to of which the following are extracted as being relevant to landscape and visual considerations:
- *The priority afforded to the protection of the Green Belt and the character of the countryside;*
 - *The need to sustain and enhance the borough's built heritage, biodiversity and geodiversity;*
 - *The need to safeguard environmental standards, public safety and residential amenity.*

2.23. Policy CS 5 Overall Spatial Strategy - Green Belt states that the Council will maintain the general extent of Green Belt until at least 2032 in recognition of its purposes. It also states that development proposals within the Green Belt will be approved *'where they accord with national policy'*.

2.24. Policy QE 3 Green Infrastructure is focused on an integrated approach to the provision, care and management of the borough's Green Infrastructure and includes:

- *'Protecting existing provision and the functions this performs...'*;
- *Improving the quality of existing provision...'*;
- *'Protecting and improving access to and connectivity between existing and planned provision...'*;
- *'Securing new provision in order to cater for anticipated increases in demand ...'*

2.25. The Appleton and Stretton Trading Estates are well established as a key distribution location and the Strategy identifies that there are few development opportunities remaining within the Site. Local policies within the Strategy *'seek to retain the major warehousing and distribution function this estate forms'*.

2.26. Policy CCI Inset and Green Belt Settlements, national planning policies with respect to Green Belt apply, *'new build development may be appropriate where it can be demonstrated that the proposals constitutes limited infill development of an appropriate scale, design and character...'*. Policy CC2 Protecting the Countryside and which is more relevant to the Site states that:

Development proposals in the countryside which accord with Green Belt policies set out in national planning policy will be supported provided that;

- *the detailed siting and design of the development relates satisfactorily to its rural setting, in terms of its scale, layout and use of materials;*
- *they respect local landscape character, both in terms of immediate impact, or from distant views;*
- *unobtrusive provision can be made for any associated servicing and parking facilities or plant, equipment and storage;*

- they relate to local enterprise and farm diversification; and
- it can be demonstrated that there would be no detrimental impact on agricultural interests.

2.27. Policy QE 6 Environment and Amenity Protection states that the Council will only support development which ‘would not lead to an adverse impact on the environment or amenity of future occupiers or those currently occupying adjoining or nearby properties, or does not have an unacceptable impact on the surrounding area’. Factors, which will be taken into consideration, include: land quality, light pollution, and living conditions of existing neighbouring residential occupiers. Reference is also made to the Design and Construction and Environmental Protection SPG see below.

2.28. Policy QE 7 Ensuring a High Quality Place states that the Council will look positively upon proposals, which are designed to provide a variety of outcomes. These include: being sustainable and durable, create inclusive, accessible and safe environments, reinforce distinctiveness and enhance the character, appearance and function of the street scene, local areas and wider townscape, maintain and respect the landscape character and, where appropriate, distinctiveness of the surrounding countryside.

[Warrington Preferred Development Options Consultation Document \(PDO\) \(July 2017\)](#)

2.29. The council is currently undertaking a review of its Local Plan and has prepared its PDO drawing on the evidence base. It confirms the need for Green Belt release to meet a housing target of 1,113 per annum and an employment target of 381 hectares over a 20-year plan period. The PDO identifies the Six56 Warrington site as a site for potential employment land as part of a wider Garden Suburb.

[South Warrington Urban Extension Framework Plan Document June 2017](#)

[Warrington Submission Version Local Plan \(2019\) and Garden Suburb Development Framework \(March 2019\)](#)

2.30. This Masterplan and Development Framework provides the evidence basis to inform the emerging Local Plan (~~Preferred Options July 2017~~). The Framework prepared by consultants AECOM, assesses the opportunity to provide a natural urban extension to southern Warrington to accommodate sustainable residential growth and unlock further employment development opportunities. The Site falls within an area, which has been

identified as employment land within the Framework. The Framework also identifies and approach to green infrastructure which correspond with the northern and southern boundaries of the Site determined by the major transport corridors.

- 2.31. The Council consulted on the next stage of their Local Plan, the Proposed Submission Version Local Plan in April 2019, for a period of 8 weeks. This Submission Version of the Local Plan was presented to Full Council Board on the 25th March 2019, seeking approval to commence public consultation. This Plan is now in the public domain. Following consultation the Council are reviewing all of the representations made during the consultation prior to submitting the Plan for 'Examination in Public' to be carried out by an independent Inspector. Following the Examination in Public, the Inspector will issue a report setting out their recommendations, including any required modifications to the Plan. The Council must carry out a final consultation on any Main Modifications before formally adopting the Plan.

Design and Construction SPG October 2010 (amended February 2016)

- 2.32. This document sets out the Council's approach regarding design considerations that can be incorporated in the production and determination of planning applications. It contains a number of references with relation to landscape matters including:

- The retention, protection and extension of areas of wildlife habitat and the value that quality landscape has to make developments attractive and to maintain its desirability and use;
- Landscape and boundary works should minimise the extent and definition of the curtilage, respecting existing farm boundaries and the existing landscape setting. Private areas should be enclosed and carefully sited to minimise the wider visual impact;
- A specific section is focused upon Landscape Design Guidance, which covers new development and the importance of landscape design. Specific guidance is given with respect to Industrial, Retail and Business Park landscapes highlighting that the external layout together with the boundary treatment play a significant part in the success of their design. Where screening is not practical or desired by the developer, higher quality building design is expected to make a more positive contribution to the local

environment with landscape design serving to enhance the setting rather than screen it. Structure planting is also desired to reduce the scale of built form and to help merge the development with its surroundings;

- With respect to development in Green Belt, the Landscape Design Guidance states that development proposals should be compatible with the character of the surrounding countryside, protecting and where appropriate, enhancing existing landscape features. Where development results in the loss of existing features such as trees, replacement native planting will be required to maintain the character of the locality and to enhance the visual quality of the new development.

Environmental Protection SPG May 2013

- 2.33. This SPG sets out the Council's approach to dealing with several environmental protection issues, of particular relevance to landscape is light pollution. The Council has determined that several factors will be taken into consideration when determining planning applications for proposals which include lighting, including: an assessment of need, the location of the proposal in relation to neighbouring uses, the purpose and use of the lights and the proposed design details. This LVIA will consider lighting from a daytime perspective in terms of the visibility of lighting structures, a separate lighting assessment is undertaken as part of this application.

3. Consultations

3.1. The following table summaries the consultation undertaken, including feedback required through the ES with statutory consultees during the application process, which is relevant to the LVIA.

Theme / Issue	Date	Consultee	Method	Summary of Discussion	Outcome / Output
Environmental Impact Assessment Regulations 2017 – Regulation 15 Scoping Option	6 th April 2018	Warrington Borough Council	Written	ES Scoping Opinion of the WBC	Requirements set out by the council for the Site. Including a 15m buffer zone from the bank top free of development, domestic gardens and formal landscaping.
LVIA	3 rd September 2018	WBC Landscape Officer, A Thompson	Written	Discussion on suggested viewpoint locations	Request from council to include for additional 7 viewpoints on top of the 17 viewpoints we already have.
LVIA	17 th September 2018	WBC Landscape Officer, A Thompson	Written	Discussion on suggested photomontage locations	Agreed Photomontage locations. Suggestion by the council for additional viewpoint and photomontage taken from Appleton Thorn to show the residents views of the Proposed Development.
LVIA	9 th January 2019	WBC Development Manager, M, Davies	Written	Request for agreement from the council of 5 additional photomontage locations	Acceptance of the proposed additional 5 photomontage locations
<u>LVIA</u>	<u>8th October 2019</u>	<u>Ramboll on behalf of WBC, B. Bainsfair</u>	<u>Skype Meeting</u>	<u>Discussion of additional information requested by Council</u>	<u>Additional information requested regarding: Additional Character and Visual Amenity analysis; Additional Design analysis / narrative; Residual Effect of Lighting on Landscape and Visual Effects; Residential Visual Amenity; & Green Belt analysis</u>

Table 4.1: Summary of Consultations and Discussions

4. Methodology and Approach

- 4.1. The LVIA focuses on assessing the potential effects of development in two key areas:
- Assessing the potential effects of development upon the physical nature and features of the receiving **landscape** as well as landscape character and quality; and
 - Assessing the potential **visual** effects of development upon the visual amenity of people (visual receptors) in terms of the properties and locations to which the public has access.
- 4.2. The assessment is carried out to a study area defined in **Figure 1 in Appendix 4.1** to this Addendum Technical Paper. The main objectives of the LVIA are to:
- Identify and describe the current landscape character of the study area;
 - Determine the sensitivity of the landscape to the type of development proposed and identify potential effects;
 - Identify potential visual receptors to the Proposed Development;
 - Evaluate the degree of change and the sensitivity to the type of changes proposed.
 - Identify likely adverse or beneficial landscape and visual effects;
 - Identify likely significant landscape and visual effects distinguishing between those that are temporary or permanent, short, medium or long term;
 - Consider how any adverse effects may be mitigated;
 - Consider any remaining residual effects; Assess cumulative landscape and visual effects and how any significant adverse effects may be mitigated.
- 4.3. Information gleaned during the course of undertaking the LVIA has been used as part of an iterative design process to inform the Updated Masterplan and Updated Parameters Plan by including mitigation measures to avoid and reduce where possible, any adverse landscape or visual effects resulting from the Proposed Development.

4.4. The Addendum LVIA will be carried out in accordance current best practice and guidance, most notably:

- Guidelines for Landscape and Visual Impact Assessment (Third Edition 2013) – Landscape Institute and the Institute of Environmental Management and Assessment;
- Landscape Character Assessment Guidance (2002) – The Countryside Agency;
- An Approach to Landscape Character Assessment (2014) – Natural England; and
- Landscape Institute Advice Note 01/11 (March 2011) Photography and Photomontage in Landscape and Visual Impact Assessment.

4.5. Of particular importance is the ‘*Guidelines for Landscape and Visual Impact Assessment*’ (hereafter referred to as GLVIA3), which represented a substantial revision to the previous edition. Crucially, it should be noted that the guidance is not prescriptive but provides a framework, which gives considerable scope to the practitioner to tailor the specific assessment to ensure that it is appropriate to the particular project and setting under consideration. In particular, the assessment should be proportional to the scale and nature of the development proposed.

4.6. The assessment will be undertaken in three key stages consisting of:

- A thorough desktop study covering an overview of relevant planning policy context from national to local level, plus a more detailed review of the topography and surrounding features, to determine the potential visibility of the development. The establishment of baseline landscape and visual conditions including any changes likely to occur independent of the development, as well as determining the value attached to the different resources followed this.
- Initial desktop findings were then tested in the field to further understand the receiving landscape and to reassess the effect upon visual receptors from viewpoints agreed with the Local Planning Authority.
- The assessment is then undertaken to determine the potential landscape and visual effects of the Proposed Development. The assessment considers not only the impact at the completion of the development (operational stage) but also during the

construction stage and for post completion periods. Residual effects consider the effects post completion after 15 years, with mitigation in place.

4.7. Landscape effects will be assessed in terms of the following categories:

- **Condition:** In terms of the state of an individual area such as the condition of the elements and features that occur to form a particular character area or unit.
- **Value:** In relation to its importance to the local community as well as local, county, national or international level designations. Consideration is also made here to the European Landscape Convention (ELC), which the UK has signed and ratified. The ELC refers to landscape being '*...about the relationship between people and place. It provides the setting for our day-to-day lives. The term does not mean just special or designated landscapes and it does not only apply to the countryside*'. In other words, landscape is not only concerned with those that are recognised as being special or valuable, but also about the ordinary and the everyday and treats landscape as a resource in its own right.
- **Sensitivity to change:** Reflected in the degree or capacity to which a particular character type or unit is able to accommodate change without adverse impacts on its character.

4.8. Assessing visual effects commences with identifying the effects upon visual receptors such as residents, users of roads and Public Rights of Way (PROW). To assist in the identification of potential receptors a desk top Zone of Theoretical Visibility (ZTV) was prepared (see **Figure 4 of Appendix 4.1**). From this a series of viewpoints were selected, from which it is considered that there is the potential to view all or some of the development. The results of this process have then been checked in the field and further refined leading to the final selection of viewpoint locations (see **Figures 8 & 9 of Appendix 4.1**).

4.9. For developments where visual effects are considered to be informed by adverse lighting issues, it would be important to carry out night-time 'darkness' surveys of the existing conditions in order to assess the potential effects the Proposed Development would have. The darkness assessment would be reviewed in conjunction with the ZTV in order to select appropriate viewpoints. The Updated Light Spill Assessment (Doc Ref **I015524-RPT-LG-0023**) assesses that the proposed lighting within the Six56 Development will not contribute

to light spill into the surrounding environment, therefore night-time 'darkness survey' will not be required for the assessment of visual effects. The Updated document provides an assessment of the likely residual effects of construction and operational lighting and includes night time visuals to provide an indication of how operational lighting would appear.

4.10. Viewpoints have been selected to provide a range of views and details are provided in section 5 Baseline. There are a range of viewpoints which may be summarised as follows:

- *Representative* viewpoints selected to represent the viewing experiences and the types of receptor likely to be affected by the development where individual locations are not likely to significantly differ;
- *Specific* viewpoints selected because they demonstrate a view from a particularly sensitive receptor such as a settlement; or
- *Illustrative* viewpoints chosen to demonstrate a particular effect or issue.

4.11. The sensitivity of visual receptors is determined by factors including the location and context of the viewpoint, the expectation and occupation or activity of the receptor and the importance of the view e.g. historical/number of viewers. In accordance with established practice, receptors sensitivity ranges from high (residents, users of a PROW) to the lowest (people at work) see **Table 4.5**.

4.12. Aspects to be considered include the scale of the change in view and the degree of contrast or integration of new features. A number of other factors are brought to bear including, distance, elevation, size, context, activity, change and duration.

4.13. The Assessment then summarises the nature of effect, is it likely to be adverse, beneficial or resulting in no change, and whether any effect is significant. In determining whether an effect is significant or not, two key factors are considered:

- As The *sensitivity* of the landscape or visual receptor to the change arising from the proposal and the value attached to the receptor e.g. is it a designated landscape or historic viewpoint;
- The *magnitude* of the effect, e.g. the scale/size and geographical extent of the effect, as well as the duration or reversibility of the effect.

4.14. The assessment then combines the assessment of the **two** factors to arrive at a judgement as to the overall effect. To ensure that the process is as consistent and transparent as possible, the tables below explain the terminology used as the criteria applied to arrive at a particular judgement. An explanation is for all judgements for clarity.

Landscape Assessment

4.15. Understanding the value, the sensitivity to change and the condition of the landscape reflects the extent to which the receiving landscape can accommodate change arising from development. **Tables 4.2 to 4.4** provide the criteria applied in this assessment. Landscape value maybe valued at community, local, and national level or above.

4.16. Landscape Receptor Value

Value	Designation	Receptors
Exceptional	International	World Heritage Site, Grade I listed buildings Site Specific: N/A
High	National	National Park, Heritage Coast, Registered Parks and Gardens, Grade II listed buildings Site Specific: Grade II listed Birchells Gorse, Grade II* Listed Tan House Farm. Bradley Hall moated site Schedules Ancient Monument
High	Regional	Area of Outstanding Natural Beauty (AONB) Site Specific: N/A
High	County	AONB, Environmentally Sensitive Areas, Country Park Site Specific: N/A
Medium	Borough / District	Areas of Special Landscape, Historic, Landscape Conservation Area Site Specific: N/A
Medium	Local/Neighbourhood	Local Landscape Value (European Landscape Convention) Site Specific: N/A
Low	Local	Areas identified for recovery, possibly with some features worthy of retention.

Table 4.2: Landscape Receptor Value

Landscape Sensitivity (to change)

Sensitivity	Criteria
Exceptional	<p>International, and National designation, e.g. World Heritage Site, National Park, AONB. No or very limited potential for substitution.</p> <p>Very strong and well defined landscape structure, characteristic patterns and balanced combination of landform and land cover; appropriate management for land used and land cover; distinct features worthy of conservation; sense of place; no detracting features.</p> <p>A landscape particularly sensitive to change with likely significant adverse effects upon landscape character, features and elements.</p>
High	<p>National, Regional or Local designation e.g. AONB, AGLV, LCI, ALLI. Limited potential for substitution.</p> <p>Strong landscape structure, characteristic patterns and balanced combination of landform and land cover; in the main appropriate management but some scope for improvement; distinct features worthy of conservation; sense of place; some but limited detracting features.</p> <p>A landscape sensitive to change with likely significant adverse effects upon landscape character, features and elements adverse effects upon landscape character, features and elements.</p>
Medium	<p>Regional or Local Designation. Limited potential for substitution. Could be undesignated but value expressed through non-official publications or demonstrable use.</p> <p>Recognisable landscape structure, characteristic patterns of landform and land cover are still evident with scope to improve; some features worthy of conservation, some detracting features.</p> <p>A landscape capable of accepting limited change with some adverse effects upon the landscape but also potential benefits.</p>
Low	<p>Area of low importance. May have some redeeming features and is possibly identified for improvement.</p> <p>Weak landscape structures, characteristic patterns of landform and land cover are often masked by land use; lack of management and intervention has resulted in degradation; frequent detracting features.</p> <p>A landscape capable of accepting change or benefiting from considerable change; change could be accommodated with little or no adverse effects and/or would result in beneficial effects upon landscape character/features/elements.</p>

Sensitivity	Criteria
Negligible	<p>Area identified for recovery.</p> <p>Damaged landscape structure; single land use dominates, disturbed or derelict land requiring restoration; detracting features dominate.</p> <p>A landscape capable of benefiting from considerable change; change would result in beneficial effects upon landscape character/features/elements</p>

Table 4.3: Landscape Sensitivity

Landscape Condition

Sensitivity	Criteria
High	<ul style="list-style-type: none"> • Strong landscape structure, characteristic patterns and balanced combination of landform and landcover. • Appropriate management for land used and land cover. • Distinct features worth of conservations. • Sense of place • No or insignificant detracting features
Medium	<ul style="list-style-type: none"> • Recognisable landscape structure, characteristic patterns and combinations of landform and landcover. • Scope to improve management for land use and land cover. • Some features worthy of conservation. • Some detracting features.
Low	<ul style="list-style-type: none"> • Weak landscape structures, characteristic patterns of landform and landcover are masked by land use. • Lack of management and intervention. • Frequent detracting features
Poor	<ul style="list-style-type: none"> • Damaged landscape structure. • Disturbed or derelict land requiring regeneration. • Dominating detracting features.

Table 4.4: Landscape Condition

Magnitude of Landscape Effects

4.17. The magnitude is an assessment of the scale, extent and duration of the landscape effects caused by the Proposed Development. This is assessed on a five-point scale shown in **Table 4.5**.

4.18. Determining the magnitude of the landscape effects is based on assessing the following criteria:

- The extent of physical change to key elements or features;
- The extent of the subject area subject to change and prominence of the Proposed Development;
- The degree of variance or compatibility between the Proposed Development and key characteristics of the landscape; and
- The degree of change to overall character and image brought about by incremental and combined effects on key characteristics.

Magnitude Evaluation	Definition
Substantial	The Proposed Development proposed scheme would completely change the character and/or appearance of the landscape. Irreparable loss of key landscape characteristics occurs with a major or complete change to features, characteristics and/or landscape condition. The development is highly visible and exerts a comprehensive influence upon landscape character to the LCA to the extent that the overall integrity it is affected and subject to change.
High	The Proposed Development proposed scheme would cause an obvious change to the character, fabric and quality of the landscape. Damage or loss or irreparable damage to landscape character will result to the LCA through the loss of key features and a reduction in landscape quality and condition. The development will be highly visible within a comprehensive area of the LCA with a major influence upon landscape character.
Moderate	The Proposed Development proposed scheme would cause a noticeable difference to landscape character and/or the fabric and quality of the landscape. Change to key landscape characteristics may occur but may be repairable or offset with by an improvement in landscape condition. The development is present within views from a wider area of the LCA and is a noticeable feature exerting an influence upon existing landscape

Magnitude Evaluation	Definition
	character where it is visible.
Minor	The Proposed Development would cause a barely perceptible impact, and would slightly affect the character, fabric and quality of the landscape. The development is present within views from limited areas of the LCA and is a minor feature exerting limited influence over existing landscape character.
Negligible	The Proposed Development is appropriate in its context. It may be difficult to differentiate from its surroundings and would have no discernible impact on the character, fabric and quality of the landscape. There is no loss or damage to landscape character, features or condition.

Table 4.5: Landscape Magnitude of Change Criteria
Assessing the Significance of Landscape Effects

4.19. The potential significance of the landscape effects is determined by combining the landscape sensitivity and the magnitude of the effect. **Table 4.6** shows how these two variables are correlated in a matrix to arrive at the significance of the effect. It should be noted, however, that in certain instances, professional judgement has been applied where evidence from field surveys requires the result to be modified, the matrix is used as a guide and is not applied in a mechanistic or formulaic manner. An explanation is provided in these cases and the fact that an adjustment has been made is noted.

Sensitivity	Negligible	Low	Medium	High	Exceptional
Magnitude					
Negligible	Negligible Impact	Negligible/ Minor Impact	Minor Impact	Minor/Moderate Impact	Moderate Impact
Minor	Negligible/ Minor Impact	Minor Impact	Minor/ Moderate Impact	Moderate Impact	Moderate/ Major Impact

Moderate	Minor Impact	Minor/ Moderate Impact	Moderate Impact	Moderate/Major Impact	Major Impact
High	Minor/ Moderate Impact	Moderate Impact	Moderate Major Impact	Major Impact	Major/ Maximum Impact
Substantial	Moderate Impact	Moderate/ Major Impact	Major Impact	Major/Substanti al Impact	Substantial Impact

Table 4.6: Significance of Landscape Effects Matrix

4.20. If the Proposed Development is not visible from a particular viewpoint (during field investigations), this is recorded as ‘no change’. The assessment is carried out in a systematic way based on a neutral perspective. It is not a quantitative process as there is no absolute scoring system and the assessment still requires a degree of professional judgment. Effects rated as moderate or greater are generally regarded as **significant**, less than this is regarded as **not significant**.

Visual Assessment

4.21. Understanding the sensitivity of the visual receptor to change and the value attached to a particular receptor are necessary to determine the ability of the receptor to accommodate a change in view resulting from development. **Tables 4.7 to 4.10** below provide the criteria applied in this assessment.

Visual Receptor Sensitivity

4.22. The sensitivity of visual receptors is dependent upon:

- The Location and context to the viewpoint;
- The expectation and occupation or activity of the receptor; and
- The importance of the view.

4.23. **Table 4.7** identifies the sensitivity criteria for the principal types of visual receptors found in the study area.

Visual Receptor Sensitivity	Description of criteria
High	Residents experiencing principal views from dwellings, recreational users focussing on landscape (walkers, cyclists) on footpaths/cycle ways, people experiencing views from important landscape features of physical cultural or historic interest, beauty spots and picnic areas.
Medium	Road users and train passengers with views of affected landscape, residents experiencing secondary views, users of secondary footpaths/cycle ways experiencing views, outdoor recreational users focussing on activity (fox-hunting, golf, shooting).
Low	People at their place of workers, users of facilities and commercial buildings (indoors) experiencing views from a building

Table 4.7: Visual Sensitivity Criteria

4.24. Primary views are described as direct views of the Site from key viewpoints, such as those from a living room. Secondary views are those that may be oblique or partially obscured from less sensitive locations, such as a garage window.

Assessing the Magnitude of Visual Effects

4.25. The magnitude of visual effects may be defined as the scale, extent and duration of the effect caused by a development. The magnitude of the visual effects is based on the following criteria:

- Extent of visibility of the Proposed Development;
- Proportion of the view occupied by the Proposed Development, which relates to the distance of the viewpoint from it and the breadth of the existing view;

- Apparent size and prominence taking account of modifying factors in the view likely to reduce or intensify this e.g. degree of contrast, framing, scale cues, back grounding and disturbing effects e.g. proportional visibility;
- Degree of contrast or integration with the character of existing elements e.g. scale, texture, form and design resolution with visual dynamics of the composition e.g. stability, cohesion and separation; and.
- Angle of view, frequency and duration of sequential views and relative elevation.

4.26. The criteria used to judge the magnitude of change to a visual receptor are shown in **Table 4.8.**

Magnitude Evaluation	Description of criteria
Substantial	The Proposed Development would completely change the existing view and would substantially affect receptors and key views. The development is a key feature and/or occupies a major proportion of the field of view. The distance between the receptor and development (relevant to the scale of the development) is short and the majority of the development is visible.
High	The Proposed Development would cause an obvious change to the existing view and would largely impact receptors and key views. The development is an obvious feature within views and occupies a large proportion of the field of view. The distance between the receptor and development is short to medium and a high proportion of the development is visible.
Moderate	The Proposed Development proposed scheme would cause a noticeable difference from the existing view impacting receptors and key views. The development is a noticeable feature and occupies a moderate proportion of the field of view. The distance between the receptor and development is medium with only part of the development visible.
Minor	The Proposed Development would be barely perceptible to receptors and key views. The development is a minor element within views and occupies a small proportion of the field of view. The distance between the receptor and development is medium to far and only a small part of the development is visible.

Magnitude Evaluation	Description of criteria
Negligible	The Proposed Development is appropriate in its context. It may be difficult to differentiate from its surroundings and would have no discernible impact on receptors or key views. The development is a very minor element within views and occupies a very limited proportion of the field of view. The distance between the receptor and development is far and only a very small part of the development is visible.

Table 4.8: Visual Magnitude of Change Criteria

Assessing the Significance of Visual Effects

4.27. The potential significance of visual effects is determined by combining the landscape sensitivity and the magnitude of the effect. As shown in **Table 4.9** below, these two variables can be correlated in tabular form to arrive at the significance of the effect. Similar to the assessment of landscape effects, it should be noted that these provide a guide only and in certain instances, professional judgement has been applied where evidence from field surveys suggests the result should be modified. An explanation is provided in these cases and the fact that an adjustment made is noted. The definitions for visual impacts are defined in **Table 4.9** below.

Sensitivity	Magnitude		
	Low	Medium	High
Negligible	Negligible/ Minor Impact	Minor Impact	Minor/Moderate Impact
Minor	Minor Impact	Minor/Moderate Impact	Moderate Impact
Moderate	Minor/Moderate Impact	Moderate Impact	Moderate High Impact
High	Moderate Impact	Moderate/High Impact	High Impact
Substantial	Moderate/High Impact	High Impact	Substantial Impact

Table 4.9: Significance of Visual Effects Matrix

- 4.28. If the Proposed Development is not visible from a particular viewpoint then it is recorded as no change. Effects rated as moderate or greater are generally regarded as **significant**, less than this is regarded as **not significant** and if this varies explanatory text is provided.

The Nature of Effects

- 4.29. Determination of the nature of a proposal's effects i.e. whether they are adverse or beneficial, is subjective and varies according to an individual's responses to a particular development. This is particularly the case with respect to visual assessment, which is heavily influenced by personal perceptions, in contrast to the landscape assessment, which is more able to utilise quantitative measures. The various types of effect are described below.

Beneficial / Adverse

- 4.30. When the effects cause a loss of character or a specific element of the landscape that affects the landscape experience or sense of place, this is described as an adverse effect. Effects that improve character, landscape value thereby enhancing the landscape and view, will be considered beneficial.

Direct / Indirect

- 4.31. Direct impacts are defined as effects that are directly attributable to the defined elements or characteristics of the development. An indirect impact is defined as an effect that is not a direct result of the Proposed Development but is produced away from the Site as a result of secondary association.

Temporary / Permanent

- 4.32. Where the Proposed Development results in landscape effects whose attributes can be quickly recovered, this is considered a temporary effect. Although a Proposed Development may be considered as temporary i.e. ultimately reversible, the effect may be long term, depending on the operational period of the Proposed Development.

Impact Prediction Confidence

- 4.33. It is also of value to attribute a level of confidence by which the predicted impact has been assessed. The criteria for these definitions are set out below:

Confidence Level	Description
High	The predicted impact is either certain i.e. a direct impact, or believed to be very likely to occur, based on reliable information or previous experience.
Low	The predicted impact and its levels are best estimates, generally derived from first principles of relevant theory and experience of the assessor. More information may be needed to improve confidence levels.

Table 4.10: Confidence Levels

Photomontage and Wireframe Production

- 4.34. A Detailed methodology for the creation of the Photomontage and Wireframe imagery can be found in Appendix 4.5 of this report.

Cumulative Assessment

- 4.35. Cumulative landscape or visual effects occur when additional effects are caused by the Proposed Development in conjunction with other developments, associated with or separate to it, or actions that occurred in the past, present or are likelier to occur in the foreseeable future. Cumulative landscape effects that can impact either on the physical fabric or character of the landscape or any special value attached to it. Cumulative visual effects can be caused by combined visibility, which occurs where the observer is able to see two or more developments from one viewpoint and/or sequential effects when the observer moves to another viewpoint to see another development.
- 4.36. The methodology applied to the assessment of the development is applied to the cumulative assessment and a narrative is similarly provided to explain the judgements made.

5. Baseline Information

- 5.1. The following information will be used to assist in assessing the potential landscape and visual effects of the development and in the formulation of an appropriate landscape strategy and Masterplan to mitigate for any adverse effects identified. Field surveys were undertaken during August, September, October and November 2018.

Landscape

National Character Area Profiles

- 5.2. One of the guiding principles of sustainable development (which underpins government policies) is that policy should be based on 'sound science'. Government agencies since the 1990's have been developing a standardised approach known as 'Landscape Character Assessment', which can be used to identify:
- What gives a locality its own sense of place and makes it different from other areas; and
 - What conditions should be set for new development and change.
- 5.3. Government agencies (e.g. Natural England) have also been developing a standardised approach to identify and monitor how landscapes are changing and have undertaken a national consultation exercise applying an indicator of change to a range of components that make up a landscape. They have developed a series of profiles for each area covering the country with the intention that these support planning conservation initiatives and help to inform how land is managed and can change. Each profile contains Statements of Environmental Opportunity (SEOs), which, whilst high level documents, they nevertheless offer guidance on the issues critical to achieving sustainable growth.
- 5.4. Within the National Character Area (NCA) classification the Site falls within **NCA 60: Mersey Valley** (October 2013) and sits immediately adjacent to NCA 61: Shropshire, Cheshire and Staffordshire Plain. **Figure 5 in Appendix 4.1** shows the location of the two Landscape Character Areas areas in relation to the Site. The Site is bounded to the south by the M56 Motorway, which also forms a well-defined boundary between the Site and ~~with~~ the adjacent NCA 61: Shropshire, Cheshire and Staffordshire Plain As a result, and for the purposes of this assessment, NCA 61 is not reviewed.

NCA 60 Mersey Valley

- 5.5. Described as a low-lying and varied river valley landscape farmland in the north of the area, which is predominantly arable and in the east *‘open flat farmland is found on the rich, dark, peaty soils of the former mosses’* Industrial infrastructure is often prominent, *‘with large scale, highly visible development’* and there is a *‘dense communication network of major roads, railways, canals and transmission lines’*. Key challenges are identified as being *‘integrating the development pressures...with the protection and enhancement of the landscape and the internationally significant habitats’*.
- 5.6. Key issues arising out of the SEOs are as follows:
- 5.7. SEO1: Conserve and enhance the Mersey Valleys rivers, tributaries and estuary for example by: optimising design and implementation of future flood storage areas to create new wetlands, maintaining and enhancing semi-natural grassland, flood meadows and wet grasslands associated with river flood plains, and managing and enhancing habitats such as wetlands and grasslands to capture sediments and contaminants before they enter water courses.
- 5.8. SEO2: Promote the Mersey Valleys’ historic environment and landscape character and positively integrate the environmental resource with industry and development, providing green space within development for example by: integrating green infrastructure into industrial development, developing networks of linear habitats to link with the wider countryside, creating new woodlands to help assimilate new infrastructure and by developing SUDS in new development.
- 5.9. SOE3: Manage the arable and mixed farmland along the valley, create semi-natural habitats, woodlands and ecological networks to protect soils and water, enhance biodiversity, increase connectivity and improve the character of the landscape for example by: connecting fragmented habitats into a more cohesive whole, restoring and enhancing hedgerows, boundary trees field margins, protecting woodlands and encouraging opportunities to improve, maintain and expand habitats such as woodlands, grasslands and wetlands.

NCA 61 Shropshire, Cheshire and Staffordshire Plain

- 5.10. A small area of the Site and a larger part of the study area fall within this NCA that lies to the south. This character area continues south comprising most of the county of Cheshire, the northern half of northwest Staffordshire and the northern half of Shropshire. Only key elements of this landscape type have been extracted for the purpose of this assessment that relate to the study area.
- 5.11. In the Statements of Environmental Opportunity, SEO 2 refers to protecting the landscape of the plain, *'incorporating well-maintained hedgerows, ponds and lowland grassland margins....reducing fragmentation of semi-natural habitats to benefit a wide range of services such as landscape character...'*. Examples for supporting this objective include the restoration and gapping up of hedgerows; providing buffer strips to water courses, retaining field ponds and riparian woodland and ensuring that new development *'is informed by and sympathetic to landscape character and quality'*. SEO 3 refers to supporting partnerships, which plan *'appropriately scaled new woodland cover, particularly where this will link and extend existing woodlands, restore and reinstate traditional orchards...where this will benefit...landscape character...'*. Examples for supporting this objective include increasing tree cover (e.g. Mersey Forest), managing existing woodlands to benefit flora and invertebrates, reversing woodland fragmentation, retaining and reinstating traditional orchards, and *'planting trees around settlements, along motorways and major highway corridors to screen visually intrusive urban areas from the surrounding landscape'*.

Regional and Local Character Studies

- 5.12. A more detailed character study is provided by Warrington: A Landscape Character Assessment undertaken by Agathoclis Beckmann Landscape Architects (2007). The Site lies wholly within landscape type 1 Undulating Enclosed Farmland sub-type 1B Appleton Thorn. It is bounded to the north by landscape type 4 Level Areas of Farmland and Former Airfields sub-types 3A Appleton Park and Grappenhall and 3B Massey Brook.
- 5.13. Key characteristics of 1B Appleton Thorn are described as:
- *"Broad expansive agricultural landscape lacking hedgerows*
 - *Strong visual and audible effect of M56*

- *Noticeably gently sloping land to the south*
- *Views of Pennine skyline to the east*
- *Skyline imposition of commercial development on ridgeline at Appleton Thorn*
- *Ridgeline feature of Appleton Thorn church tower.”*

5.14. This type is described as having been affected by developments such as newer housing estates as well as industrial and warehousing. Whilst farming is mainly arable, hedgerows are poorly maintained with few trees and *‘the overall quality of the landscape has declined’*. Key elements of landscape sensitivity are described as:

- *“Skyline location*
- *Remaining hedgerows*
- *Remaining views of Appleton Thorn Church on skyline*
- *Marl pit ponds.”*

5.15. Landscape Change identifies that substantial changes have happened in the area and are summarised as:

- *“Past impact of Stretton Airfield*
- *Past impact of M56 Motorway*
- *Substantial reduction in hedgerows and hedgerow trees*
- *Decline in management of remaining hedgerows and hedgerow trees*
- *Encroachment of housing and development imposing onto the skyline*
- *Constant improvement of soil fertility for arable crops by drainage and fertilisers*
- *Tipping in marl pit ponds.”*

5.16. Recommended management and landscape objectives focus on restoring the remaining field patterns and hedgerows to improve landscape quality with an overall emphasis on restoration and enhancement. In summary the management objectives are as follows:

- *“Restore and enhance the remaining field pattern by additional hedgerow planting*
- *Reintroduce hedgerow trees to the hedgerows*
- *Conserve and manage remaining hedgerows*
- *Consider additional native woodland planting as a screen to exposed sections of M56 and Stretton Industrial Estate. Particularly in connection with obtrusive skyline views*
- *Conserve and reinstate the old marl pit ponds, de-silting and creating open water. Generally remove tree and shrub growth for the south and west aspects to allow light penetration to maximise habitat and wildlife potential*
- *Support opportunities to increase bio-diversity by native woodland planting to field corners and reducing herbicide use to field margins and streams.”*

5.17. The impact of the ~~of~~ Barleycastle Trading Estate and Appleton Thorn Trading Estate located to the east of the settlement of Appleton Thorn are noted for their substantial height and scale which is in contrast with that of the village.

5.18. Landscape type 3A Appleton Park and Grappenhall is bordered by a distinct ridgeline crest and road running between the villages of Hatton, Stretton and Appleton Thorn, which marks the junction with landscape type 1B. The character of both 3A and 3B Massey Brook is the strongly sloping land to the north with sweeping longer distance views restricted by the presence of linear deciduous woodlands, coverts and tree groups. Key elements of landscape sensitivity for type 3A are stated as being ‘*building development on the crest/skyline*’ and ‘*loss of agricultural landscape for housing development*’. Landscape change includes: ‘*absorption of farmland for landscape by large-scale housing development*’; and ‘*slow decline in hedgerows and more notably hedgerow trees*’. Management objectives include: ‘*control planned housing development, pulling back construction on the skyline*’; ‘*encourage hedgerow retention and restoration*’; and ‘*encourage the replacement of new hedgerow trees*’.

- 5.19. Key elements of landscape sensitivity within Landscape type 3B Massey Brook are: ‘visually sensitive to any form of building development within the basin or, in particular, on the ridgelines to the east and west’; and ‘currently sensitive to the presence of the M6 motorway both visually and audibly’. The greatest landscape change is stated as being the construction of the M6 Motorway and the ‘slow decline in hedgerows and more notably hedgerow trees’. Key management objectives are to: ‘restrict building within the area, particularly on or immediately below the ridge lines’; ‘encourage hedgerow restoration’; ‘encourage the replacement of new hedgerow trees’; and the consideration of native linear woodland planting to soften the impact of the motorway.
- 5.20. A small portion of the Site lies outside Warrington BC and within Cheshire East Councils boundary, see **Figure 2** of **Appendix 4.1**. The landscape character study for Cheshire East, Cheshire East Landscape Character Assessment LUC (May 2018) identifies this area as being within Landscape Type Lower Wooded Farmland 7a: Arley. This assessment updates the previous Cheshire Landscape Character Assessment prepared in November 2008. The overall type covers a wide area extending from Arley in the north and as far south as Audlem. It is described as a gently rolling landscape with concentrations of woodland and nucleated hamlets and villages. Forces for change include: continued pressure for development and the loss of historic field pattern. Landscape management guidance for such a wide area is varied but of note are: avoiding development in visually prominent locations; protecting the overall wooded character of the type; and retaining the overall sense of enclosure, screening the visual and audible effects of existing and new intrusive features within the landscape where possible.

Site Landscape Character

- 5.21. The Site comprises of a series of medium contained fields enclosed by the M56 Motorway to the south, the M6 Motorway to the east, B5356 Grappenhall Lane to the north and the Barleycastle Trading Estate to the west. The fields are predominantly pastoral farmland and improved grassland with mature hedgerow boundaries following a gently undulating topography representative of the Appleton Thorn Character Area. To the north of the Site, within the site boundary, three fields are used for arable farming; growing barley, see Appendix 4.1 Figure 15. The field patterns are predominantly rectangular enclosed fields with relatively straight-sided hedgerows. A number of field boundaries within the remainder

of the Site are not enclosed within this rectangular pattern, as hedgerows terminate internally to form larger irregular shaped fields.

- 5.22. A number of existing buildings and sheds in the centre of the Site form a working farm and farmhouse. The size and scale of these buildings are representative of the other working farms and farmhouses within the Appleton Thorn Character area. Immediately adjacent to the western site boundary the Appleton Thorn Trading Estate and further to the south the Barleycastle Trading Estate, provides precedent for larger scale development within the area. Large metal clad units ranging from approximately 1 to 3 storeys in height within the Appleton Thorn Trading Estate are highly visible on the ridgeline of the escarpment. These are particularly visible within the background of the views experienced by local residence along Barleycastle Lane, Broad Lane and Cartridge Lane.
- 5.23. A scheduled ancient monument, in the form of a moat, surrounds the farmhouse, which is enclosed by tree vegetation and field boundaries. The scheduled monument is in good condition and is reported to have survived well. It is described as a good example of a moated medieval manor house. The moat remains water filled and within the island are two occupation phases, which survive beneath the present house and gardens. The moat surrounding the island is c. 10m wide and 2.5m deep. Part of the moat has been disturbed through the creation of an ornamental pond on its east side. Access is currently gained from a causeway also on the east side, which replaced an earlier drawbridge.
- 5.24. The moat was first depicted on mapping dating back to 1735. This mapping identifies the hall to the north east of its current position and the moat extending beyond its present location. The location and extent of the moat was considerably altered between the early 18th and early 19th century with later maps showing the addition of a number of outbuildings and agricultural buildings immediately to the north west of the moat. A watching brief undertaken as part of extension works to the present house reveals poorly constructed cobbled surface associated with the present house and a layer of clay believed to be arising's from the excavation of the moat.
- 5.25. The moat historically would have been isolated from the historic built form of Appleton and would have had greater prominence within the landscape than it currently enjoys. Built form in the form of residential properties within Bradley Hall Cottages, Bradley View and within the immediate context of the site boundary; as well as industrial built form of the Appleton Thorn Trading Estate and Barleycastle Trading Estate within the immediate site

context and the out buildings and agricultural buildings immediately adjacent to the north west of the moat have encroached on to the setting of the Scheduled Ancient Monument, therefore, degrading the open aspect previously enjoyed.

- 5.26. A number of cottage type properties are located adjacent to the Site boundary along the existing access road. These properties sit in the middle of the ; however, the Site and proposed development on multiple sides envelops these 8 (number) properties.
- 5.27. To the southeast of the Site, within the Site boundary, lies Bradley Gorse, which contains a number of deciduous broadleaved woodland species. A water body in the form of Bradley Brook and additional irregular fields define the southern site boundary.

Green Belt

- 5.28. The assessment of the Green Belt has been undertaken in the Planning Statement (Doc Ref: PO-TP-SPA-RP-P4055-0020-00). The NPPF states under paragraph 113: “the fundamental aim of Green Belt policy is to prevent urban sprawl by keeping land permanently open; the essential characteristics of Green Belts are their openness and their permanence”. Elements of these open characteristics are visible within the Site, including the arable and pastoral fields with hedgerow boundaries of varying levels of enclosure. However, this element of openness is not continued within the immediate context of the Site due to the presence of the Appleton Thorn and Barleycastle Trading Estates to the west and south of the Site as well as the M56 and M6 Motorways, which contain the Site to the east and south. There are elements of openness experienced to the north of the Site with approximately 1.5km of arable and pastoral land present between the Site and Grappenhall, however, existing residential properties along Cartridge Lane and Cliff Lane separate the Site from this arable and pastoral provision. These properties set a president for development within the area and help to create the boundary for within which, future development could be undertaken.
- 5.29. The Green Belt Assessment Final Report (October 2016) states that the Warrington Green Belt Area is contiguous with the Green Belt in Merseyside, Greater Manchester and North Cheshire. The Cheshire Structure Plan 1977 identifies the size of the Warrington Green Belt, which covers a large expanse to the south of Warrington.

- 5.30. As part of the assessment the report assess a number of parcels of land within the Green Belt against the 5 purposes of the Green Belt as set out within the NPPF:
- a. “to check the unrestricted sprawl of large built-up areas;
 - b. to prevent neighbouring towns merging into one another;
 - c. to assist in safeguarding the countryside from encroachment;
 - d. to preserve the setting and special character of historic towns; and
 - e. to assist in urban regeneration, by encouraging the recycling of derelict and other urban land.”
- 5.31. The Green Belt Assessment identifies 2 parcels within the site boundary as AT7, AT8 (see **Appendix I – Figure 16**). In both cases the parcels are considered by the assessment to provide strong contributions to purpose 3 ‘the safeguarding of the countryside from encroachment’ due to their openness and non-durable boundaries. Within Section 4.4.3 ‘Parcel Assessment’ the Warrington Borough Council Green Belt Assessment defines the attributes considered for the assessment of the five purposes of the Green Belt. Within Purpose 3, the document states that a strong degree of openness is applied to parcels considered to contribute “to openness in a strong and undeniable way, where removal of the parcel from the Green Belt would detrimentally undermine the overall openness of the Green Belt.” The parcels are also considered to contribute moderate contributions to purpose 5 ‘to assist in urban regeneration, by encouraging the recycling of derelict and other urban land’ through the Mid Mersey Housing Market Area containing 2.08% brownfield urban capacity for potential development; and weak to no contributions for the remaining purposes identified. The assessment considers both parcels to have non-durable boundaries with references being made to areas surrounding the Site such as the boundary with Bradley Brook where ‘although tree lined, some of the trees are intermittent and therefore it does not represent a durable boundary which could prevent encroachment’ therefore, visibility of the existing industrial units within Appleton Thorn and Barleycastle Trading Estates are possible from within the two parcels.
- 5.32. The boundary of parcel AT7 comprises of tree planting along the western / south-western boundary, intermittent hedgerows and tree planting along the eastern and southern boundaries (allowing views of the trading estate immediately to the rear) and hedgerows

planting along the northern boundary. The BS5837:2012 Arboricultural Survey and Impact Assessment (see **Appendix 4.4**) considers the tree planting identified within this parcel to be predominantly in good condition with only a number of over mature willow species in the south-west corner being considered to be in a poor condition.

- 5.33. Parcel AT8 contains hedgerow boundaries both externally and internally. Externally along the northern, western and partial eastern boundary, and internally, through the centre of the site, leading from the eastern boundary of the parcel and terminating in the centre of the field. The southern and northern boundaries of this parcel incorporate tree planting, which are predominantly considered to be in a good condition. Although some mature willow and oak species have been identified within the Arboricultural Survey as being in a poor condition and a number of willow trees have also been considered to be of a moderate condition.
- 5.34. The remainder of the Site contains similar features to the parcels identified above, with predominantly tree planting along the southern boundary; hedgerow planting along the northern boundary; linear hedgerows moving within the Site; and groups of tree planting of varying conditions throughout the Site. Trees of particularly high quality and condition have been identified to the north of the Site along the A50 Cliff Lane; within the Site near to the Scheduled Ancient Monument; and within the ecological mitigation area and Bradley Gorse.
- 5.35. The hedgerows across the Site have been determined by the Arboricultural Survey to be of low landscape value, due to “their overall species-poor composition, intensively managed nature and subsequent overall low height”. This lack of mature established hedgerow planting is in keeping with the wider Appleton Thorn Landscape Character Area.

Topography

- 5.36. The existing contours of the Site fall from +67.58m in the northwest to +51.51m in the southeast. The brook that defines the Sites southern boundary follows the gently sloping topography of the area.

Lighting

- 5.37. The Updated Light Technical Assessment for the Site, Doc Ref:1015524-RPT-LG-0023 (See Appendix 16 of the ES Addendum Part One Report) does not identify any existing lighting structures within the Site boundary. The document states that there is no existing lighting

at the Six56 Warrington Site that contributes to the light spill into the surrounding roads and residential buildings. The existing farm building within the Site will create some light and ambient light from street lighting along junctions 20 & 20A of the M6 Motorway, Junction 9 of the M56 Motorway, A50 Cliff Lane and the B5356 Grappenhall Lane as well as the residential properties surrounding the Site provides limited visibility at night-time.

Transport Links

- 5.38. The Site is bounded to the north by the B5356 Grappenhall Lane and to the east by the M6 Motorway with junction 20 located in the north-east corner of the Site. The northbound slip road linking the M56 Motorway and M6 Motorway forms the south-eastern boundary with the majority of the southern boundary adjoining agricultural land lying between Barleycastle Trading estate and the Site. To the east the Site borders the Appleton Thorn Trading Estate, which are both accessed from the Barleycastle Lane, which runs northwest southeast beyond the Site.

Public Rights of Way (PROWs) and Cycleways

- 5.39. PROW and Cycleways are shown on **Figure 2 of Appendix 4.1** together with definitive footpath references. Two PROWs cross the Site, Appleton FP23 runs north-south past Bradley Hall and Appleton FP28 runs east-west linking up with the former to the immediate north of the hall. National Cycle Route 62 Trans Pennine Trail (West) runs east-west along the Manchester Ship Canal approximately 3km to the north of the Site.

Visual

- 5.40. Desktop and field investigations have indicated that the Site is generally screened from extensive views to the south and east beyond the M56 Motorway and M6 Motorway corridors, but test viewpoints were checked in the fields to collaborate this. To the north, the land slopes gently northwards and a higher number of views were anticipated. Views to the west are largely restricted by existing development. **Figure 4 of Appendix 4.1** shows the proposed Zone of Theoretical Visibility (ZTV) resulting from desktop analysis and field observations.
- 5.41. A total of 25 viewpoints have been selected and agreed with WBC as being representative viewpoints of the Site from within the study area. Of these viewpoints it was agreed that

wireframe photomontages would be prepared for 10 no. viewpoints and these are viewpoints 6, 7, 9, 15, 16, 18, 20, 21, 22 and 24 Wireframe models are of the proposed building units only and do not included landscape proposals such as planting or other external infrastructure. Baseline viewpoint descriptions are provided in **Table 4.11** below, distances are approximated to the nearest boundary.

Viewpoint 1 Barleycastle Lane		
NGR	Distance to Development	Visual Receptor
SJ 65683 83839	330m	Residential properties, road users, pedestrians
Baseline: Located by a field gate close to Tan House Cottage at southern end of the lane. The view northwards across agricultural fields towards the southern boundary of the Site. When tall crops are not growing, views will be possible towards the riparian vegetation along Bradley Brook and fields within the Site beyond. A dense hedgerow with regular trees forms the eastern boundary to the view with mature trees in Wright's Covert visible in the background beyond the hedge line. Views north westerly will be across fields but will be less rural in nature with industrial units within Appleton Thorn Trading Estate forming the backdrop.		
Viewpoint 2 PROW Appleton FP23/Barleycastle Lane		
NGR	Distance to Development	Visual Receptor
SJ 65613 83891	300m	Residents, road users, pedestrians
Baseline: Adjacent to Birchels Gorse residential property the location marks the junction of the PROW with Barleycastle Lane, the former which runs north towards Bradley Farm. The property screens views westwards and views are focused northwards to the southern boundary of the Site and Bradley Brook. Views north-easterly are towards Bradley Gorse and Wright's Covert, the tops of which are just visible. The view is a rural one although traffic noise from the nearby motorway network can be audible. There are sections of hedgerow along Barleycastle Lane which are reasonably dense and which screen or filter views either side of the road.		
Viewpoint 3 PROW Appleton FP23		
NGR	Distance to Development	Visual Receptor
SJ 65665 84197	0m	Pedestrians
Baseline: The viewpoint is where the PROW crosses Bradley Brook, which is crossed via a narrow footbridge. The location is close to the centre of the Site and shows a large field structure with hedgerows but relatively limited tree cover, particularly along the hedgerows. The ground continues to rise gently northwards with the result that the middle ground forms the horizon, which extends to Bradley Hall in the north, Bradley Copse to the east and industrial units on the edge of Appleton Thorn Trading Estate to the west. A small telecommunication tower is visible on the edge of Bradley Gorse and an LV overhead power line runs north-south across the centre of the view. The view is pleasantly rural with the exception of low industrial units on the eastern edge of the trading estate but which are not overly dominant.		
Viewpoint 4 PROW Appleton FP23		
NGR	Distance to Development	Visual Receptor
SJ 65813 84421	0m	Pedestrians
Baseline: The view is just to the south of Bradley Hall, which is approximately at the centre of the Site. Bradley Gorse forms the south eastern boundary of the view with the eastern boundary hedgerow being clearly visible across open fields and maturing vegetation along the M6 Motorway forming the horizon with vehicles on it are not visible. To the west views are across the Site towards Barleycastle Lane and the M56 Motorway although neither is visible due to hedgerow cover. The view is relatively contained with Bradley Hall Cottages visible to the north of the Hall.		
Viewpoint 5 PROW Appleton FP23		
NGR	Distance to Development	Visual Receptor
SJ 65749 84687	0m	Pedestrians
Baseline: Located to the north of Bradley Hall and adjacent to Bradley Hall Cottages. A combination of farm outbuildings and dense hedgerows contain views to the east and south. To the west longer views are possible across the Site towards the tops of unit roofs within the Trading Estate with the LV overhead power line visible. Views are, however, generally restricted in this location.		
Viewpoint 6 PROW Appleton FP23/Bradley View		
NGR	Distance to Development	Visual Receptor
SJ 65879 84853	0m	Residents, pedestrians
Baseline: Further north of this location the PROW terminates with A50 Cliff Lane opposite Howshoots Farm. Bradley House is immediately to the north and contains views in this direction. Eastern views are open towards the boundary of the Site with Howshoots Farm visible and Bradley Gorse further to the south boundary vegetation		

along A50 Cliff Lane generally screens views beyond although bridge associated with slip roads to the M6 Motorway is glimpsed between the trees just north of Bradley Gorse. Views within the Site extend further south between Bradley Gorse and Bradley Hall with the latter screening views to the south west and west.

Viewpoint 7 Cartridge Lane

NGR	Distance to Development	Visual Receptor
SJ 65238 84823	80m	Residents and road users
Baseline: The northern boundary hedgerow to the Site is just visible across dense hedgerows either side of a narrow field situated between Cartridge Lane and the B5356 Grappenhall Lane. Views of the Site itself are not possible due to the dense hedgerows and the view is restricted largely to the near ground with some hedgerow trees skylined. Manor Farm is orientated with windows north-south with south facing gable windows, which are aligned towards the Site. A number of properties along the lane, however, are orientated east-west with a greater number of windows facing the Site.		

Viewpoint 8 PROW Grappenhall and Thelwell FP05

NGR	Distance to Development	Visual Receptor
SJ 65203 85015	280m	Pedestrians
Baseline: Properties and hedgerows running along Cartridge Lane, which forms the horizon due to the ground rising gently, restrict views south towards the Site. Views to the north east can glimpse the top of motorway infrastructure with distant views towards the greater Manchester conurbation possible. The viewpoint is, however, generally very contained.		

Viewpoint 9 PROW Grappenhall and Thelwell FP17/Cinder Lane

NGR	Distance to Development	Visual Receptor
SJ 65625 85461	380m	Road users and pedestrians
Baseline: The viewpoint is located due north of the Site where the PROW connects with Cinder Lane. The view towards the Site is across farmland where the topography drops into a shallow valley and then rises to up to B5356 Grappenhall Lane with A50 Cliff Lane Farm and its outbuildings forming the centre horizon. Other properties are also glimpsed between mature vegetation, which runs along the horizon formed by Cinder Lane. The tops of infrastructure associated with A50 Cliff Lane and M6 Motorway slip roads is visible to the south east. The Site itself is not visible from this location.		

Viewpoint 10 Broad Lane/Yew Tree Farm

NGR	Distance to Development	Visual Receptor
SJ 64333 85478	965m	Road users
Baseline: Located north-west of the Site the lane follows the topography in sloping gently north towards Grappenhall. Residential properties set back off Broad Lane to the south of the viewpoint are visible in the middle ground, which forms the near horizon. Due to the sloping topography and dense hedgerow structure, the Site is not visible. The view is rural with dense hedgerows but few hedgerow trees with distant views to the north of Winter's Hill Communication Tower above Horwich possible.		

Viewpoint 11 PROW Appleton FP17

NGR	Distance to Development	Visual Receptor
SJ 63804 84601	640m	Pedestrians
Baseline: West of the Site the viewpoint looks towards the Appleton Thorn Trading Estate but due to the topography sloping north, from this location relatively little of the units with it are visible with the near horizon formed by hedgerows along the B5356 Grappenhall Lane. Woodland strips running along New Lane to the south and west contain the view towards Appleton Thorn, which is not visible, with taller residential units on the southern edge of Grappenhall visible to the northwest. Similar to Viewpoint 10, more distant views are possible to the north and east towards the conurbation of Manchester and the Pennines. Views are, therefore, rural in nature but with middle and distant views of urban development. The Site is not visible from this location.		

Viewpoint 12 B5158 Cherry Lane

NGR	Distance to Development	Visual Receptor
SJ 66622 85410	510m	Road users
Baseline: Located north and east of the M6 Motorway, views of the Site are prevented by a combination of dense vegetation running along the western side of the lane and dense vegetation as well as buildings associated with residential properties along Cherry Corner and Lymm Fire Station. Views west and south are across open and well treed fields. Visual containment is, therefore quite high and the Site is not visible.		

Viewpoint 13 Swineyard Lane/Sworton Heath Farm

NGR	Distance to Development	Visual Receptor
SJ 68198 83992	1.89km	Road users
Baseline: The viewpoint is located south of the M56 Motorway and east of the M6 Motorway near where PROW High Legh FPI 1 enters the lane from the south. The topography is relatively flat with dense hedgerows lining either side of the lane. Views west are to the middle horizon with Jones's Covert off Fanner's Lane forming a dense vegetative screen to views further west and towards the M56 Motorway. The view is within the access road to the farm and the hedgerows along the lane screen views west with woodland of Moss Oaks and Fox Covert further south also screening views west and towards the M6 Motorway with the result that the Site is not visible. As a consequence the view is rural although the traffic on the motorway network becomes more audible the closer to it.		

Viewpoint 14 Moss Lane/Hobbs Lane Hill		
NGR	Distance to Development	Visual Receptor
SJ 68092 82600	2.41km	Road users
<p>Baseline: The viewpoint is surrounded large agricultural fields with scattered hedgerows and trees. The topography is reasonably flat and visual containment is quite high due to overlapping vegetation and denser woodland blocks. Views north-west towards the Site are screened by dense vegetation running north-south along Crowley Brook and the M6 Motorway with the result that the Site is not visible. Scattered settlements are visible within a wooded backdrop with the only views of any distance in a northerly direction.</p>		
Viewpoint 15 Pennypleck Lane		
NGR	Distance to Development	Visual Receptor
SJ 66265 82811	1.23km	Road users
<p>Baseline: The view north towards the Site is relatively contained due to dense and overlapping hedgerow vegetation with the Site not visible. Views east, south and west are very limited due to dense vegetation with only limited glimpses of buildings to the north-east.</p>		
Viewpoint 16 PROW Antrobus FP32		
NGR	Distance to Development	Visual Receptor
SJ 64887 81462	2.69km	Pedestrians
<p>Baseline: Located with level topography to the south of the Site, open fields surround the viewpoint with views generally contained to the middle ground with dense wooded blocks preventing more distant views. Only a few properties are visible, and the view is a rural one. The Site is not visible from this location.</p>		
Viewpoint 17 Woolston New Cut		
NGR	Distance to Development	Visual Receptor
SJ 63004 88847	4.66m	Pedestrians
<p>Baseline: Due to distance and topography the Site is not visible from this location and is scoped out of further assessment</p>		
Viewpoint 18 PROW Grappenhall and Thelwall FP05/Barry's Covert		
NGR	Distance to Development	Visual Receptor
SJ 65248 85272	510m	Pedestrians
<p>Baseline: The viewpoint is located to the west of Viewpoint 9. Hedgerow vegetation in the foreground screens views to the south towards the Site, in winter filtered views towards properties along Cartridge Lane will be visible. Views to the north and east are also relatively contained due to overlapping hedgerow vegetation and woodland blocks. The Site is not visible.</p>		
Viewpoint 19 PROW Lymm FP02		
NGR	Distance to Development	Visual Receptor
SJ 66259 85434	370m	Pedestrians
<p>Baseline: Located close and east of the M6 Motorway, the view is dominated visually and audibly by the M6 Motorway. Vegetation around the M6 Motorway/Lymm Service station roundabouts screens views to the Site with Howshoots Farm visible in the distance which is located just to the north of the Site.</p>		
Viewpoint 20 Wither's Lane		
NGR	Distance to Development	Visual Receptor
SJ 67028 84673	750m	Road users
<p>Baseline: Dense vegetation lines Bradley Brook with runs to the south of Lymm Service station. Outbuildings to Ivyhouse Farm are visible in the near middle ground and a combination of topography and dense vegetation screens views west and towards the Site. Residential properties, which occupy slightly higher land, are also unlikely to view the Site.</p>		
Viewpoint 21 PROW Appleton FP36/Arley Road		
NGR	Distance to Development	Visual Receptor
SJ 64424 83072	1.31m	Road users and pedestrians
<p>Baseline: Located where the PROW joins Arley Road views north towards the Site are heavily screened by dense vegetation along the M56 Motorway. Even from the centre of the bridge and for some distance north along the road, dense vegetation screens the Stretton Green Distribution Park and Barleycastle Trading Estate. The view east is over a disused airfield with wooded slopes around High Legh on the distant horizon. View west are over large gently rolling agricultural fields with the M56 Motorway more visible across the middle ground where it is at grade. Views south are restricted by vegetation and Burley Heyes Cottage. The Site is not visible from this location.</p>		
Viewpoint 22 PROW Grappenhall and Thelwall FP05		
NGR	Distance to Development	Visual Receptor
SJ 64699 85958	1.37m	Pedestrians
<p>Baseline: The viewpoint is located south of Viewpoint 18 and along the same PROW but occupies a lower position within a shallow valley. A combination of the topography and dense woodland blocks effectively screens views in all directions to the near or middle ground. A few properties are visible but the view is otherwise very contained compared to Viewpoint 9, which is further east and on slightly higher ground. The Site is not visible from this location.</p>		

Viewpoint 23 PROW Lymm FP02		
NGR	Distance to Development	Visual Receptor
SJ 66505 86126	1.14km	Pedestrians
Baseline: Located on the same PROW as Viewpoint 19 but further north of the Site dense hedgerows and poplar plantations screen views south and west. Views north are similarly screened by hedgerow vegetation and only views onto fields south and east of the Site are visible. Should the plantation be removed, the view closer to the Site from Viewpoint 19 suggests views would still not be visible.		
Viewpoint 24 PROW Appleton 24		
NGR	Distance to Development	Visual Receptor
SJ 64277 84085	770m	Pedestrians
Baseline: Located at the end of properties along Yew Tree Lane, which turns into the PROW. The view is across agricultural fields with dense hedgerow and tree planting restricting views beyond the middle ground. The upper portions of some units within the Barleycastle Trading Estate are visible to the west and southwest but these only glimpsed whilst trees are in leaf. A more distant view is possible in any north-west direction across Grappenhall Lane. The Site is not visible from this location.		
Additional Viewpoints for the A50 Cliff Lane Roundabout Relocation, not formally agreed with WBC		
Viewpoint 25 A50 Cliff Lane		
NGR	Distance to Development	Visual Receptor
SJ 65790 85110	0m	Vehicular & Pedestrian
Baseline: Located along A50 Cliff Lane facing south towards the Site boundary. The view is comprised of the existing trees along A50 Cliff Lane. The A50 Cliff Lane roundabout is visible in the middle ground of the view. The main developable area within the Six56 boundary is visible in the background of the view.		
Viewpoint 26 A50 Cliff Lane Roundabout		
NGR	Distance to Development	Visual Receptor
SJ 65829 85017	0m	Vehicular
Baseline: Located in the centre of the A50 Cliff Lane roundabout facing west towards the B5356 Grappenhall Lane. The view consists of the A50 Cliff Lane roundabout. The main developable area of the Site is visible in the centre of the view. Howshoots farm the north east of the Site is visible to the left of the view in the background. The existing entrance into the Site and start of the Appleton FP23 footpath are located on the opposite side of the road to Howshoots farm along A50 Cliff Lane.		
Viewpoint 27 Junction of Cartridge Lane and the B5356 Grappenhall Lane		
NGR	Distance to Development	Visual Receptor
SJ 65675 84925	0m	Vehicular
Baseline: Located on the junction of Cartridge Lane and B5356 Grappenhall Lane facing east towards the A50 Cliff Lane Roundabout. The view consists of the road junction and corresponding grass verges and boundary hedgerow and tree vegetation. The A50 Cliff Lane roundabout is located in the centre background of the view; however, the majority of the roundabout is screened from view by intervening hedgerow and tree vegetation. The main developable area of the Site is visible to the right of the view.		

Table 4.11: Summary of Representative Viewpoints

Summary of Landscape and Visual Baseline

- 5.42. The Site and its immediate surroundings are relatively rural in character and is predominantly farmland with a medium sized field structure. There is a dense hedgerow structure and occasional woodland blocks or copses are regular and consistent features in the landscape giving it a coherent structure and appearance.
- 5.43. ~~The presence of the industrial parks to the west strongly influence the character of this side of the Site, however, as the buildings become more visible, Built form in the local area is characterised predominantly by large scale industrial development, particularly to the west and south of the Site boundary. Large floorplate, large scale (approximately 1 - 3 storeys) warehouse buildings are highly/moderately visible, contain views and reduce the openness~~

and visual amenity of the greenbelt. The Warrington Borough Council Green Belt Assessment identifies two parcels of land within the Site boundary as providing strong contributions towards protecting the countryside from encroachment due to the openness and open long line views present within these parcels, however, these views to the south, west and east are contained by the industrial units identified above as well as the manmade features such as the M56 and M6 Motorways. Longer views are possible to the north of the site, as identified within the Zone of Theoretical Visibility (Appendix 4.1 – Figure 6). It should be noted that the Zone of Theoretical Visibility has been formed using landform data and does not take into consideration the screening provided by existing built form or vegetation. Views to the north will be interrupted close to the site boundary by the residential built form along the A50 Cliff Lane and Cartridge Lane as well as the boundary vegetation for these properties and the surrounding arable and pastoral fields.

- 5.44. To the north, the land slopes gently towards Grappenhall and is attractive rural countryside, which from certain locations offers longer distance views towards the north and east. Vegetation associated with highways infrastructure limits views both into and out from the Site. Views south are similarly rural in nature but are largely screened from extending beyond the M56 Motorway. Views east are also generally contained by vegetation associated with the M6 Motorway and the woodland blocks within the Site.
- 5.45. Views from south of the M56 Motorway are generally not available due to the density of hedgerow vegetation, woodland blocks and copses, as well as mature vegetation along the M56 Motorway.
- 5.46. Sensitive ~~visual~~ visual receptors are also limited due to the rural nature of the area ~~with a multitude of small lanes serving only a relatively small number of scattered properties.~~ A small number of properties are located close to or surrounded by the proposed development. These will be most sensitive to change due to the scale and close proximity of development and limited opportunity to mitigate effects.
- 5.47. Similarly, to the north of the Site, the land is generally farmland with few properties until Grappenhall and has far fewer roads serving crossing the area than to the south. Existing large scale buildings associated with adjacent industrial parks and dense vegetation around the M6 and M56 motorways to the west and east of the Site provide visual containment and limit visual effects beyond these Site boundaries ~~are more visually contained by the industrial~~

~~parks to the west and dense vegetation around the M6 Motorway and the slip roads associated with it and the M56 Motorway.~~

Future Conditions

- 5.48. The Application Site is predominantly farmland (arable and pastoral) with a wide-open aspect containing hedgerows and hedgerow trees, the latter in the main following Bradley Brook, which runs east-west across the Site. Bradley Hall Farm consists of a farmhouse and a series of out buildings as well as a number of residential properties nearby. Bradley Hall moated site is a Scheduled Ancient Monument (SAM) located in the eastern portion of the Site. Wooded areas occur within the Site, most notable being Bradley Gorse and Wrights Covert, which are located in the south east of the Site and existing PROW cross the Site.
- 5.49. Should development of any kind not take place it is reasonable to assume that the area would continue to be farmed with the possibility of additional farm buildings or residential extensions or conversions, the latter subject to planning permission. The adjacent industrial estates of Barleycastle and Appleton Thorn could also seek to expand but this would similarly be subject to planning permission.

Potential Sources of Effects

- 5.50. Based on the scheme description there are a number of potential landscape and visual effects which may occur during the construction and/or operational phases. These include:
- Construction site establishment works including access creation, vegetation clearance, particularly of mature scrub and trees;
 - The introduction of construction activity and vehicular/personnel movements around the Site and local roads including reflections and hazard lighting;
 - Establishment of site cabins and compound with security fencing and lighting;
 - The disturbance of landform resulting from large-scale earthworks;
 - The construction of hard standings and large-scale building units with associated construction plant such as cranes as well as scaffolding;
 - Loss or disturbance of existing landscape features including mature vegetation;

- Changes to the boundary of the Site, in particular to mature trees and existing landform;
- Changes to existing landscape character;
- Demolition of existing buildings e.g. Bradley Hall Farm;
- Changes to the landscape setting of a Scheduled Ancient Monument, Bradley Hall Farm;
- Changes to the visual setting of Bradley Hall Cottages and Bradley Hall View, which are properties adjacent to the Site;
- Changes in view which for some receptors are likely to be substantial in terms of size, scale and duration;
- Introduction of major new features e.g. buildings and infrastructure, the latter including access roads, external storage, lighting structures; and
- Diversion of a PROW and the loss of recreational route through the Site.

Key Sensitive Visual Receptors

5.51. The baseline for this assessment has identified a number of key visual receptors within the immediate vicinity of the Site as well as within the Site’s boundary. These include:

- Residential receptors including Bradley View, Bradley Hall Cottages, Bradley Hall, properties along Barleycastle Lane, Cartridge Lane and the A50 Cliff Lane;
- Users of the Public Right of Way Appleton FP23, Grappenhall and Thelwall FP05, Grappenhall and Thelwall FP17;
- The Scheduled Ancient Monument of the Bradley Hall moated site.

5.52. For information regarding the scale and focus of the views experienced by the visual receptors identified above see Table 4.11 Summary of Representative Viewpoints above.

Primary Mitigation Measures

5.53. During the scoping stage a number of potential adverse landscape and visual impacts were identified. The main impact generators were:

- Increase of traffic movement – effecting highways corridor including the impact on and setting of hedgerows and trees
- Loss of farmland – removal of internal field boundaries including hedgerows and hedgerow trees
- Construction buildings and mechanical plant – forming anomalous feature in the landscape
- Earthworks for development plateaus and the creation of new SuDs systems – changing the form and topography of the landscape locally
- Materials storage, importing new topsoil (the removal off-site of existing topsoil), the erection of site compounds, hoarding and the use of security lighting – notional changes in the night sky, loss of dark sky, mollified by presence of Motorway and Services lighting

5.54. ~~and m~~ Mitigation measures have been embedded into the design to avoid or reduce them. Often referred to as ‘primary’ mitigation measures, these include:

- Retention of boundary vegetation wherever possible (in particular around the SAM and the southern boundary to limit impacts on the SAM and listed building on Barleycastle Lane);
- Lowering existing ground levels to reduce the visible height of proposed buildings;
- Lowering building heights surrounding the scheduled ancient monument and creating sense of openness around the SAM;
- Careful selection of building cladding and roofing materials using muted colours and non-reflective surfaces;
- Extensive perimeter bunding and screen planting to soften the visibility of new building structures; In order to respect the setting of the SAM, the bund to the south of Plot 1 has been reviewed and partially realigned. As previously, the bund bounds the east of

Plot 1 and continues to separate the site from Bradley Hall Cottages. The revised alignment occurs at the most southerly end of the bund, whereby it now continues to wrap around the perimeter of Plot 1, alongside the car park and its access road, before terminating at the adjoining roundabout. This respects the 30m no development offset and means that open space between the SAM and Bradley Hall Cottages is not severed by the bund, which in turn strengthens the sense of openness around the heritage asset. To facilitate realignment of the bund, the pond north of the SAM has been remodelled to suit the adjusted landform. As part of the bund realignment, acoustic modelling has permitted the removal of some fencing to the top of the bund to the south east corner of Plot 1, including the section in closest proximity to Bradley Hall Cottages. Hedging will be retained and reinforced with post and wire fencing to protect the change in level between the top of the bund and ground level of Plot 1.

- Incorporation of reinforced slopes within the bund on the side of the proposed unit in order to reduce the impact of the bunds visually from residential receptors, which could be overshadowed by these elements;
- The incorporation of extensive areas of new landscape throughout the development including planting and habitat creation features;
- Encouraging habitat movement throughout the Site, leading to the Ecological Mitigation area in the south east corner of the Site;
- Avoidance of light pollution – refer to Lighting Assessment, Document Reference: I015524-RPT-LG-002 (See Appendix 16 of the ES Addendum Part One Report).

6. Alternatives Considered

- 6.1. A series of alternatives have been considered as part of the evolution of the proposals. These are documented within the ES Part One Report, identifying how environmental considerations have influenced the proposals.
- 6.2. The Landscape proposals seek to mitigate the loss of existing habitats by, where possible, removing the need for level change. This will allow for the retention of mature existing vegetation within Bradley Gorse and surrounding the Scheduled Ancient Monument.

Cut and Fill

- 6.3. The existing site topography will be levelled off in order to accommodate the proposed units and the corresponding drainage strategy. The cut and fill for the proposed unit boundaries will see the adaption of the existing levels from a range of -5.65 to +3.91 further information can be found within the Earthworks Cut and Fill Analysis, Drawing No: CLXX(52)4001 (See Appendix 7 of the ES Addendum Part One Report).
- 6.4. Excavated material will be used to create screening bunds rather than seeking to remove this material off site. ~~This new bunding will require the creation of maximum 1:3 gradient slopes, as this will be a natural self-stabilising slope. This also enables planting to be incorporated along the bund. This new bunding will incorporate 1:3 gradient slopes (self stabilising), which will allow for planting to be incorporated along the bund. A number of the bunds will incorporate steeper gradients, which will require reinforcing on one or either sider of the bund. This will be undertaken in order move the bunding further away from the residential properties surrounded by the Site in order to ensure the bund does not become a more imposing feature visually for views out of the properties. The ridge of the bunding, which will incorporate the reinforced gradient slope, will stand approximately between 3 and 6m higher than the existing residential properties of Bradley View and Bradley Hall Cottages. These bunds will also incorporates fencing, which will screen visibility of the Proposed Units as well as forming an acoustic barrier to the residential properties from the works being undertaken within each plot. The formation and the planting of the bunding should be undertaken at the earliest opportunity in order to ensure that any hedgerow and tree planting introduced are given the greatest amount of time to establish themselves and~~

provide as strong a screen as possible of the proposed built form once the operational stage commences.

Screening of Acoustic Fencing

- 6.5. As part of the engineering works to reduce the amounts of noise experienced by the residential properties surrounded by the Site Boundary (Bradley Hall, Bradley Hall Cottages & Bradley View) acoustic fencing will be incorporated along the bunding to the west of Plot 2. This acoustic fencing will be approximately 3m high on top of the proposed bund. Hedgerows will be incorporated adjacent to the acoustic fencing in order to soften the impact of the fence within the views experienced by the residential properties. New tree planting along and in front of the proposed bund will further screen views of this fencing and the proposed unit within Plot 2 for these residential receptors.

Preserving Habitat / Ecological Mitigation

- 6.6. The area to the south-east of the Site has been left untouched by built form in order to preserve the existing mature vegetation within Bradley Gorse and create an ecological mitigation area to help offset the effects of the development on the rest of the Site. Hedgerow planting has been incorporated throughout the Site to provide a safer movement route for species such as great crested newts, throughout the Site, leading species from the wildflower meadowland in the centre of the Site, around the perimeter of Zone D2 ~~avoiding the vehicular trafficked areas,~~ to the Ecological Mitigation Zone to the south-east, this route is crossed by the revised access route for Plots 2 & 3 which is to be set down into the ground and will not be lit in order to visually reduce the impact of the manmade elements present within the area, for more information see Heritage Parameters Plan (Appendix 5 of the ES Addendum Part One Report).

Impact on Heritage Assets

- 6.7. A development offset around the Scheduled Ancient Monument has been installed to protect the setting of the monument itself and the sense of openness to allow appreciation of the monument. ~~In order to bring visitors into contact with scheduled ancient monument the existing PROW Appleton FP23 will be moved to the west to bring users closer to the monument.~~ The existing unnamed road, which the PROW Appleton FP23 traverses will be

retained and in addition to the PROW will be extended to circle around the perimeter of the monument before re-joining Appleton FP23 on the opposite side. Amendments to the public rights of way proposed can be found on the Access and Circulation Parameters Plan (Appendix 5 of ES Part 1 Report and Constraints Plan – Appendix 8 of the ES Part 1 Report) The additional footpaths whilst located within the offset area will not be distinctly marked by hard surfaces such as tarmac or stone chippings, instead the route will be through a wildflower meadow therefore allowing access whilst maintaining the setting of the monument. Building heights within close proximity have been reduced to protect the setting of the monuments.

- 6.8. The previous masterplan created for the Site as presented within the first submission of the ES Part 2 Report saw the incorporation of an access route between the SAM and Plot 1. This road cut across the PROW leading towards Plot 2, where the road would move north along side the PROW and Bradley Hall Cottages, towards the car parking provision for Plot 2 immediate adjacent to Bradley View. The road would also lead south to Plot 3, whose parking provision would abut the PROW to the south of the SAM. The revised scheme repositions the access route to the south of the SAM. This access route will not incorporate lighting columns to ensure that the views from the properties within Bradley Hall Cottages and Bradley View as well as the Scheduled Ancient Monument will not be affected by light emitting from these columns during the night-time. The descending topography across the site from the north to the south will help to ensure that the relocated road will blend into the topography when viewed from the properties and SAM mentioned above.
- 6.9. The proposed building within Plot 3 has been relocated further to the southeast to make room for the relocated access road, therefore, creating a buffer between the proposed built form and the PROW as well as increasing the distance between the proposed built form and the SAM. Additionally the parking provision for Plot 2, originally located to the north of the proposed unit, has been relocated to the south of Plot 2. The larger space to the north will now incorporate bunding, which will help to filter views of the proposed units from the PROW and Bradley View. The proposed car parking provisions within Plot 3 and lorry parking provision to the west of the proposed unit within Plot 2, are sunken in comparison to the residential receptors of Bradley View Cottages and Bradley Hall, further helping to limit the impact of the proposed units for these receptors.

- 6.10. Realignment of bunding has resulted in bunds being located at greater distance from the SAM so that the bund to the south of Plot 1 wraps around the car park and terminates close to the new roundabout. This means retention of a robust development offset from the SAM and that there is more appropriate landscape connection between the SAM and Bradley Hall Cottages.

7. Potential Environmental Effects

- 7.1. The assessment is divided between an assessment of the potential landscape and visual effects, which take into account the primary mitigation measures, which have been embedded into the design of the development. Landscape effects are considered firstly with an overview assessing the key baseline aspects before focusing on an assessment of the effects of the development upon the landscape at the construction and operational stages. Summary tables for both stages are also provided for ease of reference.
- 7.2. The visual assessment uses, primarily, the representative viewpoints selected to assess the overall visual effects of the development upon the receptors identified. Similar to the above, baseline aspects are firstly reviewed before considering the effects of development at the construction and operational stages of the development. Viewpoint summary tables are provided encompassing both stages.
- 7.3. During the construction stage the effects are likely to vary in magnitude throughout this period depending on the scale, type and range of activities occurring or having been completed at any one time. Operational landscape and visual effects are considered at the commencement of operations year 1 assuming all construction activities have been completed including mitigation measures.

Assessment of Landscape Effects – Overview

Landscape Value

- 7.4. The Site is not within a designated landscape and the only designation within the study area is the Scheduled Ancient Monument of Bradley Hall moated site, see **Figure 2 of Appendix 4.1**. The Site itself is currently within Green Belt within the Local Plan Core Strategy (July 2014) and saved proposals Map. The Site, however, forms part of a wider area identified for future growth within the emerging new Local Plan (~~Preferred Options Consultation – July 2017~~) as a site for employment and a future site of possible development.
- 7.5. In terms of local, undesignated value, the Site is currently farmland, which is accessible via PROW. The Site is also visible from the roads around the Site, particularly to the north and

east where views into and across the Site can be glimpsed. In view of the above, Landscape Value is considered to be **Medium**.

Landscape Sensitivity

- 7.6. The Site is agricultural land and, therefore, development will constitute a major change in land use. The WBC LCA records the skyline location of the character type, hedgerows and views of Appleton Thorn Church as being sensitive landscape elements. The WBC LCA also recognises that there has been a high level of change throughout this character type, largely at the expense of agricultural land as through development and the decline in hedgerows and hedgerow trees. Coupled with the assessment of Landscape Value, Landscape Sensitivity is considered to be **Medium**.

Landscape Condition

- 7.7. Similar to the assessment of landscape sensitivity above, the agricultural nature of the land, primarily for arable and pastoral uses, implies that it is in reasonable condition. From a landscape perspective and as has been identified within the national and local landscape character assessments, the amount and quality of existing hedgerow and tree cover is in decline. In a wider context, the presence of large-scale infrastructure in the landscape, such as the M6 Motorway and M56 Motorways, as well as the nearby industrial estates, are all visual detractors, which fragment the rural character of area. The WBC LCA considers landscape management objectives geared towards strengthening existing field patterns and the restoration and management of hedgerows as key objectives. Landscape Condition is, therefore, considered to be **Medium**.

Environmental Designations

- 7.8. The Site does not have any environmental designations and there are none within the study area. There are three Tree Preservation Orders (TPO). Environmental designations are, therefore, considered to be of **Low Sensitivity**.

Cultural and Historical Resources

- 7.9. The scoping stage has identified that although there are a number of listed buildings and scheduled monuments within the study area, scoping has determined that there is only the Scheduled Ancient Monument within the Site although there are a number of listed

properties within the study area. The NPPF considers heritage assets to be irreplaceable and, therefore, great weight should be given to the conservation of the asset and its setting, with greater weight applied to the more important assets. The Scheduled Monument is, therefore, considered to have a value, which is **High**.

Landscape Character

- 7.10. Existing Landscape character assessments have been reviewed and there is a consensus between the WBC LCA in which the Site falls within, and the adjacent Cheshire East LCA that the area of the Site and its local surroundings are areas which have experienced a lot of change particularly as a result of development pressures and the decline in hedgerow and tree cover. Attention is drawn in both LCAs to the desire to control and mitigate views of development and to avoid developing in visually prominent locations. There is also a common desire through landscape management objectives to protect the existing wooded character retaining the overall sense of enclosure, screening the visual and audible effects of existing and new intrusive features within the landscape where possible.
- 7.11. The Proposed Development will result in a major change to the character and appearance of the Site through extensive earthworks and vegetation clearance. At national level this is not significant in terms of landscape character, reflecting the size of the character units and the relatively limited visibility of the Site. The effect at local level will be more significant occupying a large segment of the eastern portion of the local character type.

Green Belt

- 7.12. As stated previously the assessment of the Green Belt has been undertaken in the Planning Statement (Doc Ref: PO-TP-SPA-RP-P4055-0020-00). The Warrington Borough Council Green Belt Assessment states for Purpose 3 'To assist in safeguarding the countryside from encroachment' that a strong degree of openness is applied to parcels considered to contribute "to openness in a strong and undeniable way, where removal of the parcel from the Green Belt would detrimentally undermine the overall openness of the Green Belt." In relation to the character of the Green Belt, the proposed development will not be considered a significant change due to the extensive size of the Warrington Green Belt in relation to the proposed development. At a local level, the Proposed Development will cause a moderate change in the characteristics of the Green Belt with the loss of openness, however, due to the proposed units replacing the open arable and pastoral

fields currently present on site, however, it should also be considered that the elements of openness and permanence, have already been degraded within the immediate context of the Site, via the presence of the Appleton Thorn and Barleycastle Trading Estates to the west and south of the Site, as well as the M56 and M6 Motorways to the east and south of the Site.

7.13. Within the Site boundary the Warrington Borough Council Green Belt Assessment has identified parcels AT7 & AT8, which are identified as providing a strong contribution to safeguarding the countryside from encroachment due to the openness and non-durable boundaries present on Site. However, as stated above, a number of the long distance views and openness considered to be present within the Site have already been curtailed by the presence of the Appleton Thorn and Barleycastle Trading Estates to the west and south; and the M56 and M6 Motorways to the east and south of the Site. Long distance views to the north though still existing are partially filtered by existing residential built form along the A50 Cliff Lane and Cartridge Lane and the boundary vegetation of these properties and the surrounding arable and pastoral fields.

7.14. The parcel of land to the south of the Site, identified as parcel AT9 within the Green Belt Assessment, which also contains a similar assessment to parcels AT7 & AT8 has been granted permission for a proposed industrial development, further containing the views out of the two parcels within the Site boundary. The Site could, therefore, be considered to represent a natural extension, connecting the manmade features within the area i.e. the Trading Estates and proposed industrial development to the west and south of the Site boundary with the primary access routes for these industrial developments to the east of the Site boundary in the form of the M56 and M6 Motorways. For further information regarding the development within parcel AT9, please refer to Section 10 of this chapter.

Assessment of Landscape Effects - Construction Phase

7.15. Landscape effects during the Construction Phase will vary depending on the operations taking place and the scale and extent development that has been undertaken or is in progress. The Site is assessed as being of medium value with a **Medium Sensitivity** to change within the context of the local character unit within which the large majority of the Site lies as well as the wider setting, which in the landscape character studies reviewed and

supported by site assessments, is an area with large infrastructure already exists and is visible.

- 7.16. The magnitude of change will increase as works commence with site clearance, particularly around the perimeters of the Site where it is associated with the construction of the new roundabout off A50 Cliff Lane. Earthworks and associated plant operations/vehicle movements will result in change including the construction of temporary storage stockpiles, which will change the appearance of the landscape from the agricultural fields, which currently occupy the Site. Changes associated with the initial construction works it is anticipated will largely affect the Site and adjacent areas in the main.
- 7.17. The introduction of large, tall building units within the Site (the largest being possibly 43.5m high with the other proposed buildings reaching 21m or less), will result in the greatest and permanent change in landscape character as this will introduce new features into the landscape which will be visible to a wider area, particularly as buildings become more elevated and construction plant such as cranes are utilised. Construction traffic movement and temporary lighting for construction will also be introduced which will also result in more construction activities being visible.
- 7.18. Perimeter screen planting is proposed and should be implemented at the earliest opportunity. However, even if this is undertaken early in the construction process is unlikely to provide any significant benefit or mitigation during construction operations. The magnitude of change, therefore, is assessed during the construction phase to be **High**. The degree of change will be most significant within the Site and immediate locality around it, but the scale of the development will be highly visible to a wider area not only of character area within which the majority of the Site lies but also to the adjacent character areas particularly to the north where inter-visibility is greatest. The significance of effects is assessed as **Moderate-Major Adverse** which reflects the scale and permanency of the change to local landscape character, but which takes account of the existing large-scale buildings and infrastructure which currently exists, most notably to the west, south-west, south east and east of the Site.
- 7.19. With respect to the Scheduled Monument of Bradley Hall moated site, the Site itself is not affected by the development and it is recorded as experiencing a **Moderate** magnitude of change, **Moderate/Major Adverse** significance and nature of effects which are permanent

due to the close proximity of development. The effects upon the Scheduled Monument are discussed in greater detail below under operational stage.

- 7.20. **Table 4.12** provides a summary of the Assessment of Landscape Effects – Construction Stage, confidence levels are considered high due to the clarity of the development proposals against the existing landscape baseline.

Landscape Resource	Description of change	Mitigation	Scale of change	Geographical Extent of Effect	Duration/ Reversibility	Overall Sensitivity of Receptor	Overall Magnitude of Effects	Significance of Effects	Nature of Effect	Significance
Heritage: Scheduled Ancient Monument	Change to landscape setting through loss of open agricultural fields.	Screen planting and new landform reducing the finished floor levels of the proposed units, 30m buffer to retain sense of openness.	Major change to current setting but offset to some extent by the retention of immediate area.	Wide area across the southern setting of the farm complex	Long term due to presence of large building/likely irreversible in reasonable time frame.	High	Moderate	Moderate/ Major	Adverse	Significant
Landscape Value	Landscape is currently agricultural fields with field hedgerows with limited hedgerow trees. Development will increasingly introduce built form and large areas of hardstanding and infrastructure.	Existing perimeter vegetation with the exception of the copse by A50 Cliff Lane is retained, including large woodland blocks to the south east (Bradley Gorse) and trees along Bradley Brook.	High level locally and within the immediate vicinity of the Site and site boundary. In the context of the character unit, within which the Site lies at national level, the change would not be noticeable. In the context of local level, the Site forms a large part of Character Type 1B resulting in a significant change.	Wide area in the context of the local character unit and to adjacent character types to the north.	Long term due to the increasing presence of large buildings as they are constructed, which will be irreversible in normal time frame.	Medium Existing site and context is within Green Belt. Whilst the area is not designated landscape, it represents pleasant agricultural land, which is accessible to PROW and is visible from roads and properties. Emerging planning policy is to remove the Site from Green Belt and to develop it.	N/A	N/A	N/A	N/A

Landscape Resource	Description of change	Mitigation	Scale of change	Geographical Extent of Effect	Duration/ Reversibility	Overall Sensitivity of Receptor	Overall Magnitude of Effects	Significance of Effects	Nature of Effect	Significance
Landscape Sensitivity	Widespread change to local landscape character but offset to a degree by the presence of existing large scale development and infrastructure.	Retention of perimeter landscape features where possible and incorporation of landscape and conservation features consistent with local management objectives.	High level locally within the immediate vicinity of the Site and site boundary. In the context of the character unit within which the Site lies at a national level, the development would not result in significant change. In the context of local level, the Site forms a large part of character type IB resulting in a significant change.	Wide area in the context of the local character unit and to adjacent character types to the north.	Long term due to the increasing presence of large buildings as they are constructed, which will be irreversible in normal time frame.	Medium Sensitivity to change is medium due to the Site being agricultural land in a character type, which has already experienced a loss due to development.	N/A	N/A	N/A	N/A
Landscape Condition	Wide spread change which will remove existing agricultural land including hedgerows.	Retention of boundary vegetation and woodland blocks with perimeter screen planting will incorporate landscape and conservation features consistent with local management objectives.	In the context of local level, the Site forms a large part of character type IB resulting in a significant change.	Wide area in the context of the local character unit and to adjacent character types to the north.	Long term due to presence of large buildings, which are likely irreversible in reasonable time frame.	Medium Existing agricultural land with need of restoration primarily to hedgerows.	N/A	N/A	N/A	N/A
Environmental Designations	None within site or study area.	N/A	N/A	N/A	N/A	Low Sensitivity	N/A	N/A	N/A	N/A

Landscape Resource	Description of change	Mitigation	Scale of change	Geographical Extent of Effect	Duration/ Reversibility	Overall Sensitivity of Receptor	Overall Magnitude of Effects	Significance of Effects	Nature of Effect	Significance
Landscape Character Construction Stage	The development will result in considerable change through clearance and earthworks. The introduction of large visible buildings and associated construction plant will result in incremental change.	Opportunity to implement mitigation early in the construction process to allow maximum time for establishment of planting. A CEMP will provide mitigation to adjacent and site retained landscape features.	Development will represent incremental change to the character areas with clearance, major earthworks and building construction as it becomes visible to a wider area.	Wide area in the context of the local character unit and to adjacent character types to the north	Long term due to the presence of large buildings, which are likely irreversible in reasonable time frame	Medium In relation to the Site and the character type in which it lies but also adjacent character areas primarily to the north.	High	Moderate - Major	Adverse Direct	Significant

Table 4.12: Significance of Effect – Construction Phase

Assessment of Landscape Effects - Operational Phase

- 7.21. Given the size of the Proposed Development a phasing strategy will be undertaken on Site. Therefore certain phases will reach the Operational stage of development before others. Decisions on which Plots will be developed in which order are subject to future detail. In terms of assessing the Landscape Effects, the cut and fill operations for the entire site will be undertaken prior to the construction of any of the Plots, therefore the changes experienced by the landscape can be assessed for the entire Site as a whole rather than in phases.
- 7.22. Development of the nature proposed will introduce large-scale industrial premises (worst case scenario of 16m high within Zone A, 18.5m high within Zones B1 and C, 24.5m high within Zones B2 (perimeter areas), D1 and D2 and 43.5m high within Zone B2) into the landscape with associated infrastructure, external yards and car parking resulting in extensive change to a largely agricultural landscape although one where existing infrastructure and industrial development is evident. Whilst the majority of boundary vegetation will be retained in the main this comprises of managed hedgerows with few trees and hedgerows within the Site will be removed. Trees along the southern boundary of Bradley Brook will be retained as will Bradley Gorse to the southeast but the reduction in the existing copse by A50 Cliff Lane will affect a particularly noticeable landscape feature.
- 7.23. Of greater significance, however, will be the introduction of large-scale industrial buildings into the landscape which exceed those size which exist in the adjacent industrial park, buildings of this scale and density will have a significant effect upon landscape character. The landscape features proposed along the boundary will have established by the beginning of the Operational Phase, although not matured. Internal landscaping features such as the proposed hedgerows, wildflower meadow planting, diversion of the PROW ~~towards~~ around the SAM and introduction of new attenuation ponds will have been introduced to the Site, however, the largest element present within the Site will be the proposed Units and corresponding access roads and hardworks. Landscape sensitivity is therefore recorded as medium and the magnitude of change is assessed as **High**.
- 7.24. Similar to assessing construction effects, the degree of change will be most significant within the Site and immediate locality around it, but the scale of the development will be highly visible to a wider area not only of character area within which the majority of the Site lies but also to the adjacent character areas particularly to the north where inter-visibility is

greatest. The significance of effects is assessed as **Moderate-Major**, which reflects the scale of change to the landscape from which the Site is visible and also the permanency of the change. Whilst, large-scale buildings and infrastructure exists within the landscape, the density and scale of built form is considerably larger to that which exists and which short or medium term mitigation is not feasible. The 43.5m maximum building height within zone B2, and 24.5m or lower across the rest of the Site represents the approximate worst case scenario for the proposed built form within the development. Taking into consideration any lowering of building heights, views from a number of viewpoint locations will experience minimal amendments to the view as can be seen in **Appendix 4.3 Landscape Photomontages**. The proposed buildings will still be prominent within the view for viewpoints 2A, 6, 7, 9 and 24. Accordingly, the assessment records the effect as **Adverse, Direct and Permanent**.

7.25. With respect to the effect upon the Scheduled Monument, the development retains and enhances the setting to the Bradley Hall moated site of which part of the original island is occupied by the modernised farmhouse and garden. The provision of a no development buffer of 30m surrounding the SAM helps to preserve some of the context of the monument. Accessibility is also retained through the maintenance and ~~minor~~ diversion of the PROW. The wider setting of the Site within farmland will undoubtedly be compromised by the Proposed Development although; the Site itself will remain intact and interpretable. The magnitude of effects is, therefore, recorded as **Moderate** with a **Moderate/Major** significance of effects. The nature of effects is recorded as **Adverse, Indirect and Permanent and Significant**.

7.26. **Table 4.13** provides a summary of the Assessment of Landscape Effects – Operation Stage, confidence levels are considered high due to the clarity of the development proposals against the existing landscape baseline.

Landscape Resource	Description of change	Mitigation	Scale of change	Geographical Extent of Effect	Duration/ Reversibility	Overall Sensitivity of Receptor	Overall Magnitude of Effects	Significance of Effects	Nature of Effect	Significance
Heritage: Scheduled Ancient Monument	Change to surrounding landscape setting through loss of open agricultural fields.	Screen planting and new landform with interpretation signage. PROW is retained.	Major change to current setting but offset to small extent by the retention of immediate area.	Wide area across the southern setting of the farm complex	Long term due to presence of large building/likely irreversible in reasonable time frame.	High	Moderate	Moderate/ Major	Adverse	Significant
Landscape Value	Landscape is currently agricultural fields with field hedgerows with limited hedgerow trees. Development will increasingly introduce built form and large areas of hardstanding and infrastructure, which will permanently alter its character.	Existing perimeter vegetation with the exception of the copse by A50 Cliff Lane is retained, including large woodland blocks to the south east (Bradley Gorse) and trees along Bradley Brook.	High level locally and within the immediate vicinity of the Site and site boundary. In the context of the character unit, within which the Site lies at national level, the change would not be noticeable. In the context of local level, the Site forms a large part of Character Type IB resulting in a significant change.	Wide area in the context of the local character unit and to adjacent character types to the north.	Long term due to the increasing presence of large buildings as they are constructed, which will be irreversible in normal time frame.	Medium Existing site and context is within Green Belt. Whilst the area is not designated landscape, it represents pleasant agricultural land, which is accessible to PROW and is visible from roads and properties. Emerging planning policy is to remove the Site from Green Belt and to develop it.	N/A	N/A	N/A	N/A

Landscape Resource	Description of change	Mitigation	Scale of change	Geographical Extent of Effect	Duration/ Reversibility	Overall Sensitivity of Receptor	Overall Magnitude of Effects	Significance of Effects	Nature of Effect	Significance
Landscape Sensitivity	Widespread change to local landscape character but offset to a degree by the presence of existing large scale development and infrastructure.	Retention of perimeter landscape features where possible and incorporation of landscape and conservation features consistent with local management objectives.	High level locally within the immediate vicinity of the Site and site boundary. In the context of the character unit within which the Site lies at a national level, the development would not result in significant change. In the context of local level, the Site forms a large part of character type IB resulting in a significant change.	Wide area in the context of the local character unit and to adjacent character types to the north.	Long term due to the increasing presence of large buildings as they are constructed, which will be irreversible in normal time frame.	Medium Sensitivity to change is medium due to the Site being agricultural land in a character type, which has already experienced a loss due to development.	N/A	N/A	N/A	N/A
Landscape Condition	Wide spread change which will remove existing agricultural land including hedgerows.	Retention of boundary vegetation and woodland blocks with perimeter screen planting will incorporate landscape and conservation features consistent with local management objectives.	In the context of local level, the Site forms a large part of character type IB resulting in a significant change.	Wide area in the context of the local character unit and to adjacent character types to the north.	Long term due to presence of large buildings, which are likely irreversible in reasonable time frame.	Medium Existing agricultural land with need of restoration primarily to hedgerows.	N/A	N/A	N/A	N/A
Environmental Designations	None within site or study area.	N/A	N/A	N/A	N/A	Low Sensitivity	N/A	N/A	N/A	N/A

Landscape Resource	Description of change	Mitigation	Scale of change	Geographical Extent of Effect	Duration/ Reversibility	Overall Sensitivity of Receptor	Overall Magnitude of Effects	Significance of Effects	Nature of Effect	Significance
Landscape Character Operation Stage	The development will result in considerable change through clearance and earthworks. The introduction of large visible buildings and associated infrastructure will result in significant change.	<p>Opportunity to implement mitigation early in the construction process to allow maximum time for establishment of planting. Perimeter woodlands as incorporated into the masterplan but will take time to establish.</p> <p>A CEMP will provide mitigation to adjacent and site retained landscape features.</p> <p>Development would form part of an employment zone ins the South Warrington Urban Extension Framework.</p>	Large scale building development and associated infrastructure will be visible to a wider area outside of the Site and immediate locality.	Wide area in the context of the local character unit and to adjacent character types to the north	Long term due to the presence of large buildings, which are likely irreversible in a short to medium time frame	Medium In relation to the Site and the character type in which it lies but also adjacent character areas primarily to the north.	High	Moderate - Major	Adverse Direct	Significant

Table 4.13: Significance of Effect – Operation Phase

Assessment of Visual Effects - Overview

7.27. This assessment of visual effects firstly considers the viewpoints (see **Appendix 4.2**), which have been selected as being representative of views within the study area and ZTV. The visual baseline is reviewed focusing on the value of a particular view and the sensitivity of the receptor. This is followed by an overview of the potential visual effects along publicly accessible areas such as transport corridors and PROWs. No viewpoints are considered valuable views in the sense of planning designations or visitor attraction locations with respect to viewpoint value. Summary Tables are provided at the end of the section for Construction and Operational stages. Impact prediction levels are high but are the most robust where wireframes have been prepared.

Viewpoint value and sensitivity

- 7.28. **Viewpoint 1:** Located on Barleycastle Lane looking north towards the Grade II* Listed Building of Tan House Farm. The majority of views experienced are likely to be in transit along the Lane from a variety of modes of transport. Views from properties along the Lane are also likely to permit views northwards and to the Site but gardens and outbuildings are likely to mean that in the main this would be from upper storey windows. Visual receptor sensitivity is recorded as **Medium**.
- 7.29. **Viewpoint 2:** Located to the west of viewpoint 1 on Appleton FP 23 PROW. For users of the footpath and occupants of the adjacent residential property, visual receptor sensitivity is assessed as **High**.
- 7.30. **Viewpoint 02A:** The view is taken Appleton FP23 PROW at its junction with Barleycastle Lane looking northeast towards the Site. Visual sensitivity is recorded for footpath users and the adjacent residential property is recorded as **High**.
- 7.31. **Viewpoint 3:** Located to the north of viewpoint 2 and closer to the southern site boundary on Appleton FP 23 PROW looking westwards, visual receptor sensitivity is also assessed as **High**.
- 7.32. **Viewpoint 4:** This viewpoint is located within the Site viewing eastwards and also on Appleton FP23 PROW. Visual receptor sensitivity is, therefore, also assessed as **High**.

- 7.33. **Viewpoint 5:** The viewpoint located within the Site on Appleton FP23 PROW looking westwards and receptor sensitivity for footpath users is recorded as **High**.
- 7.34. **Viewpoint 6:** Located at the northern side of the Site and also on Appleton FP23 PROW, the view looking southwards also represents those from Bradley House, which is just outside the Site boundary. Visual sensitivity is accordingly recorded as **High**.
- 7.35. **Viewpoint 7:** Looking south from Cartridge Lane the viewpoint represents views for users of the Lane as well as from residential properties although the orientation of windows to properties varies considerably. The viewpoint sensitivity is, therefore, recorded to represent **High** for residential users due to the close proximity of the development and for users of the Lane who will be in transit, it is **Medium**.
- 7.36. **Viewpoint 8:** The viewpoint is taken looking south towards the Site from Grappenhall and Thelwall FP05 PROW. Visual sensitivity is accordingly recorded as **High**.
- 7.37. **Viewpoint 9:** The viewpoint is taken from Grappenhall and Thelwall FP17 PROW off Cinder Lane looking south-southwest toward the Site. Visual sensitivity is recorded as **High**.
- 7.38. **Viewpoint 10:** Looking south-easterly towards the Site from the entrance to Yew Tree Farm a long Broad Lane. The view represents users who will be in transit and visual sensitivity is accordingly **Medium**.
- 7.39. **Viewpoint 11:** The viewpoint is from Appleton FP17 PROW looking east towards the Site across agricultural fields. Visual sensitivity for footpath users is recorded as **High**.
- 7.40. **Viewpoint 12:** Located along the B5158 Cherry Lane at Osheys Farm viewing southwest towards the Site east of the M6 Motorway and Junction 20. Visual sensitivity for road users in transit is recorded as **Medium**.
- 7.41. **Viewpoint 13:** The viewpoint is taken from Swineyard Lane at the entrance to Sworton Heath Farm looking west towards the Site. Visual sensitivity for road users is recorded as **Medium**.
- 7.42. **Viewpoint 14:** Located at the junction of Moss Lane and Hobbs Hill Lane looking north west towards the Site. Visual sensitivity for road users is recorded as **Medium**.

- 7.43. **Viewpoint 15:** The viewpoint is located on Pennypleck Lane immediately to the west of where Antrobus FP8 PROW enters the Lane and is visible in the viewpoint. Visual sensitivity for footpath users is recorded as **High** and **Medium** for road users.
- 7.44. **Viewpoint 16:** Located at the junction of where Antrobus FP32 PROW meets with Reed Lane looking northwards towards the Site. Visual sensitivity representing footpath users is recorded as **High**.
- 7.45. **Viewpoint 17:** The viewpoint is located south of Woolston New Cut viewing southeast towards the Site. Visual sensitivity representing users of Paddington Meadows is recorded as **Medium**.
- 7.46. **Viewpoint 18:** The viewpoint is taken from Grappenhall and Thelwall FP05 PROW taken next to Barry's Covert north of viewpoint 8. Visual sensitivity representing footpath users is recorded as **High**.
- 7.47. **Viewpoint 19:** Located on Lymm FP02 PROW looking southwest across the M6 Motorway towards the Site. Visual Sensitivity for footpath users is recorded as **High**.
- 7.48. **Viewpoint 20:** Located along Wither's Lane next to High Leigh FP20 PROW viewing west towards the Site. Visual Sensitivity for footpath users is recorded as **High** and for road users **Medium**.
- 7.49. **Viewpoint 21:** The view is taken from Appleton FP36 where the PROW meets Arpley Road immediately to the south of the M56 Motorway looking northeast towards the Site. Visual Sensitivity for footpath users is recorded as **High** and for road users as **Medium**.
- 7.50. **Viewpoint 22:** The view is located on Grappenhall and Thelwall FP05 looking south to the Site north of viewpoints 8 and 18. Visual Sensitivity for footpath users is recorded as **High**.
- 7.51. **Viewpoint 23:** Located on Lymm FP02 PROW south of Booth's Lane near Massey Brook looking southwest towards the Site west of the M6 Motorway. Visual Sensitivity for footpath users is recorded as **High**.
- 7.52. **Viewpoint 24:** The view is located on Appleton 24 PROW west of Appleton Thorn and looking west towards the Site. Visual Sensitivity for footpath users is recorded as **High**.

- 7.53. **Viewpoint 25:** The view is located on A50 Cliff Lane to the immediate north of the A50 Cliff Lane roundabout facing south towards the Site. Visual Sensitivity for road users is recorded as **Medium**.
- 7.54. **Viewpoint 26:** Taken from the centre of the A50 Cliff Lane roundabout, facing west towards the B5356 Grappenhall Lane. Visual Sensitivity for road users is recorded as **Medium**.
- 7.55. **Viewpoint 27:** Taken from the junction of Cartridge Lane and the B5356 Grappenhall Lane facing towards the A50 Cliff Lane roundabout. Visual Sensitivity for road users is recorded as **Medium**.

Assessment of Visual Effects – Construction Stage

Magnitude of Change and Significance

- 7.56. Similar to the assessment of landscape effects, the visual effects during the construction stage will vary depending on the operation taking place and the scale and extent of development that has been undertaken, is in progress and is visible to a particular receptor. Whether the receptor is likely to be static or moving, the scale of change and the distance between the receptor and the Site are all factors that are taken into consideration in making the assessment.
- 7.57. Initial site clearance works are likely to have a significant and adverse effect where they are highly visible, such as around visible boundaries and particularly where this involves the removal of mature vegetation such as mature trees and woodland. Similarly, large scale earthworks will be obvious from certain viewpoints and spoil and storage heaps will add to the disturbance of the existing landscape as well as the introduction of construction plant and operators into the landscape. There may be the opportunity to undertake mitigation works early in the construction process such as screening earthworks and planting which may assist in reducing adverse construction effects to some extent, which is discussed further in section 8. It is assessed that the significance and nature of effects as well as whether they are significant or not, will be the same as that identified at Operation, Year 1 as landscape mitigation will need to establish and mature.

- 7.58. The nature of effects and significance for each viewpoint are stated in **Table 7.3 4.14 Summary of Visual Effects – Construction** together with a summary statement for different groups of receptors.

Viewpoint	Description	Size/Scale Of Effect	Geographic Extent of Effect	Duration/ Revers-ability	Value of view	Sensitivity of Receptor	Magnitude of Effects	Significance of Effects	Nature of Effect	Significant Y/N
Construction										
1	Major earthworks may be visible including storage mounds. Development will incrementally become more visible as building construction increases above existing hedgerow cover and construction methods such as cranes and scaffolding become visible. The adjacent residential properties are also likely to experience direct views onto the Site. Early installation of screen planting may have some limited benefit.	Large Scale/Major	Wide panorama	Permanent; Partly Reversible	Low	High	Substantial	Substantial	Adverse	Y
2*	As for viewpoint 1. Major earthworks may be visible including storage mounds. Development will incrementally become more visible as building construction increases above existing hedgerow cover and construction methods such as cranes and scaffolding become visible. The residential property of Birchells Gorse is also anticipated to experience direct views onto the development. Early installation of screen planting may have some limited benefit.	Large Scale/Major	Centre background/ Wide panorama (further north)	Permanent; Partly Reversible	Low	High	High/ Substantial	High/ Substantial	Adverse	Y
3	Within the Site so the effects of construction activities will be immediate on commencement and will increase to completion as large scale buildings are completed.	Large Scale/Major	Wide panorama	Permanent;	Low	High	Substantial	Substantial	Adverse	Y
4	As for viewpoint 3. Within the Site so the effects of construction activities will be immediate on commencement and will increase to completion as large-scale buildings are completed.	Large Scale/Major	Wide panorama	Permanent;	Low	High	Substantial	Substantial	Adverse	Y

Viewpoint	Description	Size/Scale Of Effect	Geographic Extent of Effect	Duration/ Revers-ability	Value of view	Sensitivity of Receptor	Magnitude of Effects	Significance of Effects	Nature of Effect	Significant Y/N
5	As for viewpoints 3 and 4. Within the Site so the effects of construction activities will be immediate on commencement and will increase to completion as large-scale buildings are completed.	Large Scale/Major	Wide panorama	Permanent;	Low	High	Substantial	Substantial	Adverse	Y
6*	As for viewpoints 3, 4 and 5. Within the Site so the effects of construction activities will be immediate on commencement and will increase to completion as large-scale buildings are completed.	Large Scale/Major	Wide panorama	Permanent;	Low	High	Substantial	Substantial	Adverse	Y
7*	Close to the northern boundary of the Site. Major earthworks may be visible including storage mounds. Development will incrementally become more visible as building construction increases above existing hedgerow cover and construction methods such as cranes and scaffolding become visible. Early installation of screen planting may have some limited benefit.	Large Scale/Major	Wide panorama	Permanent;	Low	High/Medium	Substantial	Substantial/High	Adverse	Y
8	Major earthworks may be visible including storage mounds. Development will incrementally become more visible as building construction increases above existing hedgerow cover and construction methods such as cranes and scaffolding become visible. Early installation of screen planting may have some limited benefit	Large Scale/Major	Wide panorama	Permanent;	Low	High	Substantial	Substantial	Adverse	Y

Viewpoint	Description	Size/Scale Of Effect	Geographic Extent of Effect	Duration/ Revers-ability	Value of view	Sensitivity of Receptor	Magnitude of Effects	Significance of Effects	Nature of Effect	Significant Y/N
9*	It is unlikely that initial groundworks operations will be visible, but development will incrementally become more visible as building construction increases above existing hedgerow/tree cover on the horizon and construction methods such as cranes and scaffolding become visible. Early installation of screen planting may have some limited benefit and distance modifies the effect.	Medium/ Moderate	Wide panorama	Permanent; Partly Reversible	Low	High	Moderate	High	Adverse	Y
10	Initial groundworks operations will not be visible, but development will incrementally become more visible as building construction increases above existing hedgerow/tree cover on the horizon and construction methods such as cranes and scaffolding become visible.	Low/ Moderate	Centre and left horizon	Permanent; Partly Reversible	Low	Medium	Moderate	Moderate	Adverse	N
11	Initial groundworks operations will not be visible, but development will incrementally become more visible as building construction increases above existing hedgerow/tree cover on the horizon and construction methods such as cranes and scaffolding become visible.	Low/ Moderate	Centre and right horizon	Permanent;	Low	High	Moderate	Moderate/ High	Adverse	N
12	Initial groundworks operations will not be visible, but development will incrementally become more visible as building construction increases above existing hedgerow/tree cover on the horizon and construction methods such as cranes and scaffolding become visible.	Small/ Low	Centre horizon	Permanent	Low	Medium	Minor	Minor/ Moderate	Adverse	N
13	Groundworks operations will not be visible, but development will incrementally become more visible as building construction increases above existing hedgerow/tree cover on the horizon and construction methods such as cranes and scaffolding become visible.	Small/ Low	Centre horizon	Permanent; Partly reversible	Low	Medium	Negligible	Minor	Adverse	N

Viewpoint	Description	Size/Scale Of Effect	Geographic Extent of Effect	Duration/ Revers-ability	Value of view	Sensitivity of Receptor	Magnitude of Effects	Significance of Effects	Nature of Effect	Significant Y/N
14	It is possible that the uppermost portion of plot 2 on the Illustrative Masterplan (zone D1 of the Heights Parameters Plan) will incrementally become more visible as building construction increases above existing hedgerow/tree cover on the horizon and construction methods such as cranes and scaffolding become visible.	Small/ Low	Centre horizon	Permanent	Low	Medium	Negligible	Minor	Adverse	N
15*	Dense and overlapping field vegetation means the Site and the majority of the development will not be visible except for glimpses of taller units and associated construction operations such as cranes.	Negligible	Centre left horizon	Permanent/ Partly reversible	Low	Medium	Negligible	Minor	Adverse	N
16*	Dense and overlapping field vegetation means the Site and potential development is unlikely to be visible with distance also a factor	No change	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
17	Distance, topography and intervening vegetation means the Site and potential development will not be visible from this location.	No change	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
18*	In summer dense hedgerow vegetation is likely to filter views of the development. During construction groundwork operations will not be visible. In winter, filtered views of buildings as they are constructed above the local vegetation and existing buildings are likely to be visible to the south.	Small/ Low	Centre and centre left horizon	Permanent/ Partly reversible	Low	High	Minor	Moderate	Adverse	N

Viewpoint	Description	Size/Scale Of Effect	Geographic Extent of Effect	Duration/ Revers-ability	Value of view	Sensitivity of Receptor	Magnitude of Effects	Significance of Effects	Nature of Effect	Significant Y/N
19	Existing vegetation opposite and around Howshoots Farm is currently skylined. Construction of the new roundabout will significantly reduce this cover. Proposed buildings will also become visible as construction increases above retained tree cover. Infrastructure associated with the M6 Motorway and junction 20 cross the middle ground moderates the effects of development beyond.	Medium/ Moderate	Centre horizon	Permanent	Low	High	Moderate	Moderate/ High	Adverse	Y
20*	Topography and intervening vegetation and buildings means the Site and potential development will not be visible from this location.	Small/ Low	Centre and centre left horizon	Permanent/ Partly reversible	Low	High	Minor	Moderate	Adverse	N
21	Topography and intervening vegetation along the M56 Motorway means the Site and potential development will not be visible from this location. It is possible that filtered views of the upper portion of proposed buildings will be visible when vegetation is out of leaf but distance and the presence of motorway infrastructure plus existing industrial premises, will moderate the effect.	No change	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
22*	Topography and intervening vegetation and buildings means the Site and potential development will not be visible from this location even when vegetation is out of leaf.	No change	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
23	Topography and intervening vegetation and buildings means the Site and potential development will not be visible from this location even when vegetation is out of leaf.	No change	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Viewpoint	Description	Size/Scale Of Effect	Geographic Extent of Effect	Duration/ Revers-ability	Value of view	Sensitivity of Receptor	Magnitude of Effects	Significance of Effects	Nature of Effect	Significant Y/N
24*	Initial groundworks operations will not be visible, but development will incrementally become more visible as building construction increases above existing hedgerow/tree cover and buildings on the horizon and construction methods such as cranes and scaffolding become visible.	Small/ Low	Centre horizon	Permanent/ Partly reversible	Low	High	Minor	Moderate	Adverse	N
25	It is unlikely that the initial groundwork's operations within the main developable area of the Site will be visible from this location, however, the proposed felling of part of the tree belt to the north east of the A50 Cliff Lane roundabout and subsequent repositioning of the roundabout to the west will have a strong effect on views from this location. The Proposed Development will incrementally become more visible as building construction increases above existing hedgerow/tree cover on the horizon and construction methods such as cranes and scaffolding become visible. Early installation of screen planting may have some limited beneficial value, however, this will be outweighed by the removal of the proposed tree belt.	Large Scale/Major	Wide panorama	Permanent;	Low	Medium	Substantial	Substantial/ High	Adverse	Y

Viewpoint	Description	Size/Scale Of Effect	Geographic Extent of Effect	Duration/ Revers-ability	Value of view	Sensitivity of Receptor	Magnitude of Effects	Significance of Effects	Nature of Effect	Significant Y/N
26	The proposed initial groundwork's operations will be visible from this location. Site clearance operations will see the removal of the tree belt to the north of the A50 Cliff Lane roundabout from this location. As construction continues the hardworks and vegetation associated with the roundabout will be relocated away from the viewpoint location to the west. Construction of the proposed Units will be visible in the centre background of the view.	Large Scale/Major	Wide panorama	Permanent;	Low	Medium	Substantial	Substantial/ High	Adverse	Y
27	The proposed initial groundwork's operations will be visible from this location. Site clearance operations will see the removal of the tree belt to the north of the A50 Cliff Lane roundabout in the centre of the view, from this location. Early instillation of screen planting will have some limited beneficial value. As construction continues the Proposed Development will rise above this screen planting.	Large Scale/Major	Wide panorama	Permanent;	Low	Medium	Substantial	Substantial/ High	Adverse	Y
Residential Properties	There are relatively few residential properties directly affected by the development but those that are close to the Site are likely to experience large and major size and scale of effect. This includes properties within the Site and those abutting it such as Bradley Hall Cottages and Bradley View, as well as properties to the north along Cartridge Lane as well as to the south along Barleycastle Lane.	Large/ Major to Medium/ Moderate	Wide Panoramic	Permanent/ Partly reversible	Low	High	Substantial to Moderate	Substantial to Moderate High	Adverse	Y

Viewpoint	Description	Size/Scale Of Effect	Geographic Extent of Effect	Duration/ Revers-ability	Value of view	Sensitivity of Receptor	Magnitude of Effects	Significance of Effects	Nature of Effect	Significant Y/N
Transport Corridors	Whilst boundary vegetation is largely retained which will screen initial low level earthworks, stockpiles and the increasing height of built form will increase their visibility for roads around and close to the Site. Further afield, particularly to the west of the M6 Motorway and south of the M56 Motorway visibility of the Site during construction is very limited.	Large/Major to No Change	Wide panoramic to N/A	Permanent/ Partly reversible to N/A	Low	Medium	Substantial to N/A	Substantial to N/A	Adverse to N/A	Y to N/A
PROW	PROW within and close to the Site will experience the most change as the works to varying degrees are visible, including initial groundwork operations. PROW further north of the Site experience little change due largely to vegetation cover and the same is true for those south of the M56 Motorway and west of the M6 Motorway.	Large/Major to No Change	Wide panoramic to N/A	Permanent/ Partly reversible to N/A	Low	Medium	Substantial to N/A	Substantial to N/A	Adverse to N/A	Y to N/A

Table 4.14: Summary of Visual Effects - Construction

Assessment of Visual Effects – Operational Stage

Magnitude of Change and Significance

- 7.59. The assessment firstly reviews the effects from the representative viewpoints. Summaries are then provided for the types of receptors referred in the above assessment of effects during the construction stage. The results are then presented in **Table 7.4** Summary of Visual Effects – Operational. Operational Stage effects beyond the year of commencement are discussed in section 9 Potential Residual Effects. As previously stated within the Assessment of Landscape Effects – Operational Stage section, due to the phasing strategy to be implemented on Site, the Units started first will reach the Operational Stage before other Units within the Proposed Development. Due to unknown factors (order of which Plots are to be built) the assessment of the Visual Effects within the Operational Stage will consider the Site as a whole rather than in phases. Assessments with respect to the duration and reversibility of effects are made in the main text where the effects are considered significant referred to in the summary tables. Viewpoints for which wireframe photo-overlay views have been prepared are marked with an * asterisk.
- 7.60. A separate Updated Lighting Impact Assessment has been undertaken, (Doc ref: 1015524-RPT-LG-0023) Cundall, 2019, see Appendix 16 of the ES Addendum Part One Report. For the purpose of the LVIA this only considers the effects of daytime visible lighting infrastructure such as column-mounted lighting and the likely residual effects of construction and operational lighting and includes night time visuals to provide an indication of how operational lighting would appear. Current design information indicates that the nature and scale of the proposed buildings will be the dominant features and that external lighting will include lighting, which is building mounted. Whilst column mounted lighting is likely to be visible from some viewpoints, it will generally be seen against the backdrop of the proposed buildings and is not considered to have a significant effect. Lighting associated with road infrastructure both external and within the Site, will be more visible but are also not considered to significantly increase the effects of the Proposed Development, instead adding to the associated infrastructure along with signage, e.g. traffic and directional.

Operational	Description	Size/Scale of Effect	Geographic Extent of Effect	Duration/ Revers-ability	Value of view	Sensitivity of Receptor	Magnitude of Effects	Significance of Effects	Nature of Effect	Significant Y/N
Year One										
1	Development will be clearly visible above the boundary vegetation along Bradley Brook and will be skylined, particularly Plots 3 and 4.on the Illustrative Masterplan (Zones D2 & B2 of the Heights Parameters Plan) The adjacent residential properties are also likely to experience direct views onto the Site. Early installation of screen planting and earth mounding may assist in screening ground level service yards and parking areas.	Large Scale/Major	Wide panorama (Permanent; Partly Reversible	Low	High	Substantial	Substantial	Adverse	Y
2*	Similar to viewpoint 1, development will be clearly visible above the boundary vegetation along Bradley Brook and will be skylined, particularly plots 3 and 4 (zone D2 and B2 of the Heights Parameters Plan), the latter as users walk north towards the Site. The residential property of Birchells Gorse is also anticipated to experience direct views onto the development. Early installation of screen planting and earth mounding may assist in screening ground level service yards and parking areas.	Large Scale/Major	Centre background/ Wide panorama (further north)	Permanent; Partly Reversible	Low	High	High/ Substantial	High/ Substantial	Adverse	Y
3	Located within the southern boundary of the Site, earth mounding, wetlands and planting will soften views of car parking and service yards but Unit 4 will dominate the view with development plots 2 and 3 (zones D1 & D2 of the Heights Parameters Plan) also prominent to the north and north east, the latter screening views to Bradley Gorse.	Large Scale/Major	Wide panorama	Permanent;	Low	High	Substantial	Substantial	Adverse	Y

Operational	Description	Size/Scale of Effect	Geographic Extent of Effect	Duration/ Revers-ability	Value of view	Sensitivity of Receptor	Magnitude of Effects	Significance of Effects	Nature of Effect	Significant Y/N
4	Similar to viewpoint 3 but located close to the centre of the Site and close to the retained Bradley Hall. Planting and wetlands around the Hall and Scheduled monument will form the northern foreground but the viewpoint will be dominated by plots 3 and 2 on the Illustrative Masterplan (Zones D1 & D2 of the Heights Parameters Plan), which will prevent views further east. Views to the west will also be dominated by new development in particular unit 4 and associated car park areas.	Large Scale/Major	Wide panorama	Permanent;	Low	High	Substantial	Substantial	Adverse	Y

Operational	Description	Size/Scale of Effect	Geographic Extent of Effect	Duration/ Revers-ability	Value of view	Sensitivity of Receptor	Magnitude of Effects	Significance of Effects	Nature of Effect	Significant Y/N
5	<p>Similar as for viewpoints 3 and 4. Located to the north of Bradley Hall the view west will be dominated by development. The location is close to the proposed new access road and roundabout, which will include associated infrastructure such as street lighting and signage. Efforts have been undertaken to reduce the impact of the proposed development from views at this location, including the rerouting of the proposed access route and associated infrastructure away to the opposite side of Plot 1. Changes to the proposed bund to the north of the view seeks to incorporate a reinforced slope on the side of Plot 1 in order to move the bund further away from the viewpoint ensuring the mitigation measures do not over shadow the properties at Bradley Hall Cottages more than the proposed development. Views west will encompass the open space around the scheduled monument but new units to the west and south will also be extremely prominent. The existing night time condition have been identified within the night time photography document created by MSEnvironmental. For viewpoint 5 the night time photography shows that there is limited visibility on site and the main light sources are from the trading estates to the west / south west of the site and from the existing residential properties within and to the south of the site. The development proposed will therefore lead to a substantial change to the existing condition on site.</p>	Large Scale/Major	Wide panorama	Permanent;	Low	High	Substantial	Substantial	Adverse	Y

Operational	Description	Size/Scale of Effect	Geographic Extent of Effect	Duration/ Revers-ability	Value of view	Sensitivity of Receptor	Magnitude of Effects	Significance of Effects	Nature of Effect	Significant Y/N
6*	Similar as for viewpoints 3, 4 and 5. Proposed new units will dominate the view and will be skylined. Landscaped areas will be adjacent to the existing residential property and will provide a degree of softening and screening to parking areas. <u>Similar to viewpoint 5 the proposed bund will incorporate reinforced slopes on the side facing Plot 2 in order to allow a 1:3 slope (self stabilising), which can be planted in order to soften the impact of the Proposed Development.</u>	Large Scale/Major	Wide panorama	Permanent;	Low	High	Substantial	Substantial	Adverse	Y
7*	Close to the northern boundary of the Site proposed new units will extend in close proximity across the skyline. Existing vegetation will provide screening to lower portions of the units as well as ground level car parking and service yards. <u>Similar to viewpoint 5, night time photography has been undertaken from viewpoint 7's location. As identified within the imagery there are no street lights along the B5356 Grappenhall Lane, therefore, night time visibility is limited to slight glimpses of light from the roundabout at Cliff Lane. The proposed development will therefore be expected to cause a substantial change to the existing condition despite the incorporation of bunding along the northern boundary of the site.</u>	Large Scale/Major	Wide panorama	Permanent;	Low	High/Medium	Substantial	Substantial/High	Adverse	Y
8	Similar to viewpoint 7 but further north with an increased distance to the Site. Existing vegetation will provide some filtering of new units as will remnant hedgerow trees in the foreground. New buildings will be skylined, however, across the majority of the view.	Large Scale/Major	Wide panorama	Permanent;	Low	High	Substantial	Substantial	Adverse	Y

Operational	Description	Size/Scale of Effect	Geographic Extent of Effect	Duration/ Revers-ability	Value of view	Sensitivity of Receptor	Magnitude of Effects	Significance of Effects	Nature of Effect	Significant Y/N
9*	Topography, angle of view and existing boundary vegetation will screen lower levels of buildings and ground level parking but the upper portions of large new units will be seen across the skyline of the wide panorama	Medium/ Moderate	Wide panorama	Permanent/ Partly Reversible	Low	High	Moderate	Moderate/ High	Adverse	Y
10	Only the upper portions of proposed units will be visible and at increased distance to viewpoint 9. Units will, however, be skylined across a wide panorama, which will be noticeable even to users in transit.	Low/ Moderate	Centre and left horizon	Permanent/ Partly Reversible	Low	Medium	Moderate	Moderate	Adverse	N
11	Existing vegetation and buildings will screen lower levels of the Proposed Development but the upper portions of units are likely to be visible and skylined. The wider panorama contains distant views to the west and north west, which provides a degree of mitigation, which is why the significance of effect is recorded as moderate.	Low/ Moderate	Centre and right horizon	Permanent;	Low	High	Moderate	Moderate/ High	Adverse	N
12	Only the upper portions of some units, in particular plot 2 of the Illustrative Masterplan (Zone D1 of the Heights Parameters Plan), are likely to be visible seen across the existing infrastructure associated with the service station at junction 20 of the M6 Motorway across a narrow field of vision. For this reason, the significance of effects has been recorded as minor.	Small/ Low	Centre horizon	Permanent	Low	Medium	Minor/ Moderate	Minor	Adverse	N

Operational	Description	Size/Scale of Effect	Geographic Extent of Effect	Duration/ Revers-ability	Value of view	Sensitivity of Receptor	Magnitude of Effects	Significance of Effects	Nature of Effect	Significant Y/N
13	Groundworks operations will not be visible, but development will incrementally become more visible as building construction increases above existing hedgerow/tree cover on the horizon and construction methods such as cranes and scaffolding become visible. It is predicted that only the uppermost portion of some units on the eastern side of the development, will be visible. Distance and the wider foreground panorama reduce the effect of visible development	Small/ Low	Centre horizon	Permanent Partly reversible	Low	Medium	Negligible	Minor	Adverse	N
14	It is likely that the uppermost portion of plot 2 of the Illustrative Masterplan (Zone D1 of the Heights Parameters Plan) will visible above existing vegetation along the M6 Motorway. Distance and the wide foreground panorama reduce the effect of visible development	Small/ Low	Centre horizon	Permanent/ Partly reversible	Low	Medium	Negligible	Minor	Adverse	N
15*	Dense and overlapping field vegetation means the Site and the majority of the potential development is unlikely to be visible except for occasional and narrow glimpses which from this location would be for users in transit along the lane.	Negligible	Centre left horizon	Permanent/ Partly reversible	Low	Medium	Negligible	Minor	Adverse	N
16*	Dense and overlapping field vegetation means the Site and potential development is unlikely to be visible with distance also a factor	No change	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
17	Distance, topography and intervening vegetation means the Site and potential development will not be visible from this location.	No change	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Operational	Description	Size/Scale of Effect	Geographic Extent of Effect	Duration/ Revers-ability	Value of view	Sensitivity of Receptor	Magnitude of Effects	Significance of Effects	Nature of Effect	Significant Y/N
18*	In summer dense hedgerow vegetation is likely to filter views of the development. In winter, filtered views of the upper portions of units on the northern boundary of the Site, plots 1,5,6, and 7 of the illustrative Masterplan (Zones A, B1 & C of the Heights Parameters Plan) will be visible, although filtered.	Small/ Low	Centre and centre left horizon	Permanent/ Partly reversible	Low	High	Minor	Moderate	Adverse	N
19	Existing vegetation opposite and around Howshoots Farm is currently skylined and will be reduced. Proposed buildings on the northern boundary of the Site will be visible and skylined. Infrastructure associated with the M6 Motorway and junction 20 cross the middle ground moderates the effects of the Proposed Development beyond.	Medium/ Moderate	Centre horizon	Permanent/ Partly reversible	Low	High	Moderate	Moderate/ High	Adverse	Y
20*	Topography and intervening vegetation and buildings means the majority of the Site and potential development will not be visible from this location but the upper most portion of units to the eastern side and the tallest unit within the development, plot 4 of the Illustrative Masterplan (Zone B2 of the Heights Parameters Plan) will be visible, which will increase when vegetation is out of leaf.	Small/ Low	Centre and centre left horizon	Permanent/ Partly reversible	Low	High	Minor	Moderate	Adverse	N
21	Topography and intervening vegetation along the M56 Motorway means the Site and potential development will not be visible from this location. It is possible that heavily filtered views of the upper portion of proposed buildings will be visible when vegetation is out of leaf but distance and the presence of motorway infrastructure plus existing industrial premises, will moderate the effect.	No change	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Operational	Description	Size/Scale of Effect	Geographic Extent of Effect	Duration/ Revers-ability	Value of view	Sensitivity of Receptor	Magnitude of Effects	Significance of Effects	Nature of Effect	Significant Y/N
22*	Topography and intervening vegetation and buildings means the Site and potential development will not be visible from this location even when vegetation is out of leaf.	No change	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
23	Topography and intervening vegetation and buildings means the Site and potential development will not be visible from this location even when vegetation is out of leaf.	No change	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
24*	Only the uppermost sections of unit 4 are predicted to be visible from this location and will be skylined. Existing vegetation will screen the majority of the development even when not in leaf.	Small/ Low	Centre horizon	Permanent/ Partly reversible	Low	High	Minor	Moderate	Adverse	N
25	Topography, angle of view and existing boundary vegetation will screen lower levels of buildings and ground level parking but the upper portions of large new units will be seen across the skyline of the wide panorama. The amended location of the A50 Cliff Lane roundabout will be visible in the centre background of the view. New tree planting will be incorporated along the western side of A50 Cliff Lane, helping to filter views of the lower levels of the proposed buildings.	Large Scale/Major	Wide panorama	Permanent;	Low	Medium	Substantial	Substantial/ High	Adverse	Y
26	The repositioned roundabout will be visible to the right of the view. Users of the roundabout will now have the ability to view the Site from this location due to the removal of mature trees. New tree planting will be grow to provide some screening of the proposed units lower built form. The majority of the units will be visible above the screen planting.	Large Scale/Major	Wide panorama	Permanent;	Low	Medium	Substantial	Substantial/ High	Adverse	Y

Operational	Description	Size/Scale of Effect	Geographic Extent of Effect	Duration/ Revers-ability	Value of view	Sensitivity of Receptor	Magnitude of Effects	Significance of Effects	Nature of Effect	Significant Y/N
27	Close to the northern boundary of the Site, proposed new units will extend in close proximity across the skyline to the right of the view. Existing vegetation will filter views of the lower portions of the units as well as ground level car parking and service yards. The tree belt associated to with the A50 Cliff Lane roundabout in the centre of the view will have been replaced by new tree planting vegetation, which will need to mature to provide a strong a screen as the existing tree copse.	Large Scale/Major	Wide panorama	Permanent;	Low	Medium	Substantial	Substantial/ High	Adverse	Y
Residential Properties	There are relatively few residential properties directly affected by the development but those that are close to the Site are likely to experience large and major size and scale of effect. This includes properties within the Site and those abutting it such as Bradley Hall Cottages, Bradley View, and properties to the north along Cartridge Lane as well as to the south along Barleycastle Lane.	Large/ Major to Medium/ Moderate	Wide Panoramic	Permanent/ Partly reversible	Low	High	Substantial to Moderate	Substantial to Moderate High	Adverse	Y

Operational	Description	Size/Scale of Effect	Geographic Extent of Effect	Duration/ Revers-ability	Value of view	Sensitivity of Receptor	Magnitude of Effects	Significance of Effects	Nature of Effect	Significant Y/N
Transport Corridors	New buildings will be dominant new features and proposed perimeter planting will not have established. Users of Grappnehall Lane to the north will have clear visibility of Plots 1, 5, 6 & 7. Users of A50 Cliff Lane will clearly see plot 2 of the Illustrative Masterplan (Zone D1 of the Heights Parameters Plan) with plots 1, 5 and 6 (Zones B1 & C) more visible from locations further north traveling south towards the Site. Development will also be glimpsed from the M6 Motorway, particularly traveling south, but this will be seen at speed and will be of short duration. Further afield, particularly to the west of the M6 Motorway and south of the M56 Motorway visibility of the Site is very limited.	Large/Major to No Change	Wide panoramic to N/A	Permanent/ Partly reversible to N/A	Low	Medium	Substantial to N/A	Substantial to N/A	Adverse to N/A	Y to N/A
PROW	PROW within and close to the Site will experience the most change, as the Proposed Development is clearly visible. The degree of change and the resulting significance of effect vary for those outside of the Site due to the effect of topography and existing vegetation cover. PROW further north of the Site generally experience little or no change due largely to vegetation cover and the same is true for viewpoints south of the M56 Motorway and west of the M6 Motorway.	Large/Major to No Change	Wide panoramic to N/A	Permanent/ Partly reversible to N/A	Low	Medium	Substantial to N/A	Substantial to N/A	Adverse to N/A	Y to N/A

Table 4.15: Summary of Visual Effects – Operational Stage

8. Proposed Mitigation

Construction Phase

- 8.1. There will be an element of early works to create building plot plateaus on which to construct the units. In order to facilitate, the spoil gained from the levelling and excavation will more than likely be utilised to construct the landform and bunding.
- 8.2. A noticeable difference will be observed by the residential receptors within the immediate surroundings of the Site. Especially by the properties to the north of the Site boundary along Cartridge Lane, B5356 Grappenhall Lane and Bradley Hall Cottages and Bradley View, which area encompassed by the Site boundary. These receptors will experience the removal of the existing trees for the relocation of the roundabout along A50 Cliff Lane as well as site clearance of existing vegetation and erection of boundary screening. Any views through these screens will consist of the proposed bund along the perimeter boundaries to the north and the corresponding proposed tree planting along these bunds. The proposed trees along these bunds are to be introduced ~~immediately as construction has started along all external boundaries~~ as soon as possible after the bund has been formed to ensure tree planting has the maximum amount of time to establish. Interim measures required across the site, prior to the formation of the bunding will be incorporated within the CEMP. Views through the bunds and tree planting will comprise of earthworks forming the foundations of the proposed Units within Plots 1, 2, 5, 6 and 7 of the Updated Illustrative Masterplan (Zones A, B1, C & D1 of the Updated Heights Parameters Plan, see **Appendix 4** and **5** of the **ES Addendum Part One Report**). As the construction phase continues views from the residential receptors to the north will be able to see the construction of the units above the boundary screening. Towards the end of the construction phase new tree, shrub and grassland planting will be introduced within the internal link roads and landscaped areas, which will be partially visible to northern receptors between Plots 1 & 5. Views from Bradley Hall Cottages and Bradley View will experience new shrub and tree planting upon and in front of the proposed bund to the north and west of the residential properties. The bund will incorporate a 1:3 gradient on the side facing the residential properties to allow for planting to be incorporated. The side of the bund facing the proposed units will incorporate a steeper reinforced gradient in order to move the bund further away from existing residential properties. This will limit the impact of the bund and help to prevent the bund

from becoming a bigger overshadowing feature within the view compared to the proposed units.

- 8.3. The proposed bund to the north of Bradley Hall Cottages will create a 6m change in level from the properties within Bradley Hall Cottages and the ridgeline of the bund. The bund to the east of Bradley Hall Cottages will form a 4m change in height between the existing properties and the ridgeline of the bund. Bradley View will experience a bund reaching 4m high separating Bradley View from Plot 2 and an 8m high bund separating Bradley View from Plot 1. Hedgerow planting will be incorporated on top of the bund adjacent to Plot 2 in order to provide further filtering of the built form elements in the background of the view including the acoustic fencing, which will sit on top of the bund and Plot 2. The boundary screens will be removed and the tree planting along the boundary bunds will have established to provide a slightly stronger filtering of the views of the units, therefore slightly mitigating the impact of the views of the northern plots.
- 8.4. The Scheduled Ancient Monument (SAM) during the construction stage will see major changes to the settings surrounding the monument. The boundary screens will be erected approximately 30m away at the closest point to the monument. Behind these screens earthworks will be visible forming the foundations for the proposed units within Plots 1 – 4 of the Illustrative Masterplan (Zones B2, C, D1 & D2 on the Heights Parameters Plan). These earthworks will see the reduction of the existing topographical gradient within the surrounding plots (For example, approximately 6.78m reduction in topography within Plot 4's north western corner). As the construction phase continues, views will include the erection of the proposed units above the boundary screening. However, the proposed building levels for the plots surrounding the SAM have been limited to 85.50 AOD maximum (Approximately a maximum internal height of 21m) in order to reduce the impact on the setting of the monument. The end of the construction phase will see the introduction of new woodland tree and shrub planting around the perimeter of Plots 1 – 4 on the Illustrative Masterplan (Zones B2, C, D1 & D2 on the Updated Heights Parameters Plan) and the introduction of new meadow planting within the area surrounding the monument therefore creating a new area which can be used as a walker route around the perimeter of the monument which incorporates the Appleton PF23 public footpath.
- 8.5. The retention, incorporation and enhancement of Bradley Gorse and the surrounding grassland and tree planting along the river to the south of the Site will help to initially screen

/ filter views of the development for receptors to the south whilst also providing an ecological mitigation zone. ~~Towards the end of construction the proposed landscaping elements will seek to incorporate new hedgerow planting within the interior landscaped areas, therefore providing a safer route for animals to travel through the Site to this ecological mitigation zone.~~ The removal of any tree vegetation will need to be undertaken in line with the 'Key actions' to support the implementation of the required mitigation measure outlined within the **Ecology and Nature Conservation ES Addendum Technical Paper No. 5** of the **ES Part 2**. The proposed lighting strategy will be implemented towards the end of the construction phase. The Updated Light Spill Assessment (Doc Ref: 1015524-RPT-LG-0023) states that there is no proposed lighting that contributes to lighting spill to the surrounding roads and residential buildings. The proposed lighting scheme complies with the ILP guidance on the reduction of obtrusive light and therefore no mitigation measures are required. However, the proposed tree planting and bunding around the exterior site boundaries will filter any light that does manage to spill towards the surrounding roads and residential buildings, further mitigating any effects caused.

Operational Phase

- 8.6. The proposed design of the Site will seek to position the proposed units a minimum of 20m away from the exterior boundaries of the development, therefore allowing the proposed bund to be introduced (for more information see **Updated Illustrative Masterplan Drawing No. 16-180-F013-001**). The positioning of the proposed units within each plot has been undertaken to ensure the busiest areas (loading areas) are situated away from the more sensitive receptors within the area. Plot 1 has its loading area situated away from the Scheduled Ancient Monument (SAM) and the Bradley Hall Cottages. Plot 3's loading area has been located away from the Appleton FP23 PROW to the west of the building. Plots 5 – 7 have the loading area located on the opposite side of the building to B5356 Grappenhall Lane. Where close proximity of the units have come in close proximity to any of the receptors above, bunding has been incorporated where possible in order to filter views from these receptors.
- 8.7. The proposed landscape design seeks to introduce a number of new landscape features along side the proposed new buildings whilst retaining existing on site woodland, tree, scrub and grassland habitats which will be managed and maintained through the creation of an

Ecological and Landscape Management Plan (ELMP) for the Application Site. Access will be restricted within the Ecological Mitigation Area to avoid human disturbance of the animal species within. Lighting will also be designed to avoid illuminating areas of a night-time that are predominantly used by bats, hares or hedgehogs. The proposed new buildings will use non-reflective, recessive muted colours, which blend into the sky.

- 8.8. A number of new habitats will have been created throughout the Site in order to mitigate the loss of habitats within the construction phase. The primary habitats will be in the form of an Ecological Mitigation Area to the southeast corner with the retention of Bradley Gorse woodland and the adjacent strip of mature trees; as well as a buffer along the southern boundary to the brook.
- 8.9. Additional habitats will be created through the enhancement of the retained hedgerows towards the Scheduled Ancient Monument; new tree planting blocks between the northern plots (Plots 5&6 on the Illustrative Masterplan); new hedgerow planting linking the above to the Ecological Mitigation Area. Six new ponds will be included within the Ecological Mitigation Area located in the southeast corner of the development. These ponds will be positioned relatively close to each other so that close habitat links can be created between them. For a full description of the proposed Ecological Mitigation and habitat creation please see **Ecology & Nature Conservation Addendum Technical Paper 5** of this Environmental Statement.
- 8.10. As stated above Bradley Gorse and the surrounding vegetation will be retained and enhanced within the ecological mitigation zone. Additional tree planting will be incorporated around the perimeter in order to filter views of the development. Over time the new tree and woodland species will mature to provide a stronger screen of the Propose Development from the surrounding visual receptors. This stronger screening will help to further block any light within the proposed site from spilling into the surrounding environment. Tree species incorporated into these areas will reflect the existing on site species and therefore will predominantly consist of *Quercus robur*, *Acer pseudoplatanus*, *Alnus glutinosa* and *Betula pendula* see **Appendix 4.4 Six56 Warrington BS 5837:2012 Arboricultural Survey and Impact Assessment** (Project Ref No: M88.17a & b). The enhancement of the existing woodland and proposed new woodland will encourage habitat diversity and help mitigate the loss of any existing woodland planting.

- 8.11. The proposed layout will see the removal of the existing hedgerow networks within the Site boundary. New hedgerow planting will be incorporated especially along the bund proposed to the east of the scheduled ancient monument. These hedgerow species will be used to soften the impact of the acoustic fencing and Plot 2 for visual receptors within and to the north of the Scheduled ancient monument including the residential properties at Bradley Hall Cottage and Bradley View as well as users of the Appleton FP23 public footpath. The new hedgerow planting will be incorporated at the earliest possible opportunity during the construction phase to ensure the species are given appropriate time to establish and form as dense screen to the Proposed Development as possible. ~~The proposals will seek to incorporate new hedgerows along the perimeter of the Site to the north and within the central landscape areas surrounding the Scheduled Ancient Monument, leading around the western side of Plot 3 on the Illustrative Masterplan to the Ecological Mitigation Area to the south-east.~~
- 8.12. The proposed layout will seek to retain the existing public footpath Appleton FP23 with an adjustment to the route in order to bring visitors closer to the Scheduled Ancient Monument as well as incorporating a new addition to the footpath encircling the monument therefore giving users greater access to the surrounding area.

9. Potential Residual Effects

Potential Residual Effects – Construction Phase

- 9.1. The potential landscape and visual effects during construction have been assessed in Section 7 of this report. The construction of the development will be undertaken over a 6.5-year timescale and will be created in phases, therefore Construction and Operational Phases will overlap. Residual effects from the Construction Phase will be experienced during the Operational Phase. Before any development has been undertaken, changes to earthworks will be performed to ensure correct finished floor levels are represented on site. Around the exterior of the Proposed Development the proposed bunds will be put into place and planted with the screening tree planting in order to allow the longest amount of time for establishment to take place. This should be undertaken in areas closest to the most effected external receptors including Bradley Hall Cottages and Bradley Hall View. As previously stated, the bund shall incorporate both 1:3 gradient slopes and steeper reinforced slopes in order to maximise the amount of available space between the bund and existing residential properties, ensuring that the bund does not become a more overpowering feature within the view than the Proposed Units.
- 9.2. As identified within the Detailed Finished Levels Contours undertaken by Cundall (Drawing No. CLXX(52)4003) the bund to the north of Bradley Hall Cottages will reach circa 5m higher at the ridge line compared to the base of the bund. This creates approximately a 6m change in level between the existing properties and the ridgeline of the bund due to the additional space between the bund and the properties created by the access route for the cottages. The reinforced slope will ensure that a minimum distance of approximately 20m between the ridgeline and the closest wall of the properties. The bund to the east of Bradley Hall Cottages will reach circa 4m high at the ridgeline compared to the base of the bund. The elevated nature of the existing properties within the Bradley Hall Cottages will ensure a 3m difference between the properties and the ridgeline of the bund. The reinforced slope will ensure a minimum of 50m between the properties and the ridgeline.
- 9.3. With regards to Bradley View the front of the property will face onto the bund surrounding Plot 2. Due to the size of the space between the property and the units the 1:3 slope is formed without the need for reinforcement. The ridgeline of the bund will reach 4m higher than the base of the bund and the property and will be located approximately 41m away.

To the rear of the property views to the west will experience the incorporation of the bund surrounding Plot I. This bund will incorporate reinforced slopes and will experience an 8m level change from the base to the ridgeline. The reinforced slope will position the ridgeline of the bund approximately 54m away from the nearest boundary wall of Bradley View.

- 9.4. Appropriate protection measures such as screening will be included to protect the new tree planting and retained vegetation within these external boundaries and will therefore be visible to both external receptors and areas of the Proposed Development which has reached the Operational Stage. Additionally protective screening is to be incorporated to protect key features within the Site including Bradley Gorse and additional existing vegetation comprising the Ecological Mitigation Area; and the 30m offset areas surrounding the Scheduled Ancient Monument and the PROW's within the Site. Temporary signage will be incorporate where required identify site entrances and diverted routes. This signage will visible for receptors within the immediate context and will likely remain into the Operational Phase of development due to the overlap with the Construction Phase.
- 9.5. The location of the Site Compound within the site boundary will depend on the order in which the Units are built. The location of the site compound will be agreed with the Local Authority prior to the commencement of work and whether this site is to be within a static location or moving throughout the Site depending on the phase of construction. The proposed external bunding and planting along with the screening mitigation will screen visibility of Site Compound from view. Once development within each phase is completed and reaches the Operational Phase visibility of the static or moving Site Compound may be visible by users of the Units. In all cases it can be assumed that access to the Site will be from Grappenhall Lane, which will be visible to transient user of Grappenhall Lane and residential receptors along Cartridge Lane to the north of the Site.
- 9.6. The measures identified above will form the basis of the landscape and visual elements of the CEMP. It is anticipated the CEMP will identify and specify any additional mitigation measures during the construction phase, see Framework CEMP at **Appendix 9** of the **ES Addendum Part One Report**.

Potential Residual Effects – Operational Phase

- 9.7. Potential residual landscape and visual effects are considered and are summarised in **Table 4.16 Summary of Residual Effects** together with an explanation of the assessment. The Table compares the effect at commencement of operations (year one completion) and then describes anticipated changes that may occur during the first 15 years and a reassessment is recorded.
- 9.8. Where the principle mitigation involves planting, then a nominal overall height of approximately 7 - 9 metres has been assumed over this period although this will vary between species and growing conditions.
- 9.9. The principle reason for a reduction in the significance of effects will be the successful establishment and growth of the proposed planting. Whilst habitat creation and landscape works within the Site will also mature and be of benefit to the Site (e.g. to workers and visitors) the majority of visual receptors as well as the landscape setting, are only likely to experience noticeable benefit where proposed woodland planting will be of sufficient density and height to screen the large building units.
- 9.10. The wider landscape, therefore, is not considered to experience a marked change or reduction in effect. The cut and fill process used within the construction phase will help to reduce the proposed finished floor levels of the plots and form the perimeter bunding. Proposed tree planting along the bund will help to filter views of the lower half of the proposed units within Zones A, B1 and C, however, the height of the proposed units within Zone B2 will stand prominently above the canopy of the new tree planting and bunding therefore the proposed building units will still be visible. Landscape effects remain as **Moderate/Major Adverse** and **Significant**.
- 9.11. Viewpoint comparisons and a summary for different user groups are provided in the summary **table 4.16 Residual Significance of Effect – Year 15** below.

Resource	Commentary	Duration/Reversibility	Sensitivity of Receptor	Magnitude of Effects		Significance of Effects		Nature of Effect		Significance	
				Year 1	Year 15	Year 1	Year 15	Year 1	Year 15	Year 1	Year 15
Landscape				Year 1	Year 15	Year 1	Year 15	Year 1	Year 15	Year 1	Year 15
	Whilst planting will mature, the scale of built development will still be evident beyond the Site and within areas of the landscape character area within which the Site lies as well as to adjacent landscape character types, particularly to the north.	Long term/Partly Reversible	Medium	High	High	Moderate/Major	Moderate/Major	Adverse	Adverse	Y	Y
Visual				Year 1	Year 15	Year 1	Year 15	Year 1	Year 15	Year 1	Year 15
VP 1	Vegetation will mature and provide screening to ground level functions and will increase filtering. The size of Unit 4 on the Illustrative Masterplan, however, will mean it will still dominate the skyline and represent significant change. Over longer time frames, 20-25 years, as planting height further increases, the effect could reduce from Substantial to High.	Permanent; Partly Reversible	High	Substantial	Substantial	Substantial	Substantial	Adverse	Adverse	Y	Y

Visual				Year 1	Year 15	Year 1	Year 15	Year 1	Year 15	Year 1	Year 15
VP2*	Similar to viewpoint 1, the size and scale of the buildings will be clearly visible even after 15 years of plant growth.	Permanent; Partly Reversible	High	Substantial	Substantial	Substantial	Substantial	Adverse	Adverse	Y	Y
VP3	Located within the Site, whilst activities and functions at ground level will experience increased screening from planting, the closeness and size of new units will still be imposing features.	Permanent	High	Substantial	Substantial	Substantial	Substantial	Adverse	Adverse	Y	Y
VP4	Similar to viewpoint 3, whilst foreground landscape works associated with the setting to the Scheduled Monument will mature, the location will be dominated by the proximity and size of the surrounding units	Permanent	High	Substantial	Substantial	Substantial	Substantial	Adverse	Adverse	Y	Y
VP5	Similar to viewpoints 3/4, whilst foreground landscape planting will mature and screen ground level activities and functions, the proximity and size of the surrounding units will dominate the view.	Permanent	High	Substantial	Substantial	Substantial	Substantial	Adverse	Adverse	Y	Y
VP6*	Similar to viewpoints 3/4/5, the proximity and size of proposed units will dominate the view although the maturing landscape towards the Scheduled Monument will provide a degree of contrast and relief to the large scale built form.	Permanent	High	Substantial	Substantial	Substantial	Substantial	Adverse	Adverse	Y	Y

Visual				Year 1	Year 15	Year 1	Year 15	Year 1	Year 15	Year 1	Year 15
VP7*	The proximity of large units close to the road and residential properties will still exert a strong presence to the view. Dense perimeter planting along the perimeter bunds will grow and filter views of the development, which will increase over a longer time frame. The scale of the perimeter vegetation will require selective thinning of the tree species in order to prevent the trees and bund forming a dense wall imposing on the view.	Permanent/ Partly reversible	High/ Medium	Substantial	High	Substantial/ High	High	Adverse	Adverse	Y	Y
VP8	Similar to viewpoint 7 with existing vegetation providing screening. Increased growth of existing and proposed planting will also increase in height and density to filter views to buildings.	Permanent/ Partly reversible	High/ Medium	Substantial	High	Substantial/ High	High	Adverse	Adverse	Y	Y
VP9*	Units are skylined but perimeter planting will grow to increase the screening and filtering of views to the lower units but prominent skylining will still be visible.	Permanent/ Partly reversible	High	Moderate	Moderate	Moderate/ High	Moderate/ High	Adverse	Adverse	Y	Y
VP10	The upper portions of units will be skylined but the increasing establishment and growth of perimeter planting will increase the screening of views to the lower units. As users will be in transit the increased screening is considered to have a positive effect even though skylining of the taller units is still likely to occur.	Permanent/ Partly reversible	Medium	Moderate	Minor	Moderate	Minor/ Moderate	Adverse	Adverse	Y	N

Visual				Year 1	Year 15	Year 1	Year 15	Year 1	Year 15	Year 1	Year 15
VP11	The continuing growth of existing vegetation in the main will provide increased screening of the proposed units.	Permanent/ Partly reversible	High	Moderate	Minor	Moderate/ High	Moderate	Adverse	Adverse	Y	N
VP12	The continuing growth of existing mature vegetation, which is assumed will be retained where outside of the development footprint, will provide a modest increase in filtering of views.	Permanent	Medium	Minor	Negligible	Minor/ Moderate	Minor	Adverse	Adverse	N	N
VP13	The continuing growth of existing mature vegetation, which is assumed will be retained where outside of the development footprint, will provide a slight increase in the filtering of views.	Permanent	Medium	Negligible	Negligible	Minor	Minor	Adverse	Adverse	N	N
VP14	The continuing growth of existing mature vegetation, which is assumed will be retained where outside of the development footprint, will provide a slight increase in the filtering of views	Permanent	Medium	Negligible	Negligible	Minor	Minor	Adverse	Adverse	N	N
VP15*	The continuing growth of existing mature vegetation, which is assumed will be retained where outside of the development footprint, will provide a slight increase in the filtering of views	Permanent	Medium	Negligible	Negligible	Minor	Minor	Adverse	Adverse	N	N
VP16*	No change	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VP17	No change	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Visual				Year 1	Year 15	Year 1	Year 15	Year 1	Year 15	Year 1	Year 15
VP18*	Existing vegetation will continue to grow and will provide a modest increase in screening. Proposed perimeter planting will also establish to provide increased screening but not of the upper portions of units which are still likely to be visible when vegetation is out of leaf.	Permanent/ Partly reversible	High	Minor	Minor	Moderate	Moderate	Adverse	Adverse	N	N
VP19	Proposed planting will establish and will provide a degree of lower level screening to new units where existing mature planting has been removed and existing retained vegetation will also provide a modest increase in screening. Buildings will, however, remain skylined	Permanent; Partly Reversible	High	Moderate	Moderate	Moderate/ High	Moderate/ High	Adverse	Adverse	Y	Y
VP20*	Existing vegetation will continue to grow and will provide a modest increase in screening which is likely to screen the units in view when vegetation is in leaf.	Permanent; Partly Reversible	High	Minor	Negligible	Moderate	Minor/ Moderate	Adverse	Adverse	Y	Y
VP21	No change	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VP22*	No change	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VP23	No change	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VP24*	Existing vegetation will continue to grow and will provide a modest increase in screening which is likely to screen the units in view when vegetation is in leaf.	Permanent; Partly Reversible	High	Moderate	Minor	Moderate/ High	Moderate	Adverse	Adverse	Y	N

Visual				Year 1	Year 15	Year 1	Year 15	Year 1	Year 15	Year 1	Year 15
VP25	Proposed vegetation will continue to grow and will provide a stronger screen to the units especially when the vegetation is in leaf.	Permanent	Medium	Substantial	High	Substantial/High	High	Adverse	Adverse	Y	Y
VP26	Proposed vegetation will continue to grow, providing a stronger screen to the units, especially when the vegetation is in leaf.	Permanent	Medium	Substantial	High	Substantial/High	High	Adverse	Adverse	Y	Y
VP27	The proximity of large units close to the road will still exert a strong presence to the view. Dense perimeter planting will grow and filter views to the development, which will increase over a longer time frame.	Permanent	Medium	Substantial	High	Substantial/High	High	Adverse	Adverse	Y	Y
Residential	Residential receptors closest to the Site will benefit from maturing vegetation and bunding in some instances. In general terms the close proximity of the majority of receptors, will not experience a significant reduction in adverse effects.	Permanent; Partly Reversible	High	Substantial	High	Substantial	High	Adverse	Adverse	Y	Y to N

Visual				Year 1	Year 15	Year 1	Year 15	Year 1	Year 15	Year 1	Year 15
Transport	Maturing boundary vegetation will filter and screen development as it matures which will assist reduce adverse effects associated with B5356 Grappenhall Lane and Cartridge Lane. The benefit is assessed to be less beneficial within this time frame for users of A50 Cliff Lane due to the skylining of buildings. For more distant location, the growth of site retained and field vegetation is assessed as providing a modest increase in screening where identified.	Permanent; Partly Reversible	Medium	Substantial to N/A	Substantial to N/A	Substantial To N/A	Substantial to N/A	Adverse to N/A	Adverse to N/A	Y to N/A	Y to N/A
PROWs	PROW within the Site will remain heavily adversely affected but maturing vegetation of existing retained and outside of the development footprint, will provide advantageous screening from a number of vantage points.	Permanent; Partly Reversible	Medium	Substantial to N/A	Substantial to N/A	Substantial to N/A	Substantial to N/A	Adverse to N/A	Adverse to N/A	Y to N/A	Y to N/A

Table 4.16: Residual Significance of Effect – Year 15

Residential Visibility Amenity Assessment (RVAA)

- 9.12. Further to the assessment undertaken within this LVIA, an additional Residential Visual Amenity Assessment (RVAA) has been undertaken for the residential properties located within 500m of the Site's boundary (see **Appendix 4.8**). The RVAA is an additional stage beyond what is normally considered within a Landscape and Visual Impact Assessment and focuses exclusively on private views and private visual amenity. An RVAA may be used by the LPA when determining the appropriate weighting of potential effects on Residential Amenity in consideration of the overall planning balance.
- 9.13. The assessment incorporates 20 properties along Barleycastle Lane, Broad Lane, Cartridge Lane, A50 Cliff Lane as well as Bradley View and Bradley Hall Cottages. The assessment sets out the requirements needed to reach the RVA threshold. This is undertaken in alignment with the guidance set out within the Residential Visual Amenity Assessment LI Technical Guidance Note 2/19 (March 2019).
- 9.14. The Residential Visual Amenity Assessment is undertaken via a four-step process.
- Step 1 – Definition of the study area and scope of the assessment
 - Step 2 – Evaluation of the Baseline Visual Amenity
 - Step 3 – Assessment of likely change to visual amenity of properties
 - Step 4 – Formatting the RVAA Judgement
- 9.15. The changes that may occur due to the introduction of the proposed development are assessed for the RVAA using the magnitude and significance of visual effects criteria as set out within the Guidance for Landscape & Visual Impact Assessment Third Edition (GLVIA3) which also forms the basis for the methodology used throughout this Chapter.
- 9.16. Within Step 3 of the Landscape Institute Technical Note, the guidance sets out a framework that is to be considered when describing and evaluating the predicted magnitude of visual change and related visual amenity effects, which may lead to the property being considered to reach the threshold. These include:

- “Distance of property from the proposed development having regard to its size / scale and location relative to the property (e.g. on higher or lower ground);
- Type and nature of the available views (e.g. panoramic, open, framed, enclosed, focused etc.) and how they may be affected, having regard to seasonal and diurnal variations;
- Direction of view / aspect of property affected, having regard to both the main / primary and peripheral / secondary views from the property;
- Extent to which development / landscape changes would be visible from the property (or parts of) having regard to views from principal rooms, the domestic curtilage (i.e. garden) and the private access route, taking into account seasonal and diurnal variations;
- Scale of change in views having regard to such factors as the loss or addition of features and compositional changes including the proportion of view occupied by the development, taking account of seasonal and diurnal variations;
- Degree of contrast or integration of new features or changes in the landscape compared to the existing situation in terms of form, scale and mass, line, height, colour and texture, having regard to seasonal and diurnal variations;
- Duration and nature of the changes, whether temporary or permanent, intermittent or continuous, reversible or irreversible etc.; and
- Mitigation opportunities – consider implications of both embedded and potential further mitigation.”

9.17. A judgement is formed from, using the criteria above, in combination with an informed professional judgement regarding whether the threshold has been reached. The technical note states that “the factors which might contribute to the threshold being reached, or the way in which these are expressed, may be different for different types of development (for example, one might use terms such as ‘overwhelming/overbearing’ for tall structures, or ‘overly intrusive’ for a development overlooking a garden or principal room).” Due to the varying outcomes possible for reaching the threshold, the professional judgment requires an explanatory narrative setting out why the effects are considered to reach the Residential Visual Amenity Threshold.

- 9.18. In the assessment of all 20 residential properties within the 500m offset boundary, the assessment has identified that the RVA threshold has not been reached. The summary of the report states, “There is no ‘right to a view’ but the judgement regarding the RVA Threshold is based on whether the proposal would affect the outlook of the resident to such an extent that it was unpleasant and overwhelming, rendering the property an unattractive place to live.” The assessment considers that the proposed development does not create these conditions. Therefore, the RVA Threshold has not been reached.

10. Additive Impacts (Cumulative Impacts and their Effects)

10.1. For the purposes of this ES we define the additive cumulative effects as:

‘Those that result from additive impacts (cumulative) caused by other existing and/or approved projects together with the project itself

10.2. The developments that are likely to have a cumulative impact when considered with the Proposed Development have been scoped with the Local Authority and Key Consultees during the preparation of this ES (a full list is included within Section 9 of the ES Part One Report). The following table includes the agreed list of cumulative developments that have been assessed in respect of Landscape and Visual Impacts. These are also shown geographically on the plan included at **Appendix II** of the **ES Part One Report**.

Possible Cumulative Development	Details	Status	Justification for Cumulative	To be considered in the CIA (Yes/No)
4 Land North of Barleycastle Lane, Appleton, Warrington Liberty Properties Development Ltd & Eddie Stobart LPA Ref: 2017/31757	Full Planning application (Major) - Demolition of all existing on-site buildings and structures and construction of a National Distribution Centre building (Use Class B8) with ancillary office accommodation (Class B1 (a)), vehicle maintenance unit, vehicle washing area, internal roads, gatehouse, parking areas, perimeter fencing, waste management area, sustainable urban drainage system, landscaping, highways improvements and other associated works. (Gross internal floor space of 56,197m ² , together with 1,858m ² of ancillary office)	Refused Planning Permission by WMBC 14-11-2018 <u>Decision subsequently appealed (Appeal reference: APP/M0655/W/19/3222603) and considered at Public Inquiry. Decision pending following closure of Inquiry.</u> <u>New planning application submitted under Ref: 2019/34739 and granted planning permission at planning committee by WBC in July 2019. Referred to the SoS with decision pending.</u>	Potential relationship in terms of landscape and visual impact due to the proximity of the development to the Six56 Site boundary. Any proposed development within the Land North of Barleycastle Lane would compound changes to the key characteristics of LCA 1B - Appleton Thorn or LCA LFW3 – Arley or views from the surrounding receptors of the Site.	Yes-
8 Former Stretton Airfield, Warrington, WA4 4RG LPA Ref: 2014/2332 Hensmill Property	Proposed construction of subterranean car storage facility (B8 Use Class) with ancillary office development and associated demolition and landscaping accessed from Crowley Lane.	Planning permission granted 23-06-2015	Potential relationship in terms of landscape and visual impact. The close proximity of the Site and the Former Stretton Airfield could compound views from local receptors within study area and compound changes to the key characteristics of the existing Landscape Character Areas.	Yes

9	Warrington Garden Suburb Phase	Uses and Quantum identified in Preferred Development Option (July 2017)*	Uses and Quantum to be identified in Six 56 Cumulative Assessment		
		<p><u>*The Warrington Garden Suburb was identified as a Preferred Development Option in the July 2017 Consultation Document, which provides the potential development of around 7,000 new homes to be delivered over the full 20 years of the Plan, therefore we have assessed relevant phases within the Cumulative Assessment.</u></p> <p><u>It should be noted that since the original ES was prepared and submitted the Council have published their Proposed Submission Version Local Plan (March 2019), which states that the Garden Suburb will deliver around 7,400 homes, with around only 5,100 of these homes to be delivered within the Plan Period, up to 2037. Policy MD2 of the Submission Version Local Plan does not identify a phasing or development trajectory, therefore this assessment remains based on the information contained in the Preferred Development Option Consultation Document (July 2017).</u></p> <p><u>On this basis, the cumulative assessment of 700 homes over the plan period of 20 years undertaken as part of the original ES provides an overly robust assessment.</u></p>			

<p>Phase I 0-5 years Assumed 2020- 2025</p>	<p>406 residential units (non- Green Belt sites)</p> <p>22ha employment (employment areas include Six 56 Warrington and Land around Barley Castle Lane)</p>	<p>Six 56 Proposals will be under construction, with part delivered within Phase I of the Garden Suburb.</p> <p>The following form part of the Garden Suburb Phase I and will be included within the Cumulative Assessment:</p> <ul style="list-style-type: none"> • HCA sites (950 dwgs)* • 71 dwgs associated with land to east of Stretton Road* • Land North of Barley Castle Lane (Liberty Properties and Stobart) (LPA Ref: 2017/31757) - 15.7ha* <p>*Note that these sites are already included as part of the Cumulative Assessment and already referenced as sites 1, 2, 3 and 4.</p>	<p>Potential relationship with Phase I due to the inclusion of the Cumulative Assessments Site 4 Land North of Barleycastle Lane, Appleton Warrington.</p>	<p>Yes</p>
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<p>Phase 2 6-10 years Assumed 2026-2030</p>	<p>2610 residential units (includes 496 non-Green Belt sites and 2,114 Green Belt sites)</p> <p>30.3 ha employment (employment areas include Six 56 Warrington and Land around Barley Castle Lane)</p>	<p>Six 56 Proposals will be completed during 2027/2029.</p> <p>The following form part of the Garden Suburb Phase 2 and will be included within the Cumulative Assessment:</p> <p>Garden City Suburb Phase 1 and 2 employment land equates to 52.3ha, beyond the 30 ha referenced in the Phase 1 and Phase 2 employment trajectory set out in the PDO. Six 56 Warrington developable area and planning application for Land North or Barley Castle Lane (LPA Ref: 2017/31757) already equates to 77.52 ha and is already included as part of the Cumulative Assessment.</p> <p>Garden Suburb Phase 1 and 2 residential units equates to a total of 3016 units. The Cumulative Assessment already includes 1,021 residential units.</p> <p><u>Therefore this Cumulative Assessments should include an additional 1995 residential units (i.e. the residual number of units identified in Preferred Development Option that not already included within Six 56 Cumulative Assessment).</u></p>	<p>Potential relationship with Phase 2 for the same reasons a Phase 1.</p>	<p>Yes</p>
<p>Phase 3 11-15 years Assumed 2031-2035</p>	<p>2,144 ha residential units 45.9 ha employment</p>	<p>The Six 56 Proposals will be fully operational</p> <p>Given this Phase of the Garden City Suburb will be beyond the delivery of Six 56 Proposals this phase will not to be included within the Six 56 Cumulative Assessment</p>		<p>No</p>
<p>Phase 4 16-20 years Assumed 2036-2040</p>	<p>2,144 residential units 18.6ha employment</p>	<p>The Six 56 Proposals will be fully operational</p> <p>Given this Phase of the Garden City Suburb will be beyond the delivery of Six 56 Proposals this phase will not to be included within the Six 56 Cumulative Assessment</p>		<p>No</p>

Table 4.17: Cumulative Development

- 10.3. Both Construction and Operational phases will be considered and the short, medium and long-term impacts assessed. The methodology and criteria applied for the LVIA are also applied in describing and assessing the cumulative landscape and visual effects to arrive at whether an effect is significant or not. Cumulative effects are defined as effects that can impact on either the physical fabric or character of the landscape or any special values attached to it. Cumulative visual effects are those that can be caused by combined visibility, which occurs where the receptor is able to see two or more developments from one viewpoint. There are also sequential effects, which occur when the receptor has to move to another viewpoint to see different developments.
- 10.4. For the purpose of assessing the cumulative landscape and visual effects, the study area and ZTV applied for the LVIA are retained.
- 10.5. The former Stretton Airfield development by Hensmill LLP is located to the south of the proposed Six56 Development on the southern side of the M56 Motorway, see **Figure 10 of Appendix 4.1**. The development involves the construction of a subterranean vehicle storage and display facility together with a small above ground office located close to the boundary with the M56 Motorway. The existing air raid shelters are retained and landscape proposals include significant new tree and shrub planting including perimeter screening together with new water features and wildlife habitat improvements. Viewpoint 21 is taken from the western perimeter of the Site.
- 10.6. The development lies outside the landscape character type within which the Proposed Development is located and straddles the adjacent LFW3 Arley Character Area of the Cheshire LCA and 4C Former Stretton Airfield from the Warrington LCA. Due to the degree of visual separation that already exists between the two developments and the limited above ground alterations proposed as part of the Stretton Airfield development, it is assessed that there are no cumulative landscape effects associated with this development either in the short or long term.
- 10.7. With regard to visual effects, the visual assessment has identified that there is very limited visibility of the Proposed Six 56 Development from viewpoints south of the M56 Motorway. The nature of the proposed Stretton Airfield development involves very limited above ground development of any significant height and boundary screening is proposed to be strengthened through mounding and planting. It is assessed that there is unlikely to be inter-

visibility between the two developments and that there are no cumulative visual effects associated with this development either in the short or long term.

- 10.8. The proposed Liberty Properties Developments and Eddie Stobart Distribution Centre on land north of Barleycastle Lane Stretton was refused planning permission in 2018 ~~but it is understood that a new proposal is to be submitted and that the decision against the existing proposal is to be appealed. The following assessment is based on the refused scheme. A new planning application was submitted under Ref:2019/34739 and was granted planning permission at planning committee by the WBC in July 2019. The decision was then referred to the Secretary of State (SoS) with the decision now pending. The following assessment is based on the proposed scheme,~~ which is to construct a new national distribution centre on land opposite the existing site. In view of the fact the scheme ~~is not approved~~ has been referred to the SoS and no construction programme is available at the time of writing, this assessment considers the cumulative effects of the development at completion years 1 and 10.
- 10.9. The Site is accessed via Barleycastle Lane which forms its southern boundary, the northern and western boundary is defined by the existing watercourse of Bradley Brook and the Appleton Thorn Industrial Park, whilst to the east lie agricultural fields. Its location is shown on **Figure 10 of Appendix 4.1**. The main components of the proposed industrial park development are the construction of a large storage and distribution unit of approximately 55,740 m² with a building height of approximately ~~18.5m or 83.00 AOD~~ 18m or 82.50 AOD, which includes first floor offices within the main building envelope. A separate vehicle maintenance unit is proposed adjacent to the western boundary as well as a gatehouse, washing facilities, HGV tractor and trailer parking and car parking for employees and visitors.
- 10.10. The industrial park development is of a similar nature to the Proposed Development within the Site, which incorporates large industrial units and due to its location it will have a direct and visible relationship in particular with Unit 4 on the Updated Illustrative Masterplan, which is considerably taller at approximately 104.50m AOD. The landscape assessment has recorded moderate/major adverse effects at years 1 and 10 in relation to the Proposed Development. The construction of this scheme will consolidate the presence of large-scale industrial development in this area and the resulting permanent change to local landscape character although this is mitigated to some degree by its closer proximity to existing,

although generally smaller, industrial units. It is assessed, therefore, that the cumulative effects would not increase as a result of this development.

- 10.11. With regard to visual effects, the assessment has identified a number of receptors and viewpoints that will experience adverse visual effects associated with the Six56 Proposed Development. The location of this development has the potential to be visible from viewpoints and users of PROW and the local road infrastructure. Views from the north represented by viewpoints including viewpoint 7 and 8 are looking towards the Six56 Site and towards this development. Distance to view and topography suggest that it would not be visible and the construction of Units 5 and 6 would in any case prevent views towards it.
- 10.12. Viewpoint 24 is from a location west of both sites and Unit 4 has been assessed as being visible from this viewpoint. It is possible that the uppermost section of this development will also be visible although likely broken or filtered by existing vegetation. This is assessed as not having any significant cumulative effect from this viewpoint. Viewpoints to the south of the M56 Motorway such as viewpoints 15,16, or 21 are also not assessed as incurring any change in view resulting from this development. Topography, existing vegetation and distance mean that the development is unlikely to be visible from these locations and, therefore there are no cumulative visual effects.
- 10.13. The greatest cumulative visual effect is likely to be for users of Barleycastle Lane. Currently the Site is agricultural fields and provides a greater depth of field and contrast to the surrounding industrial park to the south and north. This development will foreshorten views for users of the lane and would screen views towards the Six56 Development. The most obvious effect, however, will be a sequential one with travellers in either westerly or easterly directions experiencing closer and greater visibility of Proposed Development. In view of the fact that the industrial park to the south of the lane extends virtually level with the proposed distribution centre site, the cumulative effects is not considered to significantly increase any adverse visual effects for users of the road. Occupants or workers within the existing industrial park are considered to be of low susceptibility to change and also will not experience any significant increase in adverse visual effects.
- 10.14. Residential properties along Barleycastle Lane are also likely to experience adverse cumulative visual effects, particularly as this will bring visible development closer to them, in particular Barley Castle Farm which is closest to the proposed distribution centre, but also Birchels Gorse which lies further to the east. Adverse cumulative visual effects are

considered greatest with the former due to its closer proximity although this is mitigated to some degree by the location of outbuildings and the orientation of windows being predominantly in a north-south direction. The increased distance and similar orientation of window within Birchels Gorse provides similar mitigation to a small degree. Due to the significant adverse visual effects of the Proposed Development upon these properties, however, results in the assessment not recording any significant cumulative visual effects.

- 10.15. Users of the PROWs within and around the Site are assessed as experiencing significant adverse effects resulting from the Six56 Development. Viewpoint 3 looks towards the west and is likely to include the Proposed Development in the wider panorama. The effects of the closer Six56 Development are assessed as not significantly increasing adverse visual effects from this viewpoint or PROW.
- 10.16. Screen planting will mature, softening or screening Proposed Development. The scale and size of the developments will exert a permanent and visual change, which will benefit the receptors most affected by the development in particular.
- 10.17. WBCs Local Plan is under review and the Submission Version Local Plan (March 2019) and Preferred Development Options (PDO) document ~~for the~~ which propose the release of Green Belt land to allow the Garden City Suburb has not been approved at the time of this assessment. Whilst there is limited information available in terms of its spatial delivery to undertake a detailed cumulative assessment, we have based this assessment on information available in the Council's Local Plan Preferred Development Options. The Proposed Site and the adjacent distribution centre proposals would both be within a proposed employment zone with further employment land identified within a potential district core separated by a strategic green corridor following B5356 Grappenhall Lane (see **Appendix 4.6**). The PDO includes residential development and a potential country park, the latter on the existing southern boundary of Grappenhall.
- 10.18. Major settlement expansion of this nature would have a significant and likely adverse landscape and visual effects essentially extending the edge of urban settlement to the M56 Motorway and M6 Motorway corridors. The PDO would remove the area of Green Belt separating the development from Grappenhall and would significantly impact upon the homogeneity of the local landscape character areas, within which the Site lies and the adjacent areas to the north. Visual amenity would also be similarly significantly impacted for viewpoints and the wider area as a whole to the north of the Proposed Development site.

With respect to the Proposed Development, however, this would, over what is assumed to be a medium to long time frame, serve to amalgamate the Site into wider urban development. The infancy of the Emerging Local Plan ensures uncertainty as to the reliability of the information available at the time of writing; details will therefore be subject to change.

Summary

- 10.19. It is assessed that for the developments considered, there are no significant cumulative landscape or visual effects. With respect to the potential Garden City Suburb development, should this materialise, the long-term effect of the development is anticipated to be reduced by its inclusion within a new and major extension to the settlement boundary.

11. Conclusion

- 11.1. The design of the development has involved an iterative design process where information gained from the LVIA has been used to mitigate for adverse effects wherever possible. ZTV mapping and wireframe visualisations have been generated from key views to understand and test the design for a variety of receptors.

Construction Phase

- 11.2. Landscape and visual effects during the construction phase will vary depending on the location and the type and scale of operations taking place. Initially the effect upon the wider landscape character unit is likely to be limited to the Site itself whilst activities are low level and existing perimeter vegetation is retained. The exception will be the significant visual effects to residential properties within and adjacent to the Site who currently have unimpeded views over it. The setting to the SAM will similarly be significantly affected by construction activities through the loss of the open fields around it.
- 11.3. Modifications to the roundabout and approach roads, which will involve the removal of mature tree cover and as building construction advances the landscape and visual effects will be greater as buildings and associated construction plant are more visible over a greater area. Landscape effects at construction stage have been assessed as Moderate/Major, Adverse, Direct and Significant. Visual effects vary considerably across the study area with the most immediate adverse effects occurring to receptors within the Site as construction activities commence such as to residential receptors and users of the PROW crossing the Site. Similarly, as building heights increase, receptors closet to the boundary of the Site will also experience adverse effects, particularly to the north for road users and nearby residential properties and PROW but also for the few residential properties, which lie close to the south. Efforts have been made to reduce and soften the impact of the Proposed Development through the introduction of bunding and new tree planting within the earliest stages of construction particularly to the north of the Site along B5356 Grappenhall Lane. This will therefore allow the tree planting to establish sooner in order to provide a slightly stronger filtering of views when the boundary screening is removed at the end of the construction period.

Operation Phase

- 11.4. Whilst every effort has been taken to mitigate for adverse landscape and visual effects, for a development of this scale and density adverse significant adverse landscape and visual effects occur on completion of construction operations. The assessment has recorded the landscape effects as being Moderate/Major adverse, direct and significant due to the degree of change, which will occur to the Site and its immediate vicinity but also to the wider landscape type, within which the Site lies and the adjacent character types to the north, which are inter-visible.
- 11.5. Visual effects have been assessed as being greatest within the Site and for receptors closest to the perimeter, particularly to residential receptors and users to the north and south of the Site. Further from the Site, the assessment has identified those views generally from the north, experience the most significant effects with views to the south generally limited due to distance as well as dense and overlapping vegetation screening the development.
- 11.6. Due to the scale of the proposed buildings, residual visual effects after 15 years are generally not anticipated for most receptors to have significantly reduced as screen planting will take more years to establish and grow sufficiently to provide a dense and tall enough canopy to filter views of the large buildings. Landscape effects are similarly not anticipated to reduce but there is the potential over a longer time frame for adverse visual effects to be reduced for some receptors.

12. Reference List

Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA3)

National Planning Policy Framework 2018 (The Framework);

Warrington Local Plan Core Strategy (July 2014);

Warrington Preferred Development Options Consultation Document (July 2017);

Design Construction SPD (Updated February 2016);

Environmental Protection SPD (May 2013);

National Character Area 60: Mersey Valley (October 2013);

National Character Area 61: Shropshire, Cheshire and Staffordshire Plain;

Warrington, A Landscape Character Assessment, Agathoclis Beckmann (2007);

Warrington Borough Council Green Belt Assessment (21 October 2016);

13. Appendices

Appendix 4.1 – Landscape Figures

SIX56 | WARRINGTON

STAGE 02
APPENDIX 4.1 - LANDSCAPE FIGURES
July 2020

CONTENTS

1.0 WIDER CONTEXT

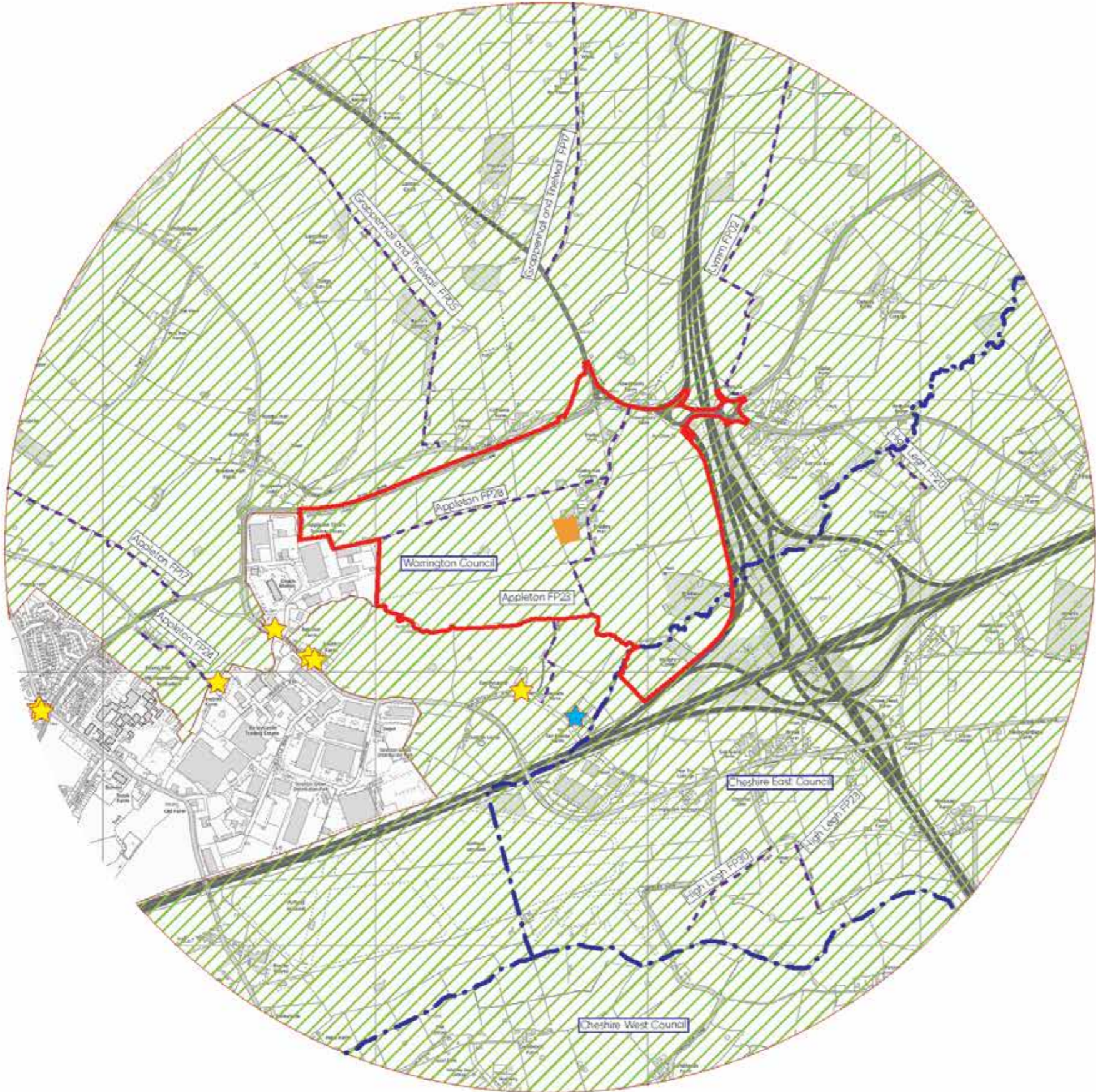
- Site Location
- Policy Context
- Zone of Visual Influence
- Zone of Theoretical Visibility
- National Character Area
- Landscape Character Area
- Transport Network
- Viewpoint Locations - Immediate Context
- Viewpoint Locations - Wider Context
- Cumulative Developments
- Zone of Theoretical Visibility with viewpoints overlay - Wider Context
- Zone of Theoretical Visibility with viewpoints overlay - Immediate Context
- Landscape Character Areas: Key Local Authority Boundaries
- Cliff Lane Roundabout Viewpoints

LANDSCAPE FIGURES

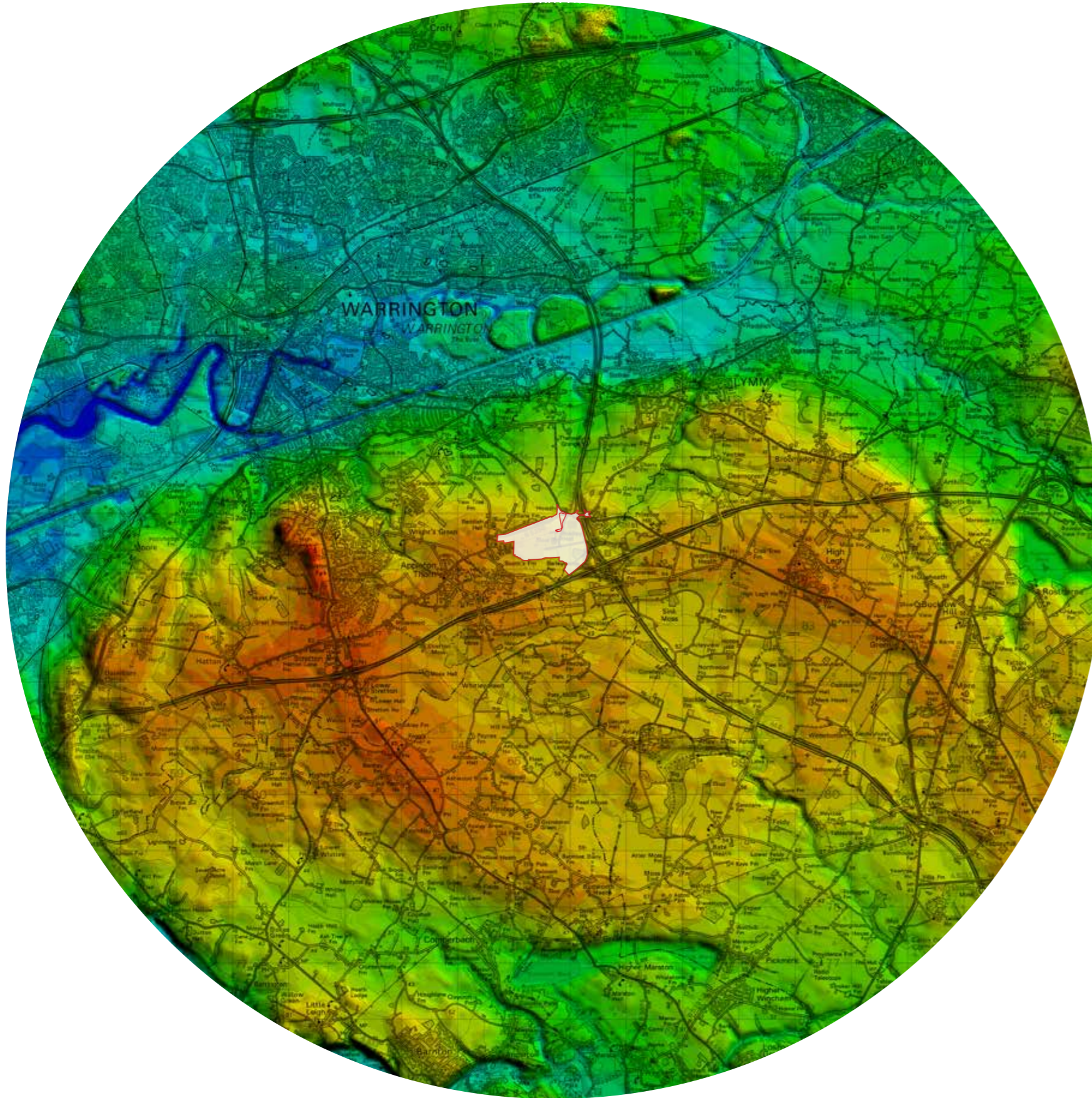
SITE LOCATION




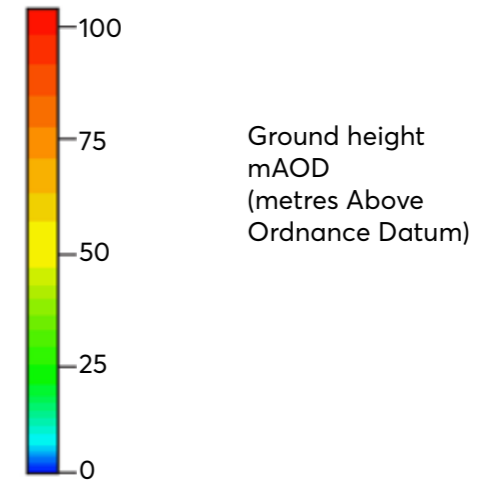
KEY
Six56, Warrington site boundary



- KEY
- Six56, Warrington site boundary
 - Council boundaries
 - Green belt
 - Scheduled monuments
 - ★ Grade II* listed building
 - ★ Grade II listed building
 - Public Rights of Way (PRoW)



KEY
 Six56, Warrington site boundary



Layout Information

Proposed Masterplan Stephen George & Partners LLP
 Langtree
 First Panattoni

The terrain data used is Ordnance Survey Terrain 5 DTM

Max Height of proposed

Zone A 12.5m shed height (max 83.50mAOD)

Zone B1 15m shed height (max 84.00mAOD)

Zone B2 40m shed height (max 104.50mAOD)

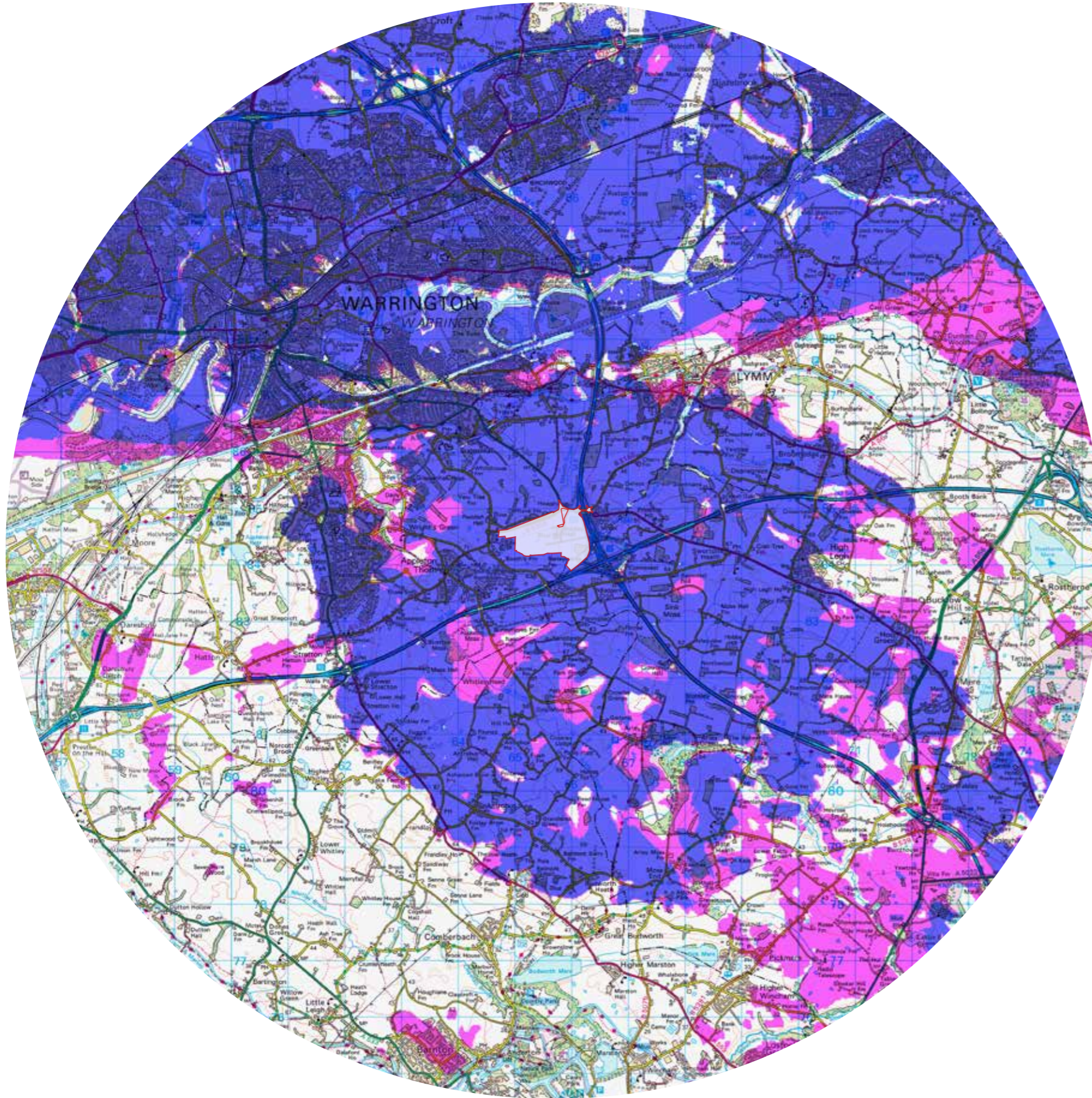
Zone B2 21m shed height (max 85.50mAOD)

Zone C 15m shed height (max 79.00mAOD)

Zone D1 21m shed height (max 82.00mAOD)

Zone D2 21m shed height (max 80.50mAOD)



ZONE OF THEORETICAL VISIBILITY



KEY

 Six56, Warrington site boundary

Theoretical visibility of:

 Zones A-D2(12.5 - 21m clear internal sheds)
 Zones B2 (40m clear internal sheds)

Layout Information

Proposed Masterplan Stephen George & Partners LLP
 Langtree
 First Panattoni

The terrain data used is Ordnance Survey Terrain 5 DTM

Max Height of proposed:

- Zone A 12.5m shed height (max 83.50mAOD)
- Zone B1 15m shed height (max 84.00mAOD)
- Zone B2 40m shed height (max 104.50mAOD)
- Zone B2 21m shed height (max 85.50mAOD)
- Zone C 15m shed height (max 79.00mAOD)
- Zone D1 21m shed height (max 82.00mAOD)
- Zone D2 21m shed height (max 80.50mAOD)

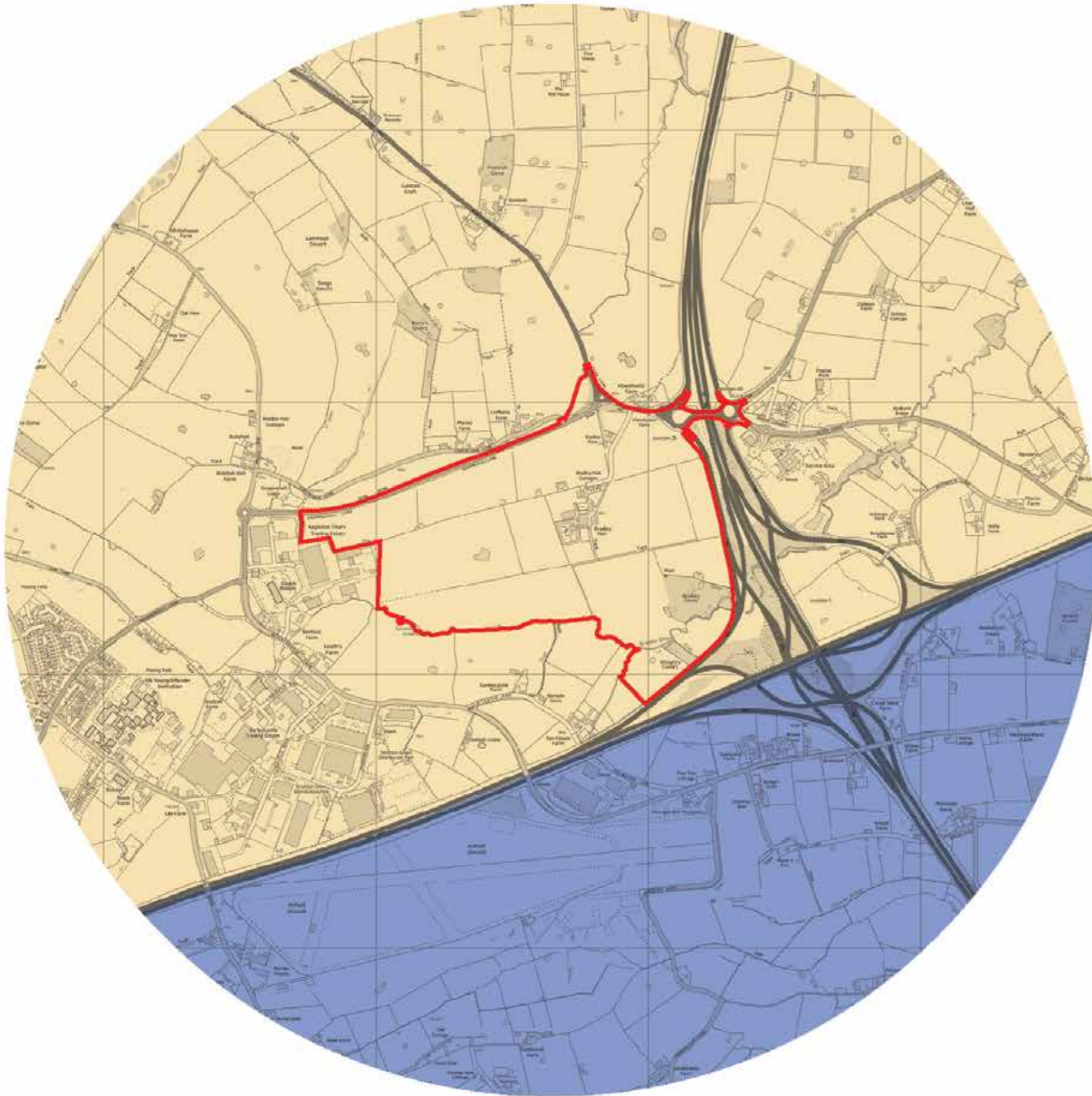
Viewer height used in calculation 1.60m

This ZTV does not include the screening effects of buildings or vegetation in the study area.




The calculation takes into account the effect of the curvature of the earth and light refraction. The calculation does not use mathematically approximate methods.

LANDSCAPE FIGURES

NATIONAL CHARACTER AREAS

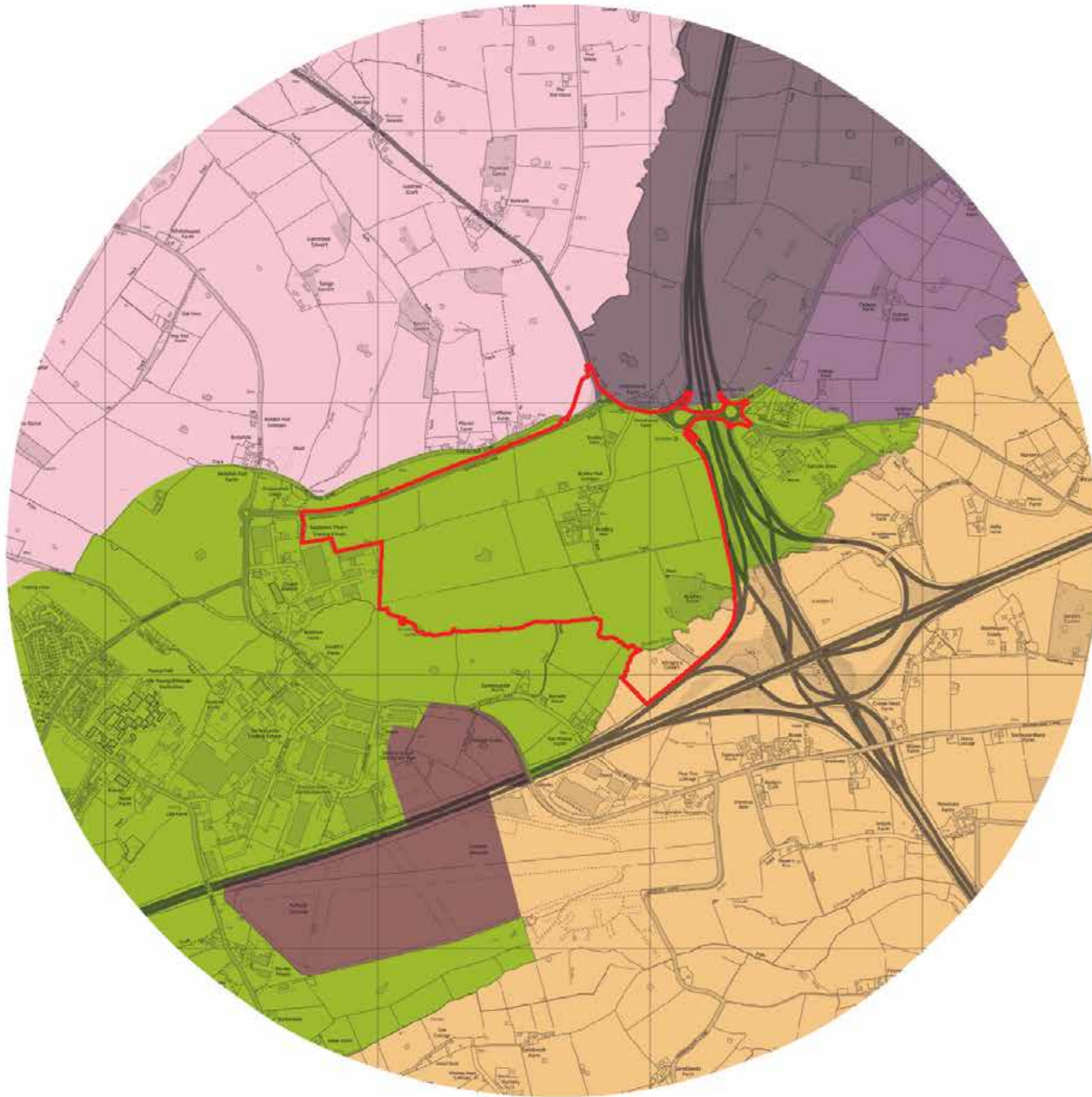


KEY

-  Six56, Warrington site boundary
-  NCA 60 - Mersey Valley
-  NCA 61 - Shropshire, Cheshire and Staffordshire Plain

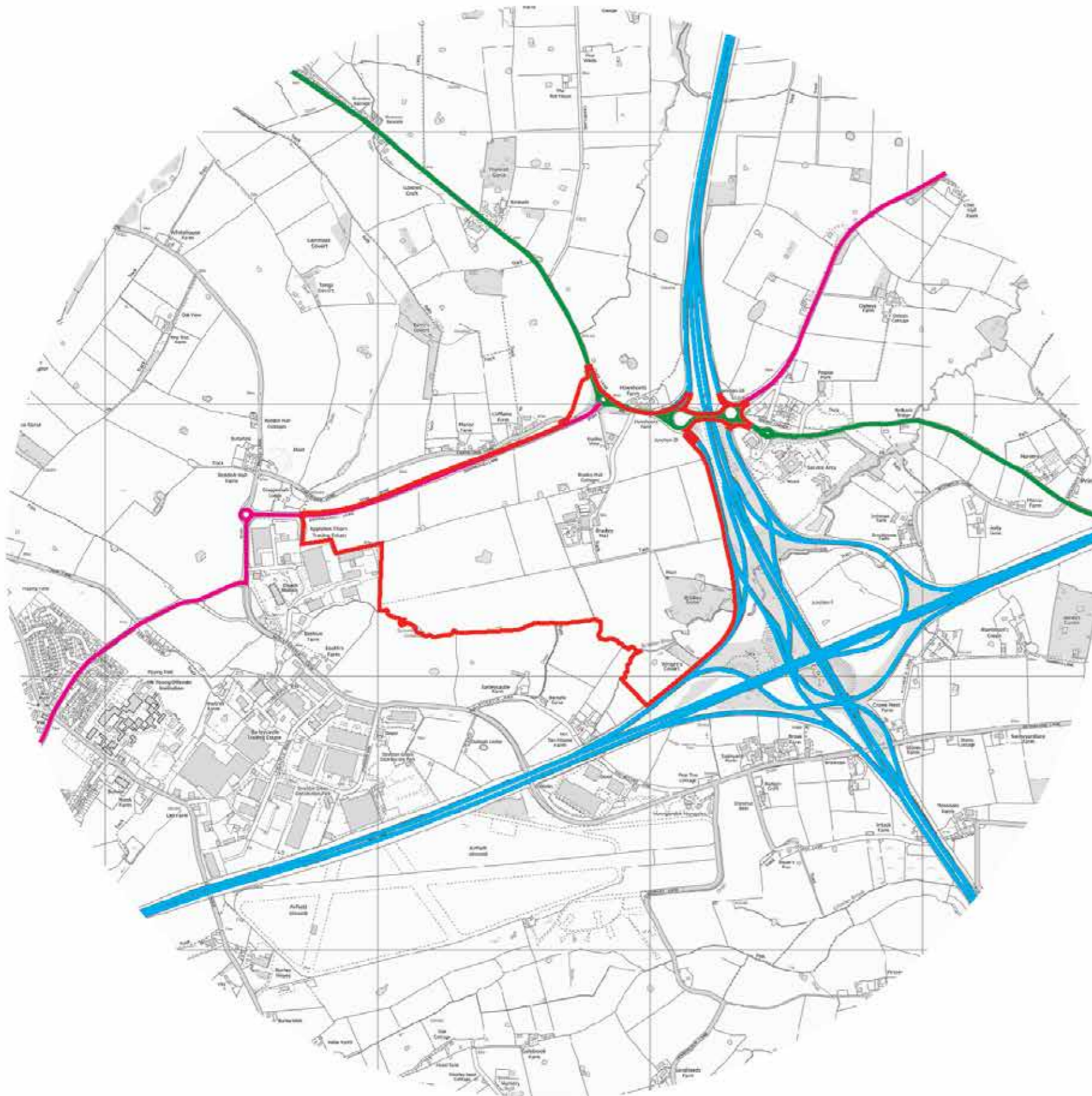
LANDSCAPE FIGURES





LANDSCAPE CHARACTER AREAS



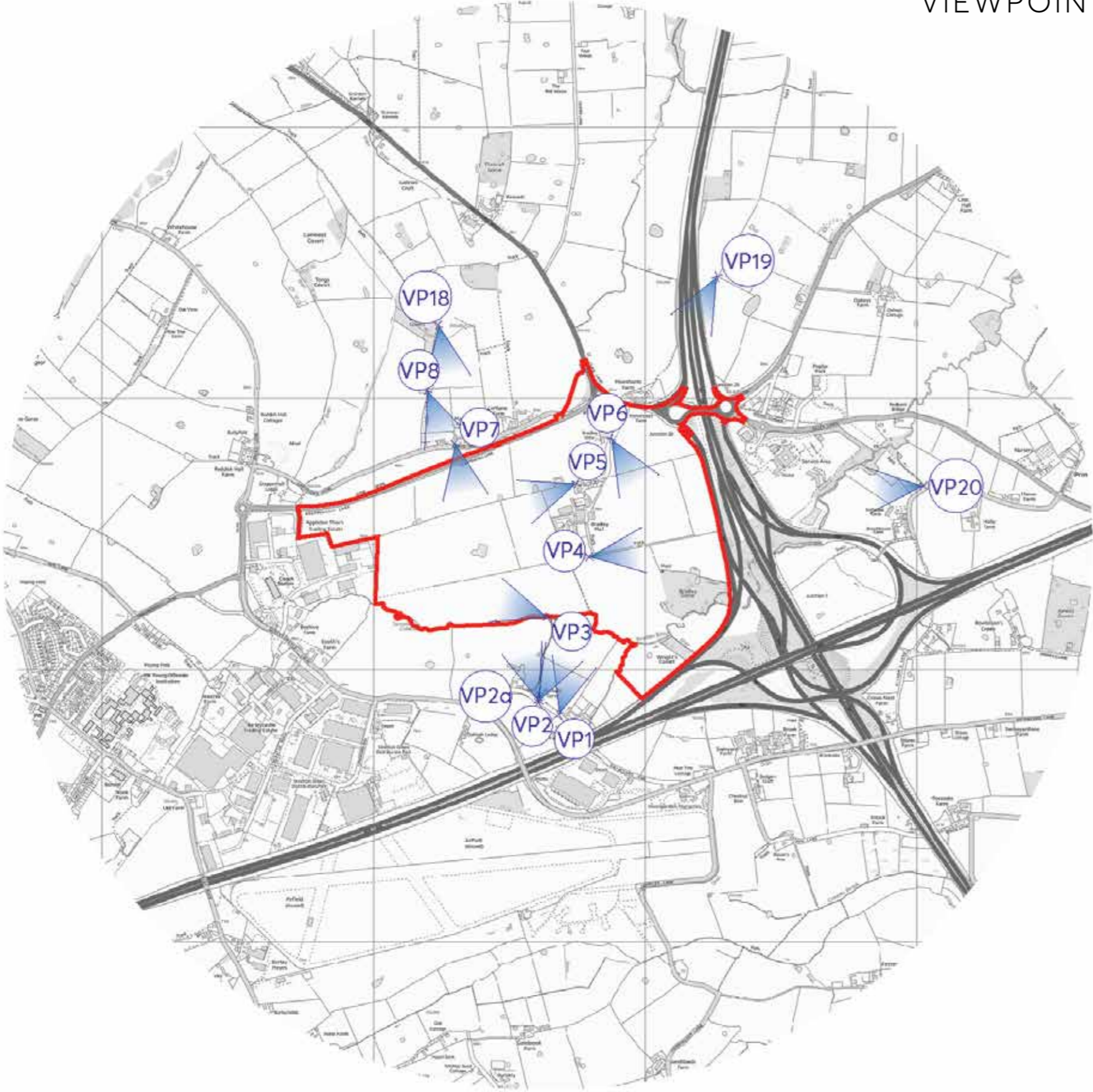
KEY

-  Six56, Warrington site boundary
-  1B - Appleton Thorn
Warrington Landscape Character Assessment 2007
-  3A - Appleton Park & Grappenhall
Warrington Landscape Character Assessment 2007
-  3B - Massey Brook
Warrington Landscape Character Assessment 2007
-  3C - Lymm
Warrington Landscape Character Assessment 2007
-  LFW3 - Arley Character Area
Cheshire Landscape Character Assessment 2008
-  4C - Former Stretton Airfield
Warrington Landscape Character Assessment 2007



- KEY
-  Six56, Warrington site boundary
 -  Motorways
 -  A Roads
 -  B Roads

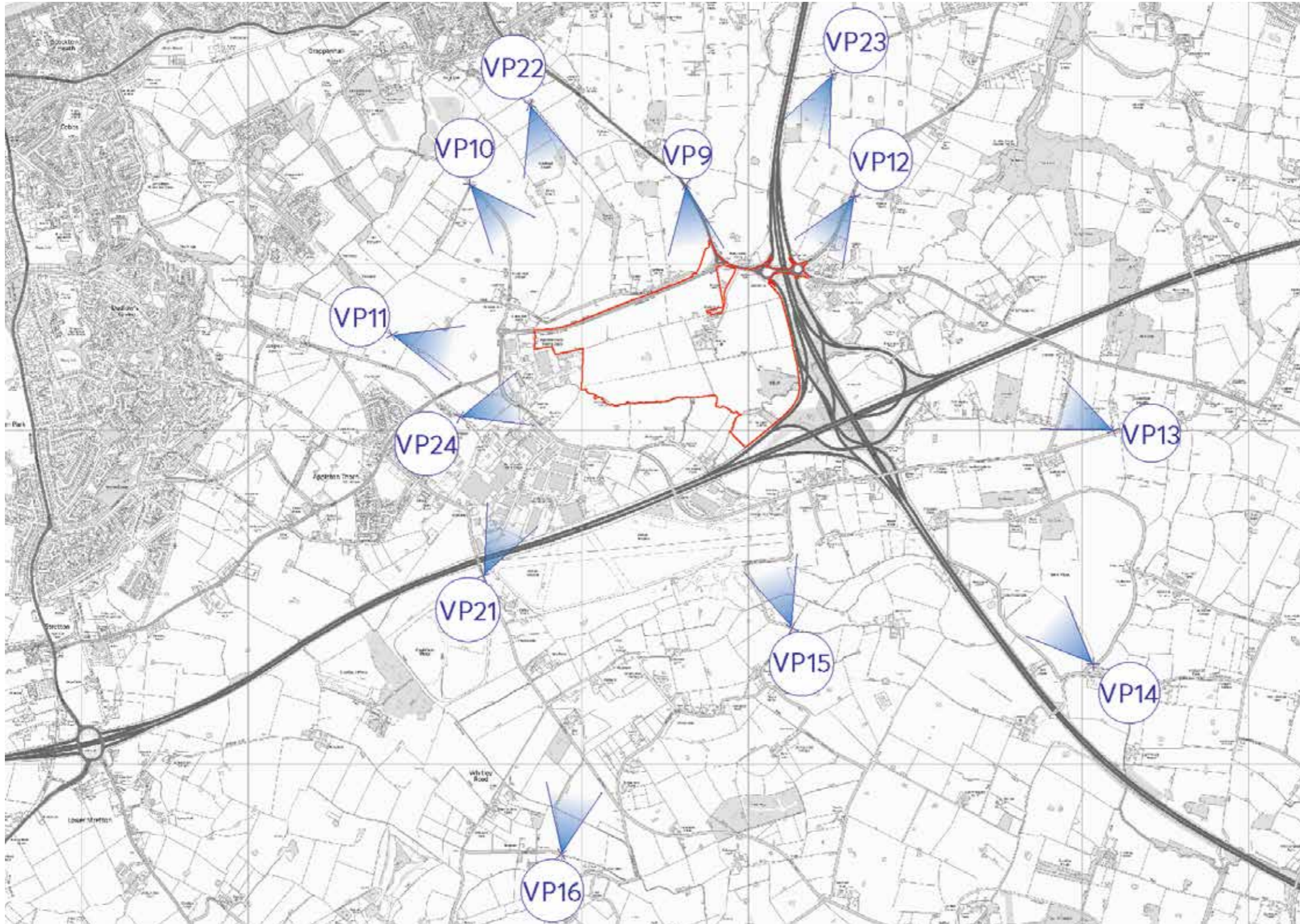
VIEWPOINT LOCATIONS - IMMEDIATE CONTEXT





KEY

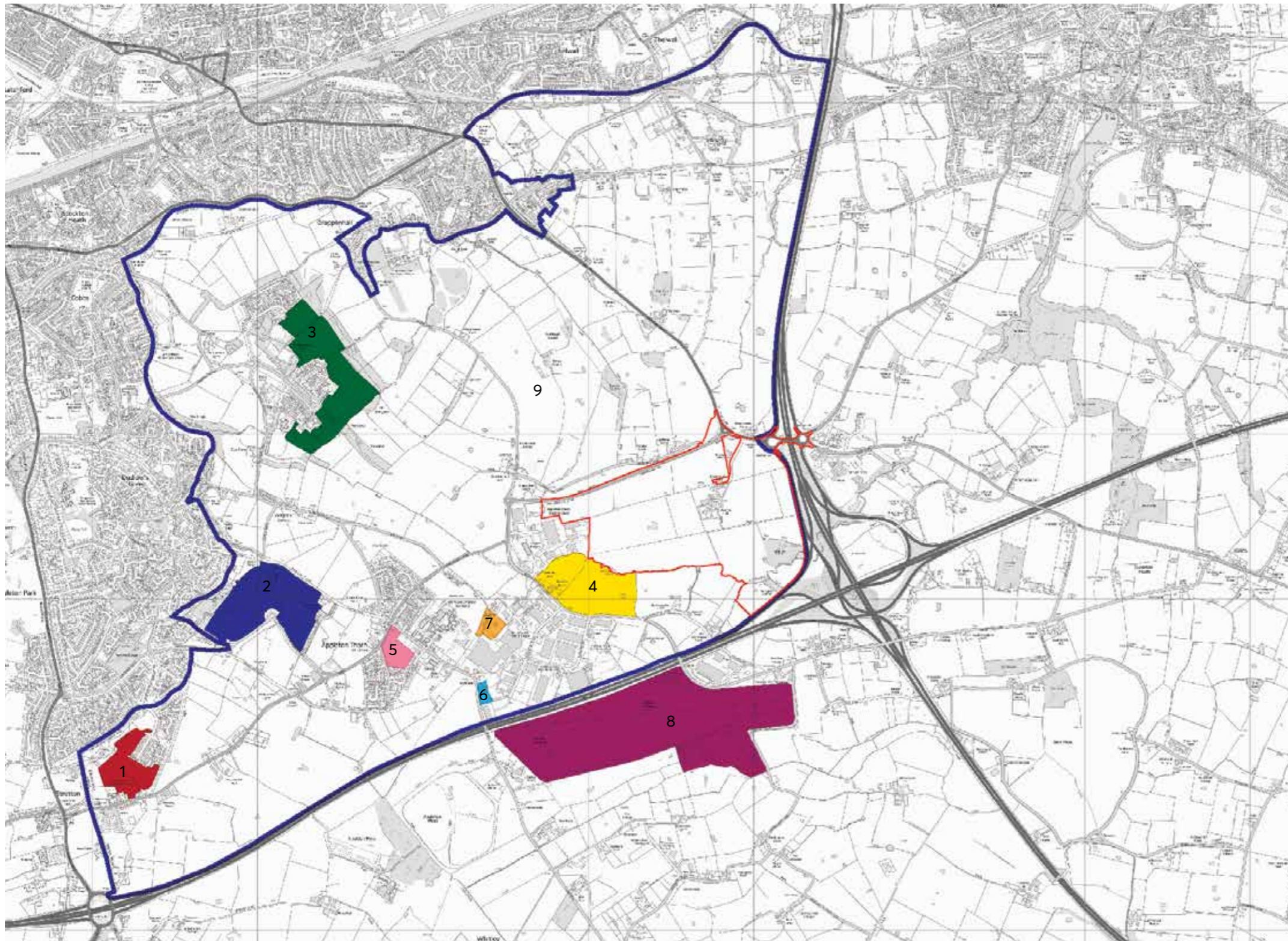
- Six56, Warrington site boundary
- ① Viewpoint

VIEWPOINT LOCATIONS - WIDER CONTEXT



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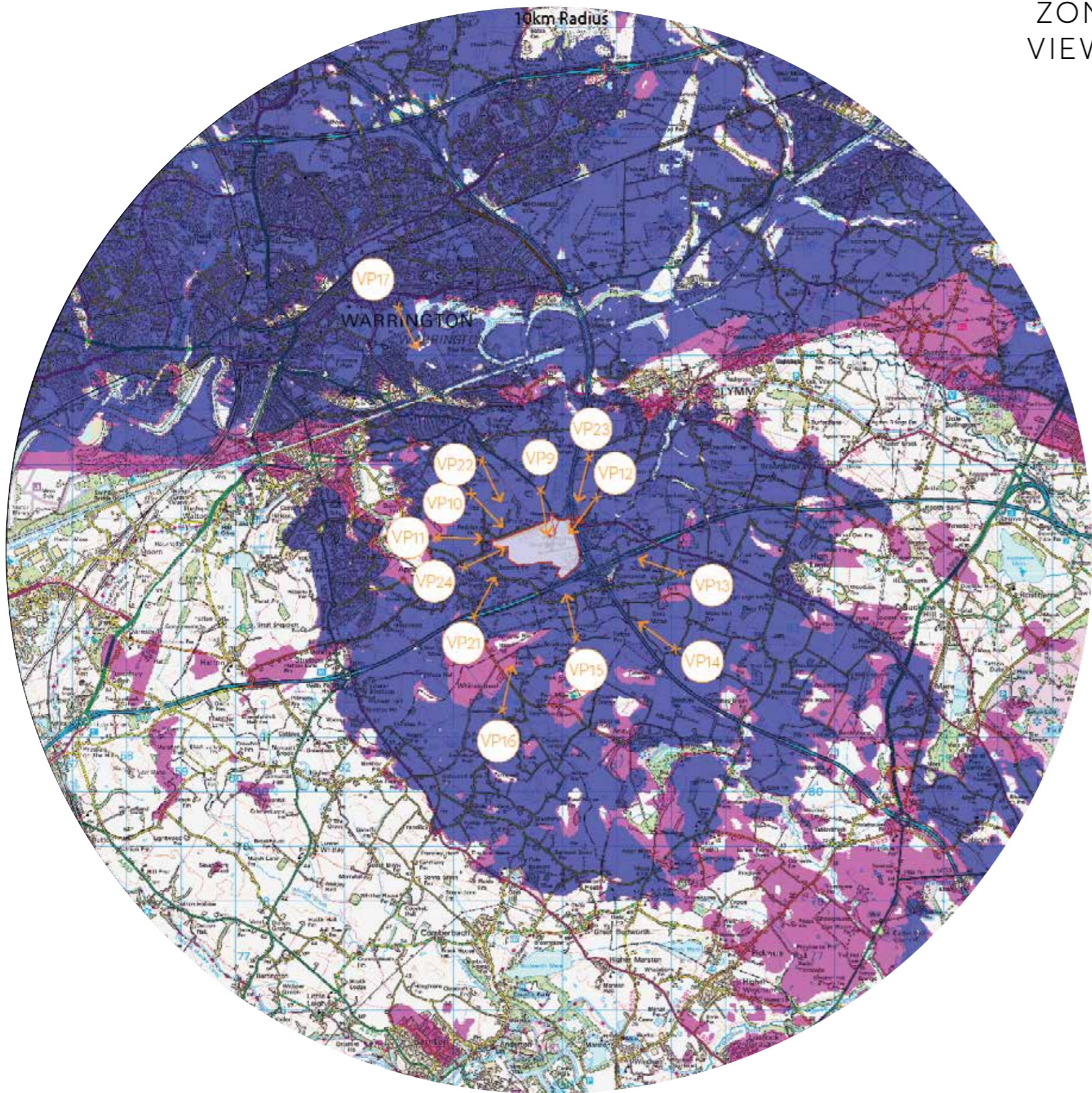
-  Six56, Warrington site boundary
-  Viewpoint



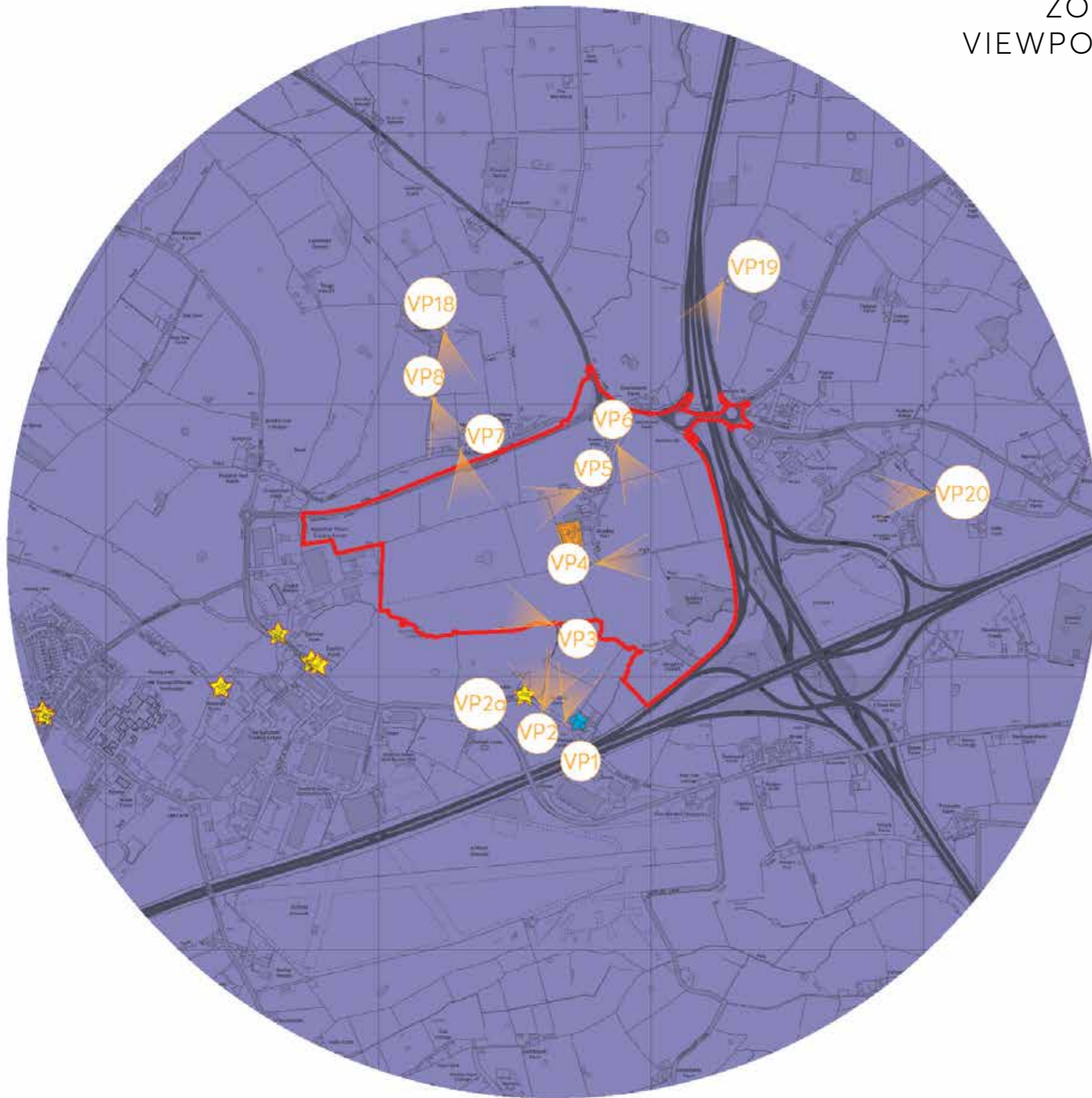
KEY

- Six56, Warrington site boundary
- 1 Land bounded by Pewterspear Green Road, Ashford Drive, Stretton
- 2 Land bounded by Green Lane & Dipping Brook Avenue, Appleton
- 3 Land South of Astor Drive, East of Lichfield Avenue &, South of Witherwin Avenue, Grappenhall Heys,
- 4 Land North of Barleycastle Lane, Appleton
- 5 Land to the east of Stretton Road, north of Pepper Street, Stretton Road, Appleton Thorn
- 6 Blue Machinery Ltd, Barleycastle Trading Estate, Lyncastle Road
- 7 Land off Lyncastle Way, Barleycastle Lane, Appleton
- 8 Former Stretton Airfield
- 9 Warrington Garden Suburb
(Limited information Available therefore Cumulative Assessment will be a non-spatial assessment, approximate boundary shown).

ZONE OF THEORETICAL VISIBILITY WITH VIEWPOINTS OVERLAY- WIDER CONTEXT



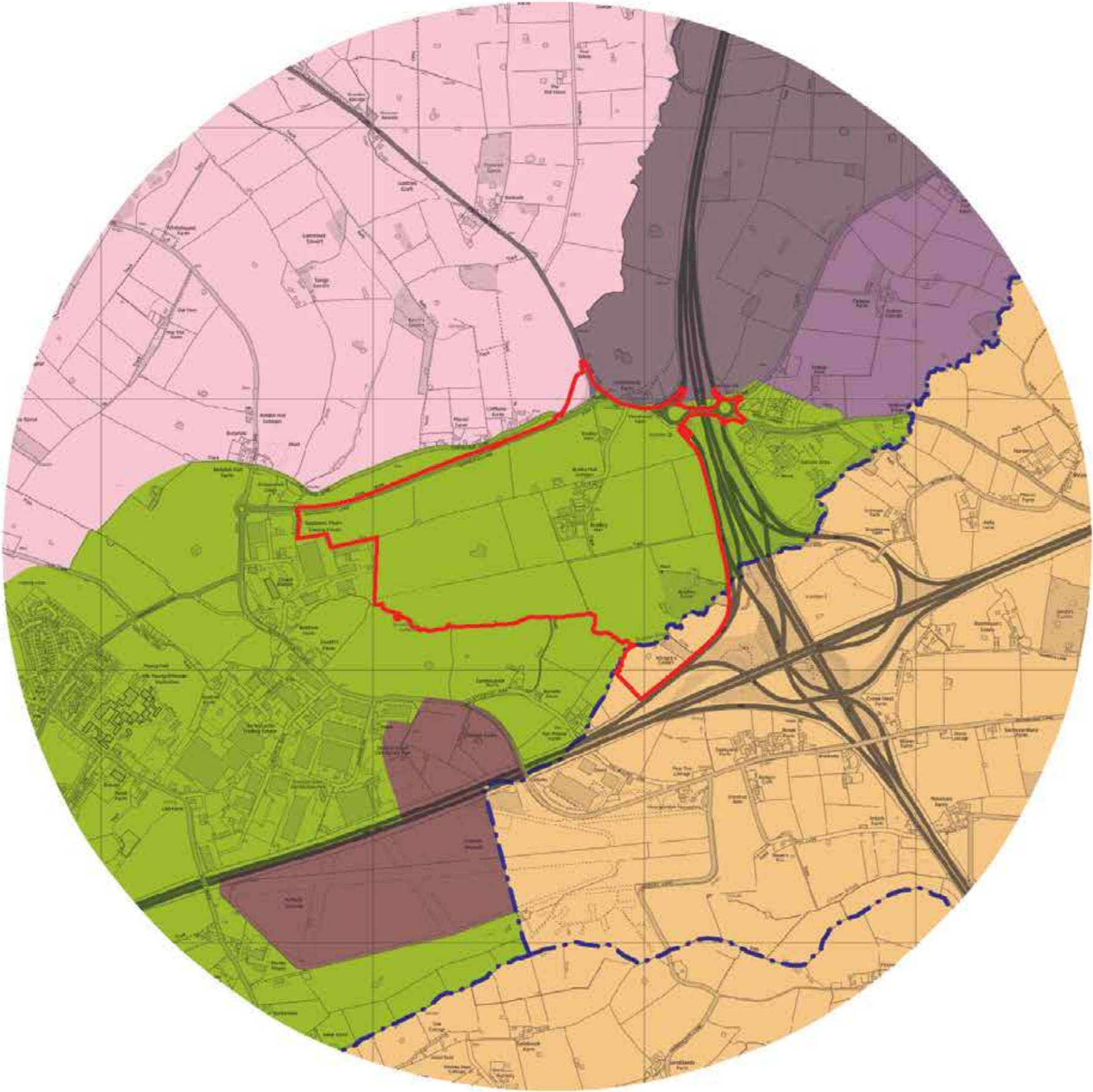
ZONE OF THEORETICAL VISIBILITY WITH VIEWPOINTS OVERLAY- IMMEDIATE CONTEXT






- KEY
- Six56, Warrington site boundary
 - Viewpoint
 - Scheduled monuments
 - Grade II* listed building
 - Grade II listed building
 - Zone of Theoretical Visibility

LANDSCAPE FIGURES

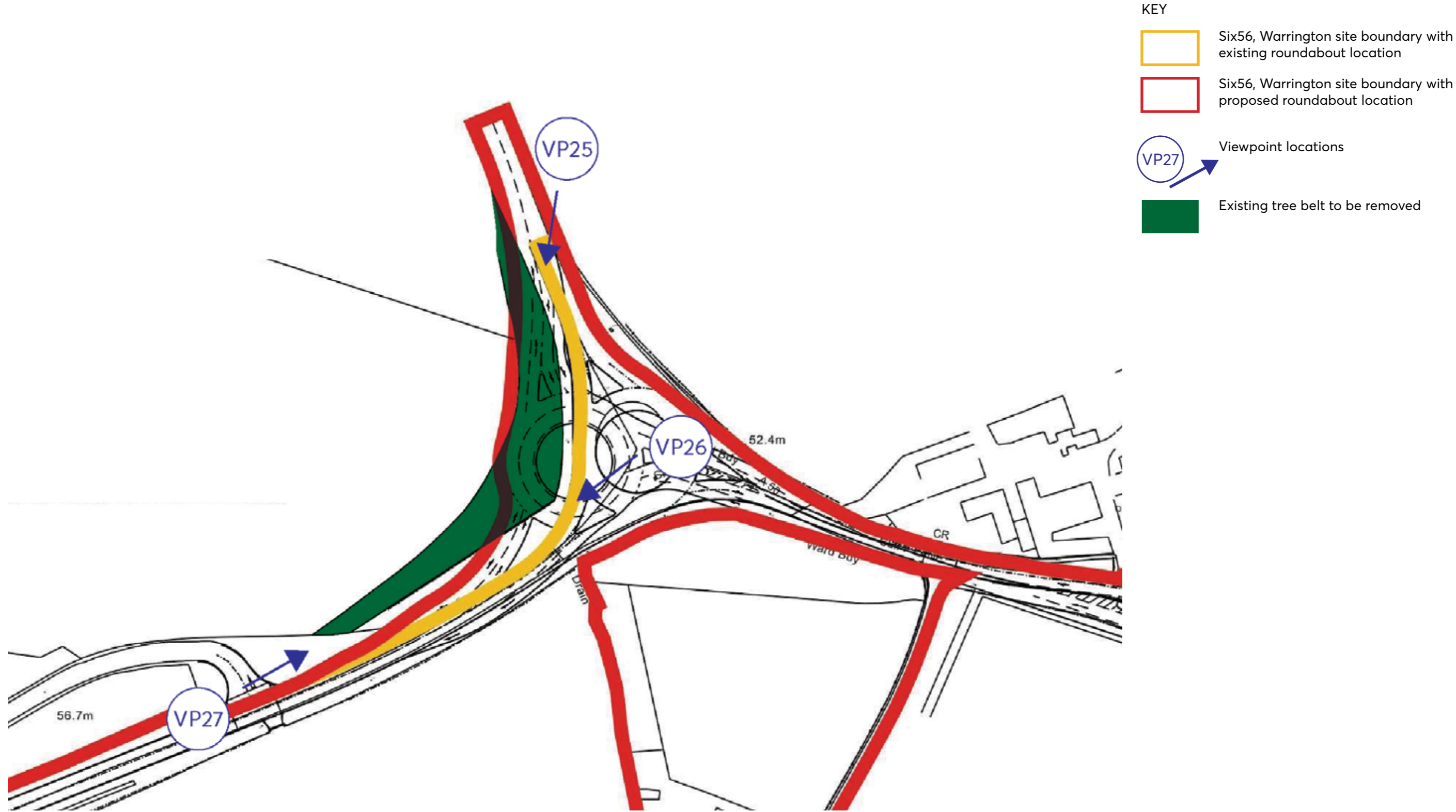
LANDSCAPE CHARACTER AREAS

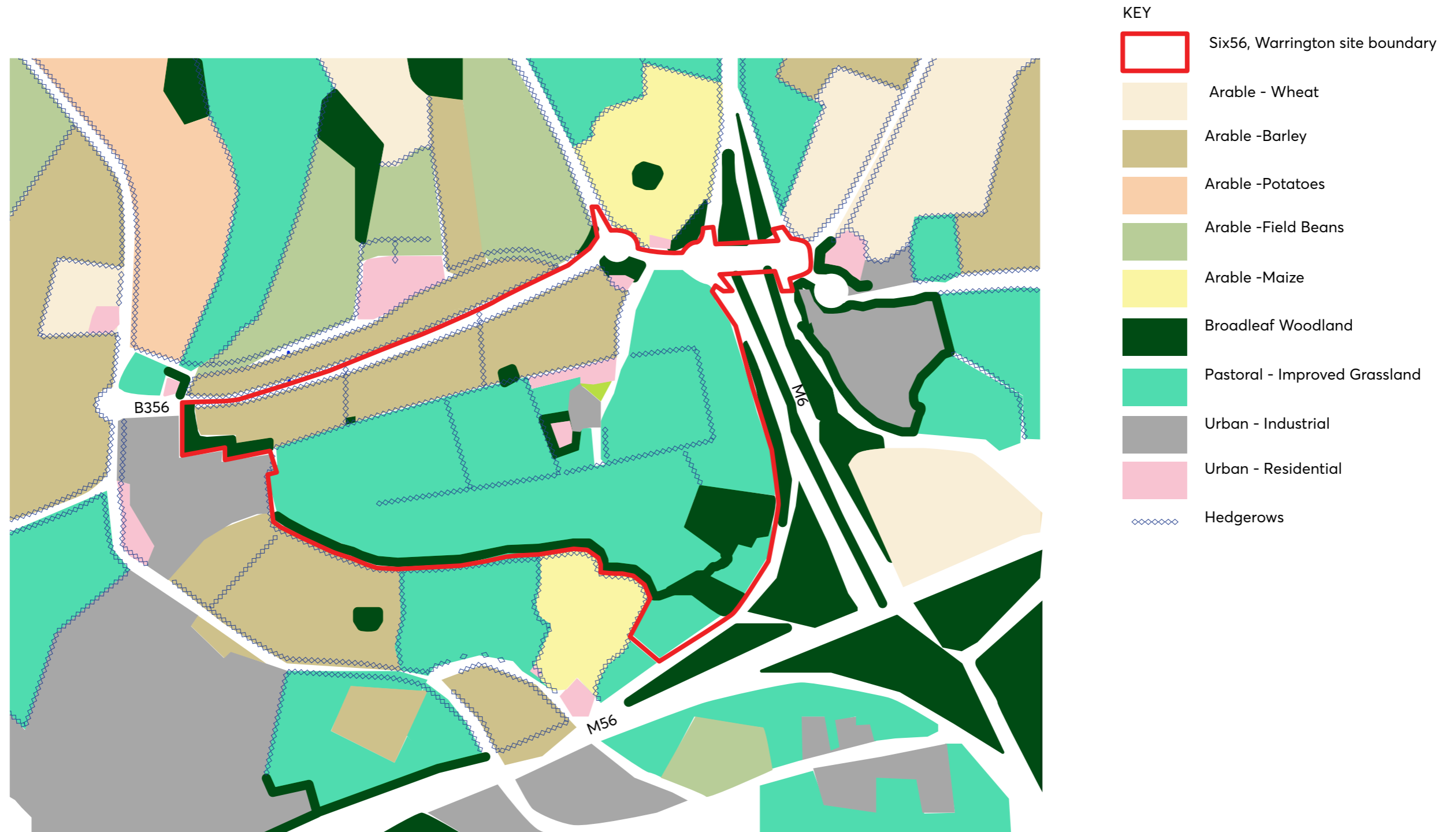


- KEY**
-  Six56, Warrington site boundary
 -  Council Boundary
- Warrington Borough Council**
Warrington Landscape Character Assessment 2007
-  1B - Appleton Thorn
Warrington Landscape Character Assessment 2007
 -  3A - Appleton Park & Grappenhall
Warrington Landscape Character Assessment 2007
 -  3B - Massey Brook
Warrington Landscape Character Assessment 2007
 -  3C - Lymm
Warrington Landscape Character Assessment 2007
 -  4C - Former Stretton Airfield
Warrington Landscape Character Assessment 2007
- Cheshire East & Cheshire West Council's**
Cheshire Landscape Character Assessment 2008
-  LFW3 - Arley Character Area
Cheshire Landscape Character Assessment 2008

LANDSCAPE FIGURES

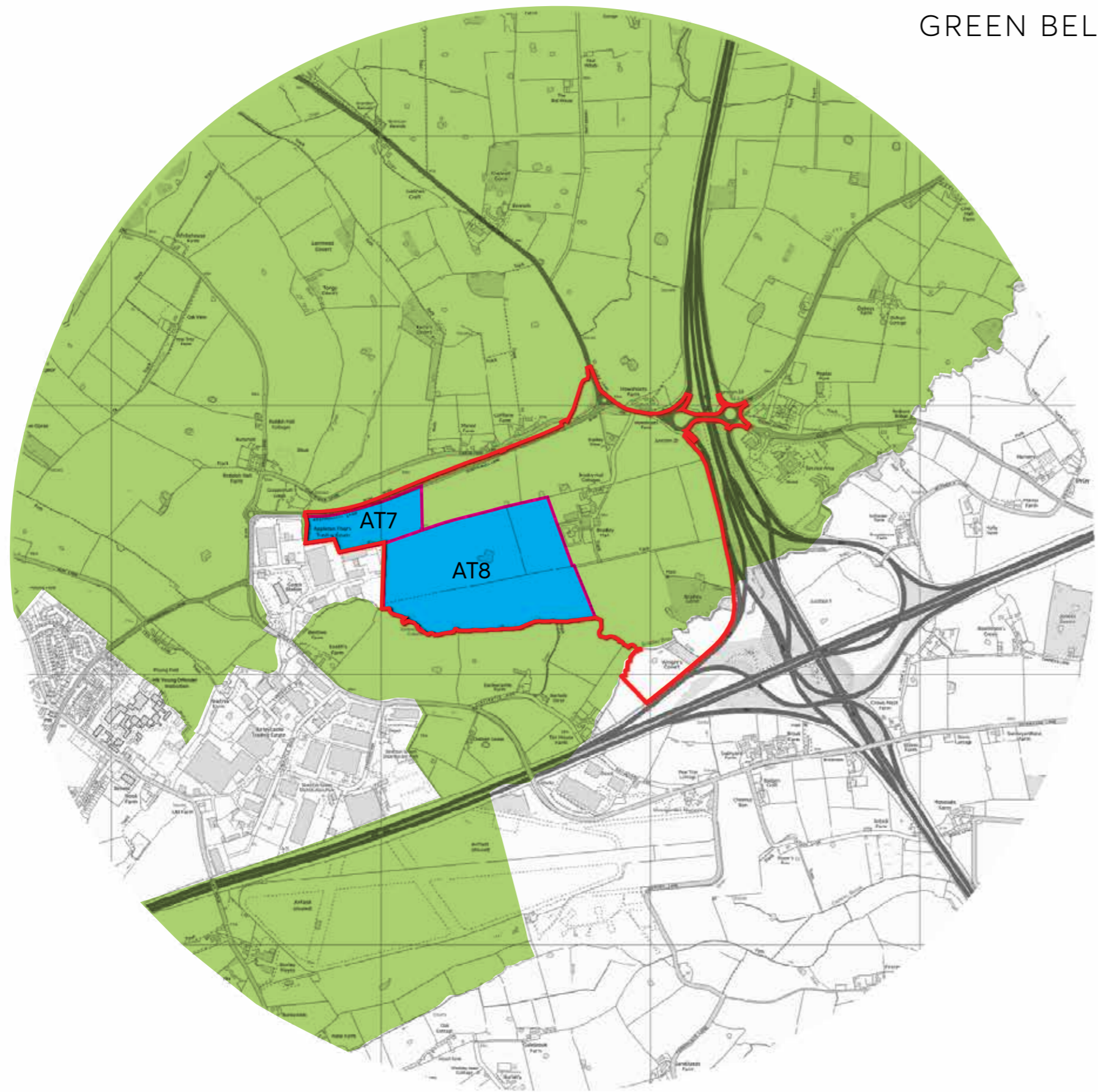
CLIFF LANE ROUNDABOUT VIEWPOINTS








Land Cover Plus Crops data 2017 / 2018 & Land Cover 2015 - Digimaps

GREEN BELT PARCELS WITHIN SITE BOUNDARY



KEY

-  Six56, Warrington site boundary
-  Warrington Green Belt
-  Parcels AT7 & AT8
Warrington Borough Council, Green Belt Assessment, Final Report (21 October 2016)

Appendix 4.2 – Photoviewpoints 1-27

SIX56 | WARRINGTON

STAGE 02
APPENDIX 4.2 - LANDSCAPE PHOTOVIEWPOINTS
July 2020

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 - Viewpoint Locations - Immediate Context
 - Viewpoint Locations - Wider Context
 - Viewpoint Locations - Cliff Lane Roundabout

- 2.0 Viewpoints**
 - Viewpoint 1 - 27

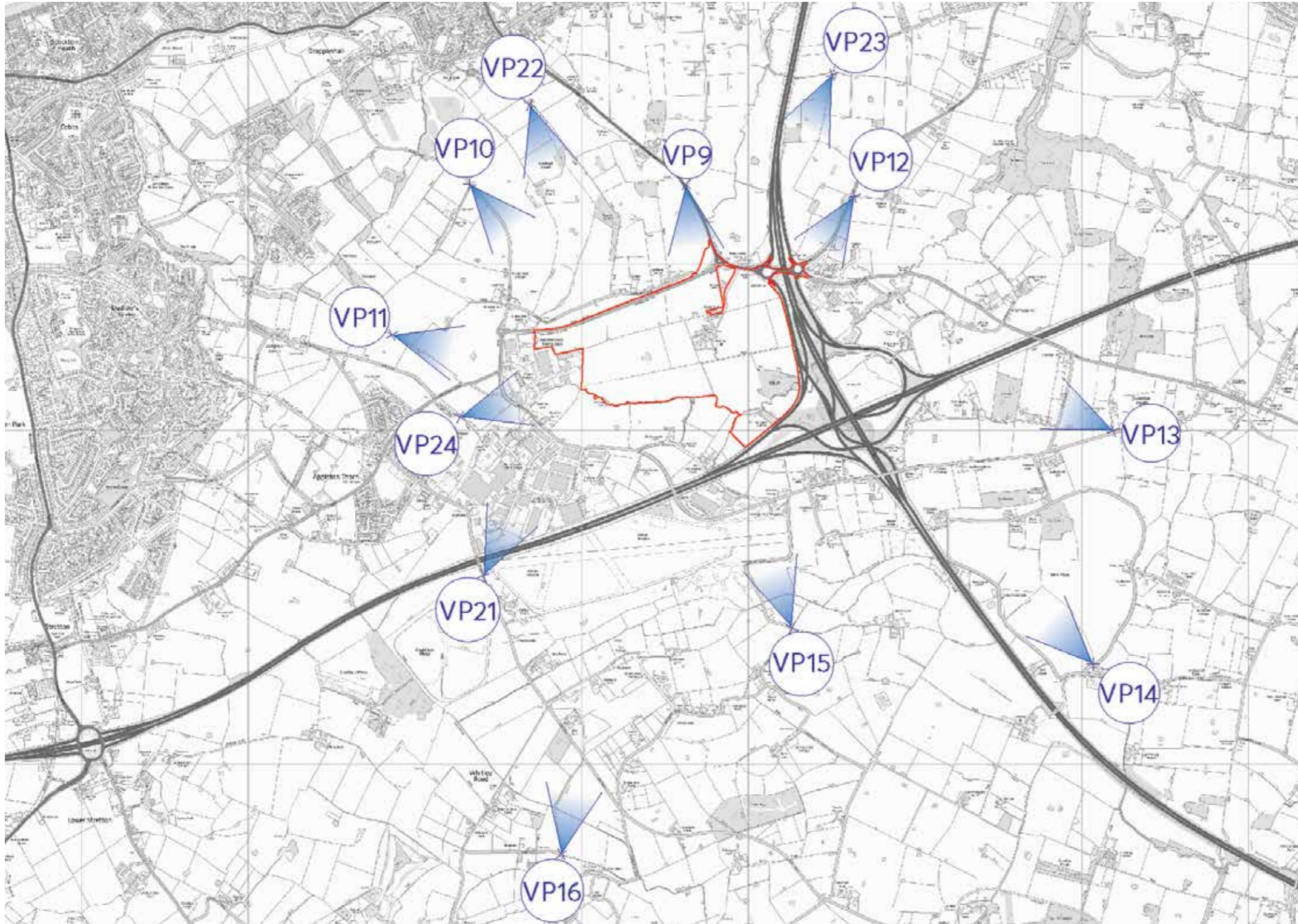
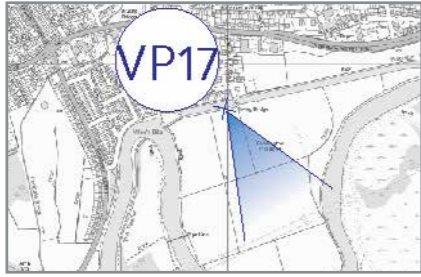
VIEWPOINT LOCATIONS 1.0

VIEWPOINT LOCATIONS - IMMEDIATE CONTEXT





VIEWPOINT LOCATIONS

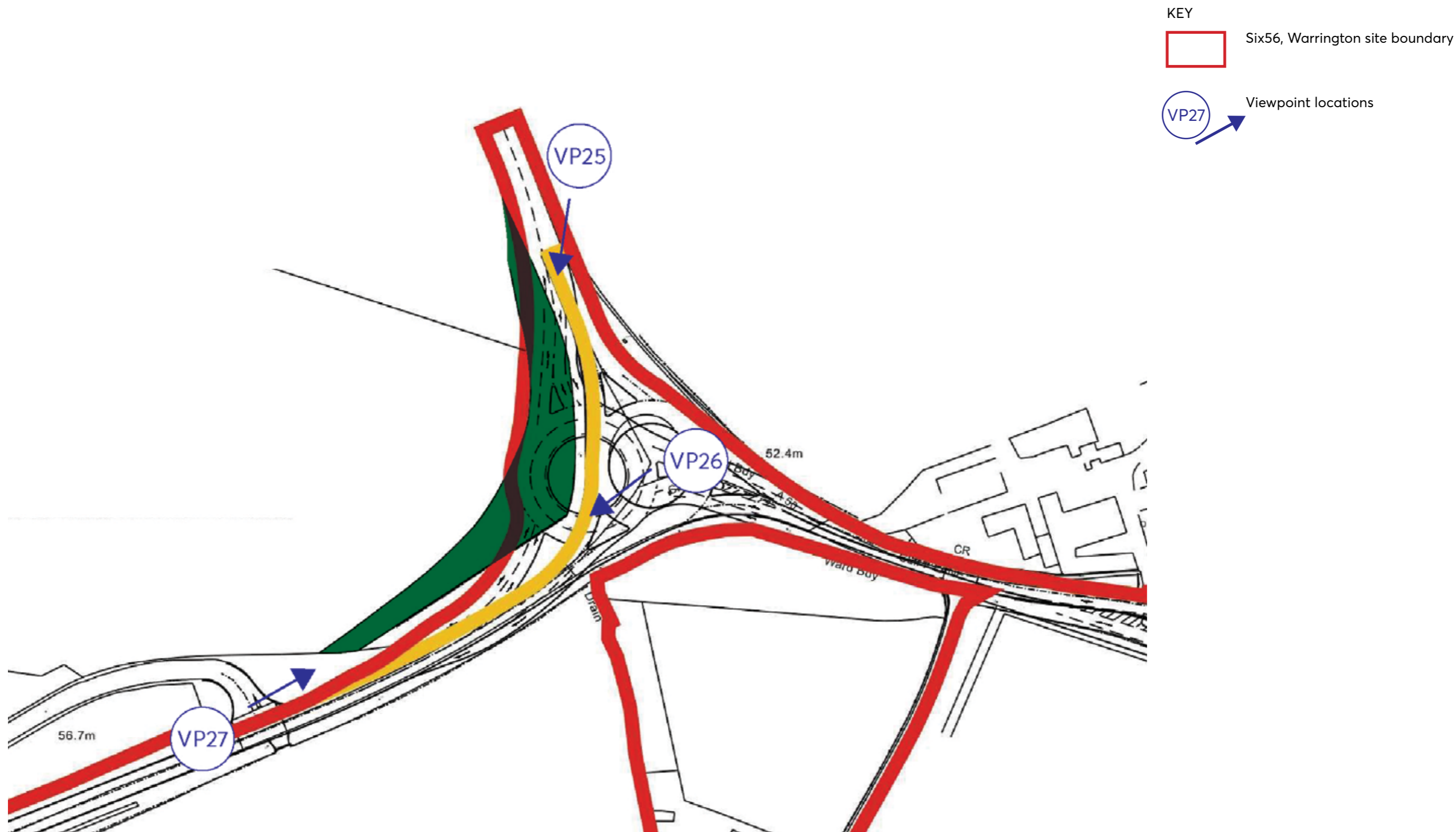
VIEWPOINT LOCATIONS - WIDER CONTEXT



KEY

-  Six56, Warrington site boundary
-  Viewpoint locations

VIEWPOINT LOCATIONS - CLIFF LANE ROUNDABOUT





VIEWPOINT 1
Representing the viewpoint of the Grade II* Listed Building Tan House Farm along Barleycastle Lane.



VIEWPOINT 2
Taken from the Appleton FP 23 Public Footpath leading to the southern boundary of the site from Barleycastle Lane, facing northeast.



VIEWPOINT 02A

Taken from the Appleton FP 23 Public Footpath leading to the southern boundary of the site from Barleycastle Lane, facing northeast.



VIEWPOINT 3

Representing the viewpoint of the Appleton FP 23 Public Footpath as it enters the site boundary along the southern boundary, facing west towards the industrial park.



VIEWPOINT 4

Taken within the site boundary along the Appleton FP 23 Public Footpath and track below the scheduled monument, facing east to wards the M6.



VIEWPOINT 5

Representing the viewpoint of the Appleton FP28 Public Footpath within the site boundary.



VIEWPOINT 6

Representing the views of the Bradley View house outside the site boundary along the Appleton FP23 Public Footpath.



VIEWPOINT 7

Taken in front of the residential properties to the north of the site boundary along Cartridge Lane, looking south towards the site boundary.



VIEWPOINT 8

Taken from the Grappenhall and Thelwall FP05 Public Footpath to the north of the site, facing south towards the site boundary. The properties along Cartridge Lane are visible in the center of the view.



VIEWPOINT 9

Taken from the Grappenhall and Thelwall FP17 Public Footpath along Cinder Lane, facing south-southwest towards the site boundary.



VIEWPOINT 10

Taken from the entrance of Yew Tree Farm along Broad Lane, facing towards the site boundary. The view represent transient views of vehicles driving along Broad Lane, which would directly face onto the site.



VIEWPOINT 11

Taken along the Appleton FP17 Public Footpath leading towards Grappenhall Lane, facing east towards the site.



VIEWPOINT 12

Taken along the B5158 Cherry Lane at the entrance road to Oxheys Farm, facing southwest towards the site boundary.



VIEWPOINT 13

Taken from along Swineyard Lane at the entrance to Sworton Heath Farm looking west towards the site boundary.



VIEWPOINT 14

Taken from Moss Lane at the junction with Hobbs Hill Lane.



VIEWPOINT 15

Taken on the bend of Pennyleck Lane, near to the Antrobus FP8 Public Footpath leading to Firtree Farm, facing north towards the site boundary.



VIEWPOINT 16

Taken from the entrance to the Antrobus FP32 Public Footpath where it meets Reed Lane, facing north towards the site boundary.



VIEWPOINT 17

Taken to the south of Woolston New Cut near to the swing-bridge, facing southeast towards the site. View representative of the pedestrian users of Paddington Meadows and River Mersey from the residential properties to the north.



VIEWPOINT 18
Taken from Public Footpath Grappenhall and Thelwall FP05 located next to Barry's Covert.



VIEWPOINT 19
Taken from Public Footpath Lymm FP 02, where the footpath bends close to Junction 20 of the M6



VIEWPOINT 20
Taken along Wither's Lane next to the public right of way.



VIEWPOINT 21
Taken from Appleton FP 36 where the PROW meets Arpley Road. Representing Appleton Moss SSSI. This viewpoint provides views in the context of existing employment on Barleycastle Lane, the airfield.



VIEWPOINT 22

Taken from Public Footpath Grappenhall and Thelwall FP 05.



VIEWPOINT 23

Taken from Public Footpath Lymm FP 02, within the grounds of Higher House Farm.

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VIEWPOINT 24

Taken from Public Footpath Appleton 24, representing the view from Appleton Thorn.



VIEWPOINT 25

Taken from Cliff Lane to the north of the Cliff Lane roundabout facing south towards the Site. View was chosen to shown effects of tree belt removal along Cliff Lane to make room for the roundabout relocation.



VIEWPOINT 26

Taken from the eastern corner of the Cliff Lane roundabout facing west towards the B5356 Grappenhall Lane. View was chosen to shown effects of tree belt removal along Cliff Lane to make room for the roundabout relocation.



VIEWPOINT 27

Taken from the corner of Cartridge Lane and the B5356 Grappenhall Lane, facing towards the Cliff Lane roundabout. View was chosen to shown effects of tree belt removal along Cliff Lane to make room for the roundabout relocation.



The Barn
One Hollin Lane
Styal
Cheshire
SK9 4JH

+441625 523 157
hello@layer-ing.com
www.layer-ing.com

Appendix 4.3 - Photomontages

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STAGE 02
APPENDIX 4.3 - LANDSCAPE PHOTOMONTAGES
July 2020

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- 1.0 Photomontages**
Photomontage Locations
- 2.0 Photomontages**
Photomontages 1-10



Existing View



Model View



Model View Overlay



Photomontage Year 1



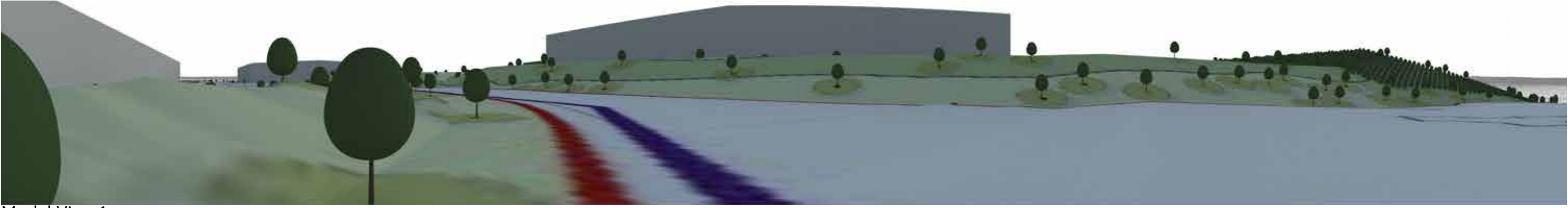
Photomontage Year 15



Existing View 1



Existing View 2



Model View 1



Model View 2



Model View Overlay 1



Model View Overlay 2



Photomontage View 1 Year 15



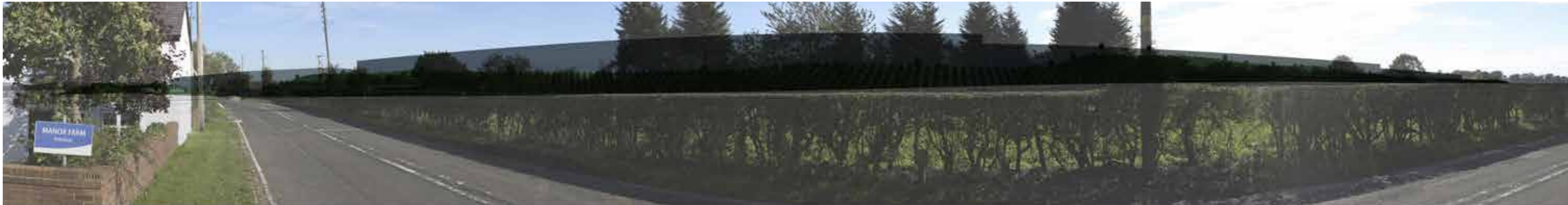
Photomontage View 2 Year 15



Existing View



Model View



Model View Overlay



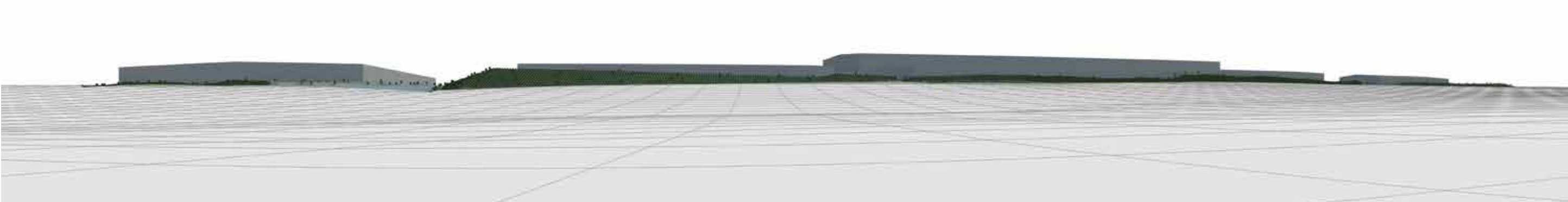
Photomontage



Photomontage Year 15



Existing View



Model View



Model View Overlay



Photomontage



Photomontage Year 15



Existing View



Model View



Model View Overlay



Photomontage



Photomontage Year 15



Existing View



Model View



Model View Overlay



Photomontage



Photomontage Year 15



Existing View



Model View



Model View Overlay



Photomontage



Photomontage Year 15



Existing View



Model View



Model View Overlay



Photomontage



Photomontage Year 15



Existing View



Model View



Model View Overlay



Photomontage



Photomontage Year 15



Existing View



Model View



Model View Overlay



Photomontage



Photomontage Year 15

LAYER
LANDSCAPE ARCHITECTURE

The Barn
One Hollin Lane
Styal
Cheshire
SK9 4JH

+441625 523 157
hello@layer-ing.com
www.layer-ing.com

**Appendix 4.4 – Six56 Warrington BS
5837:2012 Arboricultural Survey and Impact
Assessment**

SIX 56 WARRINGTON

BS 5837:2012 ARBORICULTURAL SURVEY AND IMPACT ASSESSMENT
REVISION A

for

LANGTREE & PANATTONI

February 2019

Registered Office:

The South Wing, The Old Barracks, Sandon Road, Grantham, Lincolnshire , NG31 9AS

Tel: (01476) 569600

Email: admin@landscapescienceconsultancy.co.uk www.landscapescienceconsultancy.co.uk

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1.0	Introduction
2.0	Site Description
3.0	Relevant Legislation and Policy
4.0	Methodology
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6.0	Impact Assessment
7.0	Site Specific Recommendations
8.0	Generic Recommendations
9.0	Conclusion

References

Figures 01a-08a:	Tree Constraints Plans
Figures 01b-08b:	Tree Removal Plans
Appendix 1:	Tree Schedule

Project Ref No:	M88.17a & b
Author:	Steven Weber BSc (Hons) MArborA MCIEEM
Scientific Check:	James Faulconbridge MRes MCIEEM
Presentation Check:	Zoe Lewis BA (Hons)
Date:	February 2019

1.0 Introduction

Landscape Science Consultancy Ltd (LSC Ltd) was commissioned by Langtree & Panattoni to conduct an Arboricultural Survey and Impact Assessment at Six 56 Warrington - hereafter referred to as the 'Survey Site'.

The proposals relate to an outline planning application for a mixed employment development with associated servicing and infrastructure including car parking, internal vehicular access roads, drainage features and soft landscaping buffers.

The Arboricultural Survey and Impact Assessment provides an evaluation of trees with regards to the species present, physiological parameters, structural factors and tree quality assessment, in line with British Standards BS 5837:2012 'Trees in Relation to Design, Demolition and Construction – Recommendations' (British Standards Institute, 2012).

The Arboricultural Survey includes all on-site trees as well as trees along site boundaries which have the potential to be affected by development, as deemed appropriate through professional judgement. The area covered by the Arboricultural Survey is illustrated in **Figures 01a - 08a**, the Tree Constraints Plan.

Broad recommendations are provided to address potential constraints from trees whilst maximizing the arboricultural value of the Survey Site using best practice methodology that follows BS 5837:2012.

2.0 Site Description

2.1 Survey Site Location

The Survey Site encompasses an expanse of farmland covering approximately 94 hectares, a few miles to the south of Warrington and directly adjacent to the M6 Junction 20 Warrington Interchange.

The central Ordnance Survey grid reference to the Survey Site is SJ 656 844.

2.2 Survey Site Description and Landscape

The Survey Site comprises a span of arable land along the northern boundary with the remainder dominated by permanent pasture. Managed low hedgerows cross the Survey Site with very occasional mature standard trees. Several ponds are present to the north of the Survey Site and support a number of mature and established trees and scrub along the banksides. Outside of tree lines and woodlands, the majority of tree stock is located at Bradley Farm, within the centre of the Survey Site.

Bradley's Brook is located along the southern boundary of the Survey Site and supports a mosaic of scattered and grouped trees with associated scrub and hedgerows. Within the south-eastern corner of the Survey Site are two mature and established broadleaved woodlands; Bradleys Gorse and Wrights Covert.

The eastern boundary of the Survey Site is directly adjacent to a filter road from the M6 Junction 20 Warrington Interchange, along which is a more or less continuous linear screening belt of young broadleaf trees. The north-western corner of the Survey Site is adjacent to an industrial estate and is separated by maturing screening belts of broadleaved trees and scrub.

3.0 Relevant Legislation and Policy

3.1 Legislation

3.1.1 Tree Preservation Orders

A Tree Preservation Order (TPO) is an order made by a Local Planning Authority (LPA) in respect of trees and woodland. The main legislative tools for TPO's are covered in Part VIII of the Town and Countryside Planning Act 1990 and the Town and Country Planning (Tree Preservation Orders) (England) Regulations 2012. Other legislative tools which have updated the 1990 Act include Section 192 of the Planning Act 2008 and Part 6 of the Localism Act 2011.

The principal effect of a TPO is to prohibit the:

- Cutting down, uprooting, topping, lopping and;
- The wilful damage or wilful destruction of trees without the LPA's consent.

The cutting or compaction of roots is potentially damaging and so, in the view of the Secretary of State, requires the LPA's consent. Any works which may affect trees or woodland under a TPO will require consent from the LPA before the development works take place, unless the works can meet strict exemptions criteria.

The Town and Countryside Planning Act 1990 also places a duty on LPA's so that, in granting planning permission for any potential development:

“Adequate provision is made, by the imposition of conditions, for the preservation or planting of trees”.

Where it is considered 'expedient' to do so, LPA's can serve a TPO(s) on trees to protect their amenity value from potential threat of development.

3.1.2 Conservation Areas

Section 211 of the Town and Countryside Planning Act 1990 makes special provision for trees in Conservation Areas which are not the subject of TPO's. Under Section 211, subject to a range of strict exemptions, landowners proposing to cut down, top or lop a tree in a Conservation Area are required to give six weeks' notice to the LPA. This is to allow the LPA to decide whether the trees should be subject to the provisions of a TPO.

3.1.3 Felling Licenses

A Felling Licence may be required when the proposed volume of timber to be removed exceeds a specified amount. The Forestry Commission administers Felling Licences under the Forestry Act 1967. There are number of general

exemptions where a Felling Licence would not be required. With respect to development, the principle exemption is:

“Felling trees immediately required for the purpose of carrying out development authorised by planning permission (granted under the Town and Country Planning Act 1990) or for work carried out by certain providers of gas, electricity and water services and which is essential for the provision of these services”.

3.2 Planning Policy

3.2.1 National Planning Policy

The National Planning Policy Framework (NPPF) sets out the Government’s planning policies for England and how these are expected to be applied (MoHCLG, 2018). With respect to trees, the NPPF requires planning policies and decisions to contribute to and enhance the natural and local environment by:

“Recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland”.

With respect to ancient trees and woodland, the NPPF also states:

“Development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists”.

3.2.2 Local Planning Policy

Warrington Borough Council’s Adopted Core Strategy (2014) details the following planning policy in respect of trees and woodland, incorporated into a policy for Green Infrastructure.

Policy QE 3

Green Infrastructure

The Council will work with partners to develop and adopt an integrated approach to the provision, care and management of the borough’s Green Infrastructure. Joint working and the assessment of applications will be focussed on:

- protecting existing provision and the functions this performs;
- increasing the functionality of existing and planned provision especially where this helps to mitigate the causes of and addresses the impacts of climate change;
- improving the quality of existing provision, including local networks and corridors,

specifically to increase its attractiveness as a sport, leisure and recreation opportunity and its value as a habitat for biodiversity;

- protecting and improving access to and connectivity between existing and planned provision to develop a continuous right of way and greenway network and integrated ecological system;
- securing new provision in order to cater for anticipated increases in demand arising from development particularly in areas where there are existing deficiencies assessed against standards set by the Council.

4.0 Methodology

4.1 Tree Preservation Orders and Conservation Areas

Warrington Borough Council's on-line planning map was consulted regarding the presence of Tree Preservation Orders (TPO's) and Conservation Areas within and/or adjacent to the Survey Site.

4.2 Survey Methodology

4.2.1 Survey Parameters

For the majority of the Survey Site, the Arboricultural Survey was conducted between August to September 2017. Additional minor areas of land along the northern edge of the Survey Site, comprising land around Cliff Lane and the Warrington M6 Interchange, were surveyed in January 2019.

All Arboricultural Surveys were undertaken by Steven Weber BSc Hons MCIEEM MArborA - see Section 4.4 for surveyor competence.

The survey methodology followed that outlined in British Standard BS 5837:2012 'Guide for Trees in Relation to Design, Demolition and Construction'.

In accordance to BS 5837:2012, trees or tree groups within the Survey Site above 1.5m in height and 7.5cm in stem diameter were included in the Arboricultural Survey. The following parameters were measured and/or assessed from the ground, for each tree or tree group as appropriate:

- Identification to species or genus;
- Life stage;
- Contributing years;
- Measurement parameters (height: ground to canopy, height: ground to the lowest part of crown, girth at 1.5m and crown spread from four cardinal points);
- *General observations* on structural and physiological condition;
- *Preliminary* management recommendations (where relevant);
- Quality assessment values (in accordance to Table 01);
- Any additional constraints noted.

All survey parameters and measurements are recorded in the Tree Schedule (**Appendix 1**).

Heights and canopy extent were measured using a True Pulse 200 Professional Electronic Range Finder. Girth measurements were undertaken using a tape measure at 1.5m from ground level.

A number of young trees and/or shrubs below the 7.5cm DBH parameter were present within the Survey Site and not included within the survey.

Shrub masses and hedgerows have been marked on the Tree Constraints Plan (**Figures 01a-08a**). Standard survey parameters have been recorded, where appropriate to the development proposals.

Close standing trees and/or woodlands which are homogenous in structure or characteristics have been surveyed as tree groups, as deemed appropriate through professional judgement.

4.2.2 Tree Quality and Value Assessment

Tree quality and value were assessed using the cascade chart detailed in BS 5837:2012 (Table 01). Factors such as visual amenity, maturity, landscape value and condition were used to assess the quality of each tree or tree group.

Table 01. Tree Quality and Value Categories

Category and definition	Criteria (including subcategories where appropriate)		
Trees unsuitable for retention			
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.	<ul style="list-style-type: none"> • Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reasons, the loss of companion shelter cannot be mitigated by pruning). • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline. • Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality. <p><i>Note: Category U trees can have existing or potential conservation value which it might be desirable to preserve.</i></p>		
	1 Mainly arboricultural qualities	2 Mainly landscape qualities	3 Mainly cultural values, including conservation
Trees To Be Considered For Retention			
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years.	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue).	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features.	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture).
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation.	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality.	Trees with material conservation or other cultural value.
Category C Trees of low quality with an estimated remaining life	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories.	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or	Trees with no material conservation or other cultural value.

expectancy of at least 10 years, or young trees with a stem diameter below 150mm.		trees offering low or only temporary/transient landscape benefits.	
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4.2.3 Survey Constraints

Several trees on-site were located within inaccessible areas such as on steep banks below watercourses, and/or were located off-site but adjacent to the Survey Site boundary. In such cases the measurement parameters of trees were carefully estimated.

4.3 Root Protection Areas

The Root Protection Area (RPA) for each tree or tree group has been calculated using guidance outlined within BS 5837:2012. The RPA is calculated from the Root Protection Radius (RPR) and is shown in the Tree Constraints Plans (**Figure 01a-08a**) and the Tree Schedule (**Appendix 1**) for each tree surveyed.

In respect of tree groups, an average stem diameter typical of the specimens within each group was taken to determine the RPA, following BS 5837:2012 guidance.

4.4 Surveyor Competence

The Arboricultural Survey and Reporting was produced by Steven Weber BSc (Hons) MCIEEM MArborA who has undertaken BS 5837:2012 surveys to inform planning applications for over ten years. In line with BS 5837:2012 he is competent in evaluating trees with regards to the species present, the physiological parameters, tree quality and value, observations of condition, tree constraints/root protection calculations and outlining detailed recommendations for tree protection.

Steven is a Professional Member of the Arboricultural Association and a Full Member of the Chartered Institute of Ecology and Environmental Management. Steven also holds the Lantra Professional Tree Inspection certification.

4.5 Survey Limitations

The Arboricultural Survey and Impact Assessment does not represent a dedicated Tree Condition and Safety Inspection and, therefore, **must not** be used in this respect to conclude a comprehensive evaluation of risk from trees. BS 5837:2012 requires general observations on tree health and condition to be assessed to determine Tree Quality and Value only, as detailed in Table 01.

No aerial inspections of trees were undertaken. No advanced assessments to assess internal woody structures of trees were also undertaken. No assessments or testing of site soils were undertaken, either by desktop or field based analysis.

The Arboricultural Survey and Impact Assessment *must not* be used to determine any constraints in respect of protected species or habitats. It is understood that an Environmental Statement in respect of ecology and biodiversity has been submitted as part of this assessment.

A Topographical Plan issued by the client or their representatives was used to locate and map all trees and tree groups during the Arboricultural Survey, as detailed in **Figures 01a-08a**. Trees or tree groups not located on the Topographical Plan were mapped as accurately as possible. It is assumed for the purposes of this report, and all associated figures, that individual tree and tree group locations provided on the Topographical Plan are accurate.

5.0 Results

5.1 Overview

The location, number, quality value and Root Protection Area (RPA) of each tree or tree group are plotted on **Figures 01a-08a**, the Tree Constraints Plans.

The Tree Schedule, which lists all survey parameters for each tree or tree group, is included in **Appendix 1**.

5.2 Tree Preservation Orders and Conservation Areas

Warrington Borough Council's on-line planning maps confirm that no TPO's or Conservation Areas are recorded as being present within, or adjacent to, the Survey Site.

5.3 Identified Tree Species and Characteristics

5.3.1 Bradley Farm

(Figure 03a)

Bradley Farm Access Road

Bradley Farm is located within the center of the Survey Site. Outside of woodlands and trees lines, Bradley Farm supports the highest proportion of the tree stock within the Survey Site. The farmyard itself is accessed by a minor road from the A50 along the northern Survey Site boundary, which also provides access to a small number of existing residential houses. The southern section of the access road, adjacent to the houses, supports an established and prominent line of silver birch (*Betula pendula*) (T101-T124). The trees range mostly from semi-mature to early-mature in age and vary in condition. Several of the trees were, at the time of survey, noted to lack crown vitality and foliage density with evidence of some tip die-back. The cause of this was unclear, as a number of the trees also appeared to be in good condition. The birch tree 'avenue' is managed and it is understood from the landowner that regular thinning works are undertaken. One birch tree T101 was identified as being in poor condition with several pruning wounds, with the parasitic fungus *Piptoporus betulinus* present. A small number of other occasional shallow pruning wounds and mechanical defects such as intact included unions were noted within the tree line.

The birch tree line continues slightly further to the north, within a triangular area of land outside, but adjacent to, the Survey Site (T26-T36). The trees are located within the headland of a paddock and were in a similar condition to those identified within the Survey Site, at the time of survey (T101-T124).

Bradley Farm Outer Moat Bank

The majority of tree stock (T133-T222) within Bradley Farm is centered on the farmhouse and associated moat – a Scheduled Ancient Monument. The outer bank of the moat supports an established, mature and prominent line of mostly broadleaved close-standing trees including English oak (*Quercus robur*), sycamore (*Acer pseudoplatanus*), crack willow (*Salix fragilis*), beech (*Fagus sylvatica*) and horse chestnut (*Aesculus hippocastanum*) (T133-T168 & T210-T221). The trees are generally mature in age and vary between 12-18m in height.

Tree condition at the time of survey was generally good; occasional shallow lower stem wounds were present on some specimens, presumably as a result of livestock damage, with no obvious effect to the vitality of those trees affected. All horse chestnut trees were affected by the leaf miner *Cameraria ohridella*, (which is now spread throughout much of England). Occasional minor to moderate deadwood was noted in some of the trees; however, it was evident that the tree stock is subject to some form of management, particularly crown lifting, to 4m+ along field edges. Occasional minor mechanical defects were noted on a small number of trees such pruning wounds, included unions and shallow cracks/splits.

Occasional young to semi-mature sub-canopy trees and shrubs are present below the dominant canopy level with hawthorn (*Crataegus monogyna*), holly (*Ilex aquifolium*) and elder (*Sambucus nigra*) represented, as well as young self-sets from canopy trees, particularly sycamore. Several of the silver birch trees were noted at the time of survey to be in moderate to poor condition, with stem wounds and hollowing present (i.e. T140 & T141).

Bradley Farm Inner Moat and Gardens

The mature trees around the outer moat are tall, continuous and form a landscape feature which renders the farmhouse and gardens within the inner moat fairly inconspicuous.

The tree stock within the inner moat and gardens (T169-T198), associated with the farmhouse, are generally of a different form and species to those on the outer moat. A number of domestic fruit trees (apple, plum and cherry) are present within the managed gardens as well as varieties of maple (*Acer sp.*), pine (*Pinus sp.*), Leyland cypress (*Cupressus x leylandii*), holly (*Ilex sp.*) as well as silver birch and copper beech (*Fagus sylvatica f. purpurea*). The gardens are established and, therefore, the tree stock is generally semi-mature to mature in age. Tree condition at the time of survey varied, some of the apple trees suffer from reduced form (probably due to lack of management) and one fallen and one standing deadwood tree was noted (T175 & T176). Two cherries were identified with significant defoliation in the crowns (T196 & T197) and a single plum tree was identified with crown die-back and the wood decaying fungi *Phellinus pomaceus* present on branches.

The inner moat bank itself supports occasional broadleaved tree species similar to that of the outer moat bank, although these are not as prominent in stature (i.e. T192-T194, T195, T136). Occasional young self-set trees and shrubs are, however, present with dense encroachment from bramble (*Rubus fruticosus agg.*). Along the southern and south-western edge of the inner moat is an established and managed beech hedge, approximately 2m high.

Bradley Farm Moat - Southern Paddocks

The paddock directly to the south of Bradley Farm moat supports a small group of four close-standing, mature, maiden English oak trees (T206-T209). The oak trees are probably some of the oldest on the site, approximately 100 to 150 years (in accordance to Mitchell's rule - Mitchell, 1978), with a maximum stem circumference of 3m. The trees are 13m-17m in height and, at the time of survey, generally supported healthy, full and wide crowns with good vitality. Minor tip die-back was, however, noted on T208, with minor deadwood also present - this is possibly as a result of cattle poaching and leachate of manure along the adjacent drove lane to the farmyard. Minor wounds and cracks/splits were also noted on some of the oaks but appeared to be occluding well.

The paddock directly to the east of Bradley Farm moat supports a small number of semi-mature cedar (*Cedrus sp.*), Scot's pine (*Pinus sylvestris*) and silver birch. The cedar T202 was noted at the time of survey to have the significant root and stem wood decaying fungi *Phaeolus schweinitzii* present at the stem base - there was also reduced vitality in the crown. There was no obvious evidence of this conifer-specific fungus on the other small number of pines present within the locality.

5.3.2 Field and Hedgerow Trees

(Figures 02a, 03a, 04a)

Numerous low, thin, hawthorn-dominated hedgerows cross the Survey Site and are typically managed to a height of 1.5-1.8m. Hedgerow trees occur comparatively rarely within the Survey Site and comprise a very small number of semi-mature to mature oak and ash (*Fraxinus excelsior*), scattered along the southern-most transverse (west-east) hedgerow (T225, T226, T230, T231). The hedgerow trees were, at the time of survey, generally in good condition, although the wood decaying fungi *Polyporus squamosus* was identified on T225. A large tear-out was also identified on the lower stem of T226, although appeared to be occluding well.

A number of scattered ponds with established tree cover are present, mainly within field headlands to the northern (T18-T24 & T37-T64) and central (T227-T229) sections of the Survey Site. Tree species represented are typically alder (*Alnus glutinosa*), English oak, ash, silver birch, goat willow (*Salix caprea*), elder and hawthorn scrub. Trees are generally located on and around the pond banks varying between 2-3 specimens or over 10 individual specimens at each pond location. The tree stock across the ponds is generally semi-mature to mature in

age, varying in height between 10-15m. The majority of trees were, at the time of survey, in good condition, with occasional minor defects noted such as shallow wounds and splits.

5.3.3 Tree Lines and Shelterbelts

North-Eastern Survey Site Corner

(Figures 02a & 08a)

In the north-eastern corner of the Survey Site a north-south line of broadleaved trees was recorded (T2-T17). The trees form a continuous edge to a small broadleaved copse running along a shallow wet ditch (W4), outside of the Survey Site boundary. Tree species recorded (and typical of the copse) were sycamore and English oak, varying in height from 12m-18m. Tree condition at the time of survey was generally good, although the significant root decaying fungi *Kretzschmaria deusta* was identified in two sycamore trees T4 & T13. Occasional minor pruning/mechanical wounds were also noted on a small number of trees.

A number of individual trees and tree groups are present along the A50 (Cliff Lane), as well as the M6 Junction 20 Interchange, within the north-eastern Survey Site corner. Tree groups comprise young to early semi-mature broadleaf and mixed shelter belts along road and motorway margins (G11 to G20), which also include young plantings on roundabouts (G11, G17, G18). Typical tree species present within the shelterbelts include sycamore, ash, oak, field maple, silver birch, hawthorn, willow and pine, in varying frequencies.

Two lines of mature, established and prominent horse chestnut trees are present along Cliff Lane either side of the Grappenhall roundabout (T293-T297 & G5). The height of the trees ranged from 12m to 16m and at the time of survey, generally appeared to be in good condition.

North-Western Survey Site Corner

(Figure 04a)

Several connected tree lines are present along the north-western boundary of the Survey Site, G1-G3, behind which is an existing and established industrial estate. All of the tree lines are off-site.

G1 is a broadleaved shelterbelt approximately 14m high and 13m-26m wide. A row of semi-mature staggered trees have been planted along the Survey Site edge (T68-T87), behind which are younger trees which have been closely planted. Typical tree and shrub species present are ash, cherry, alder, Norway maple (*Acer platanoides*), sycamore, rowan (*Sorbus aucuparia*), blackthorn (*Prunus spinosa*) and hawthorn. Tree condition was, at the time of survey, generally good, however, occasional to frequent deadwood was recorded within crowns.

G2 is a broadleaved shelterbelt connected to G1 but lower in height (~12m) and significantly thinner (~5m), comprising a single staggered line of early semi-mature trees with species and specimen condition similar to G1.

G3 is also connected to G1 but comprises a line of mostly mature broadleaved trees (T88 to T98) with younger self-set re-growth and scrub. The trees are mostly present along the off-side bank of a boundary drain where regrading of the bank along the industrial estate boundary has been undertaken, to the potential detriment to the trees. Tree species present include English oak, sycamore, horse chestnut and ash with younger self-set trees and hawthorn scrub. Tree condition at the time of survey was variable although generally no less than moderate; there was evidence of die-back, pruning/mechanical stress wounds and some poor quality pruning works. To what extent the bund works around the trees could be affecting tree health and vitality is uncertain. *Cameraria ohridella* leaf miner was present on all horse chestnut trees.

All trees lines G1-G3 overhang the Survey Site to varying degrees, generally between 4m-8m. The canopy clearance over the Survey Site is typically between 3m-4m.

Eastern Survey Site Boundary

(Figures 06a & 07a)

G6 comprises a homogenous, and more-or-less continuous, thin but long belt of tree planting along a verge to a filter road of the M6, approximately 9m in height. The tree line is planted off-site but overhangs by ~4m. Typical tree and shrub species present are ash, rowan, field maple (*Acer campestre*), hazel (*Corylus avellana*), hawthorn and goat willow.

G10 & G11 are also along the off-site verge of the filter road and support a similar mix of species, although the tree lines are more scattered and not continuous along each boundary.

The condition of both tree lines at the time of survey appeared to be good – the tree stock is young in age.

5.3.4 Bradleys Brook

(Figures 05a & 06a)

Bradleys Brook is located along the southern boundary of the Survey Site and comprises semi-mature to mature broadleaf trees which are either scattered, in short lines or in distinct small groups (T232-290, G7 & G8). Typical tree species present are English oak, ash, cherry, alder and crack willow. Trees occur on both the Survey Site and the off-site brook banks. Bands of hawthorn, blackthorn, elder and willow scrub are prominent along the length of the brook.

The height of the tree line ranges from approximately 11-15m, with occasional more established individual specimens reaching up to 19m in height. Trees overhang the site and the canopy spread varies from 5m-8m on average. The ground clearance from the canopies is typically around 3m-4m. Given the variability in the spread of trees and shrubs along the brook, this landscape feature, as a whole, displays a patchy mosaic of continuous and more open vegetation cover. The brook and associated trees and scrub also create a well-connected landscape feature along the southern boundary, which link to the woodlands in the south-eastern Survey Site corner.

Tree condition along the brook was generally good, although some tip die-back was noted in small number of alders (i.e. T243, T259, T260, T270). Several of the trees, particularly the alders, supported established re-growth from coppiced stools. Occasional minor pruning wounds and mechanical defects such as intact included unions, rot holes and fused stems were identified in a small number of trees.

5.3.5 Woodlands

Woodland W1

(Figure 04a)

Woodland W1 is located in the north-western corner of the Survey Site and bounds an off-site industrial estate to the south. The woodland is not recorded on the Ancient Woodland Register.

Woodland W1 is an established small copse (0.15ha) of native trees and shrubs varying in canopy height from 10-14m. Dominant tree species, mostly to the west, are alder and goat willow, many of which have been previously coppiced and support tall multi-stem leaders. Several of the goat willows are over-mature and have split at the lower stems. Occasional semi-mature ash trees are present on the southern boundary to the adjacent industrial estate.

Apart from the over-mature willows, the majority of trees at the time of survey were in good condition. Occasional deadwood, fallen and standing, is present. The scrub layer is sparse with hawthorn and elder represented, mainly to the woodland edge. To the west, the copse opens out into a mosaic of dense bramble scrub and tall ruderal vegetation with occasional scattered semi-mature hawthorn shrubs.

Woodland W2 – Wrights Covert

(Figure 06a)

Woodland W2 is located in the south-eastern Survey Site corner and is connected to Bradleys Brook, which runs along the southern Survey Site boundary. The woodland is known locally as Wrights Covert and is not recorded on the Ancient Woodland Register.

Wrights Covert is mostly native broadleaf woodland with a canopy height of approximately 20-23m in height. The woodland covers an approximate area of 0.54ha. The dominant canopy trees are ash, English oak and sycamore with occasional alder, rowan and silver birch present within the sub-canopy, mainly along the woodland edges. The canopy trees were, at the time of survey, generally in good condition with only occasional standing deadwood present. However, several of the ash trees were showing symptoms of die-back in the crowns and, therefore, held more deadwood than would ordinarily be expected for this species in a woodland environment. Due to the height of the canopies it could not be confirmed whether the die-back was a result of *Hymenoscyphus fraxineus* (Chalara die-back of ash).

Canopy cover varies across the woodland with distinct open canopy areas exposing the shrub layer below. There is occasional self-set re-growth from canopy trees – mainly sycamore. Very occasional standing deadwood trees are present and one mature tree within the middle of the woodland had fallen as a result of windthrow.

A prominent and structurally varied shrub layer is present within the woodland which in places becomes locally dominant, particularly where there are gaps in the canopy. Typical shrub species represented are hawthorn and elder with occasional cherry, holly and hazel. The age structure of the shrub layer is varied with occasional notable maturing hawthorns present. Elder shrubs are often over-mature and 'leggy'. Occasional stands of invasive *Rhododendron* shrubs are present to the south-east of the woodland and appear to be becoming established.

The woodland edge is not particularly well-developed and comprises a thin layer of occasional shrubs such as hawthorn, hazel and rowan with dominant mature canopy trees, with an average canopy clearance of 4m. The ground layer of the woodland is largely ruderal and comprises dominant bramble cover.

Wrights Covert is located on the earliest Ordnance Survey map for the area - 1881. The most mature tree stock is likely to be around 100-150 years old. The woodland is not on the Ancient Woodland Register and there was no immediate evidence of ancient woodland plants, however, the survey was out of season for such indicator species. The woodland is most likely to have derived from a 19th Century plantation which has now become naturalised.

Woodland W3 – Bradleys Gorse

(Figure 06a)

Woodland W3 is located in the south-eastern Survey Site corner located just to the north of Wrights Covert. The woodland is known locally as Bradleys Gorse and is not recorded on the Ancient Woodland Register.

Notably larger than Wrights Covert at 3.30ha, Bradleys Gorse is mature,

established and prominent broadleaf woodland with a canopy height of 20-25m. The most abundant mature canopy trees are sycamore; however, occasional to frequent mature English oak are also present, which, on average, surpass the sycamore in age and height.

Occasional ash is present within the woodland as well as alder, crack willow, goat willow and cherry, mainly around the scattered ponds and drains along the woodland edge. The majority of canopy trees were, at the time of survey, in good condition with the oak stock holding a moderate amount of deadwood consistent with the species, age and woodland environment. Occasional standing deadwood is present and is mainly represented by semi-mature specimens. Occasional lying deadwood is scattered around the woodland. Some self-sets from canopy trees are present, mainly from the sycamore. Across the woodland, the canopy layer displays few gaps and breaks apart above woodland ponds and drains which are mainly located towards the woodland edges.

The native shrub layer is sparse with occasional hawthorn, rowan and elder represented, mostly young in age. As in Wrights Covert, *Rhododendron* has become established and has, in this woodland, become locally dominant to the east.

A woodland edge is present to a degree, although it is not particularly well-structured and is mainly represented by a thin line of hawthorn shrubs and sycamore as a canopy species. The ground layer of the woodland is largely ruderal and comprises dominant bramble cover.

Bradleys Gorse is located on the earliest Ordnance Survey map for the area - 1881. The most mature tree stock is likely to be around 100-150 years old. The woodland is not on the Ancient Woodland Register and there was no immediate evidence of ancient woodland plants, however, the survey was out of season for such indicator species. The woodland is most likely to have derived from a 19th Century plantation which has now become naturalised.

Woodland W4

(Figure 08a)

Woodland W4 comprises very small broadleaf woodland copse facing the A50 Cliff Lane roundabout, located outside the Survey Site boundary. The dominant canopy layer is mature English oak and ash to 20m in height. The scrub layer is sparse. A shallow brook is present along the western boundary of the woodland. The ground layer of the woodland is somewhat undulating. The woodland is not recorded on the Ancient Woodland Register.

5.4 Tree Quality Assessment

5.4.1 Bradley Farm

(Figure 03a)

Bradley Farm Access Road

The silver birch tree line along the access road to Bradley Farm comprises an established linear landscape feature which provides a softening affect to the residential houses and farm buildings adjacent (T26-T36, T101-T124).

The silver birch tree line is, therefore, considered to be of **moderate** landscape value (**B2**) as a group. Younger trees or those with notable impaired conditions are considered to be of **low** landscape value (**C2**).

Bradley Farm Outer Moat Bank

The tree stock on the outer moat (T133-T168 & T210-T221) comprises a prominent stand of mostly mature and established trees associated with a Scheduled Ancient Monument. The most established trees are individually considered to be of **moderate** landscape value (**B2**), with younger trees or those with a notable impaired condition considered to be of **low** landscape value (**C2**).

As a *collective group* of trees together with their historical association with a Scheduled Ancient Monument, their value is upgraded to **high** landscape value (**A2**). In this respect, the trees are also likely to be of moderate cultural value (B3) as well as moderate arboricultural value (B1).

Bradley Farm Inner Moat and Gardens

Trees which form part of the inner moat are valued as prescribed above (i.e. T192-T194, T195, T136).

Trees which are located within the gardens are notably younger in age than those around the moat. Garden trees are typically ornamental cultivars and were often found to have impaired conditions – these trees are, therefore, in the main considered to be of **low** landscape value (**C2**). Individually, the more established trees in good condition which provide a contribution to the wider moat setting are considered to be of **moderate** landscape value (**B2**).

Bradley Farm Moat - Southern Paddocks

The four oak trees within the southern paddock are fine mature maiden specimens of this species which are mostly in good condition (T206-T209). The oak trees are considered to be of **high** landscape value (**A2**) and also of **moderate** arboricultural value (**B1**). Although mature and established, the

trees have not yet reached a fully mature age class where they could be assessed as being of high arboricultural value.

5.4.2 Field and Hedgerow Trees

(Figures 02a, 03a, 04a)

A number of hedgerows cross the Survey Site and are typically species-poor, intensively managed, low in height and homogenous in structure. Hedgerow trees are considered to be of **low** landscape value (**C2**).

Standard trees within hedgerows occur comparatively rarely and those which are present are late semi-mature to mature in age and, therefore, prominent in the landscape (T225, T226, T230, T231). The hedgerow trees are, therefore, considered to be of **moderate** landscape value (**B2**).

Similarly, trees associated with field ponds are generally mature and established and located within arable/pasture fields with few other landscape features (T18-T24, T37-T64, & T227-T229). These trees are, therefore, as distinct groups, considered to be of **moderate** landscape value (**B2**).

5.4.3 Tree Lines

North-Eastern Survey Site Corner

(Figures 02a & 08a)

The tree line T2-T17 forms part of an established off-site broadleaved woodland copse which as a group is considered to be of **moderate** landscape value (**B2**). Younger trees or those with a notable impaired condition are considered to be of **low** landscape value (**C2**).

T293-T297 & G5 are mature and established lines of broadleaf trees in good condition, in a prominent position along the A50 (Cliff Lane). Both tree lines are, therefore, considered to be of **moderate** landscape value (**B2**).

The numerous shelterbelts along the A50 (Cliff Lane) and M6 Junction 20 Interchange (G11 to G20) are early semi-mature in age but are located in prominent positions providing noise and visual screening barriers to the adjacent road networks. The majority of shelterbelts are, therefore, considered to be of **moderate** landscape value (**B2**), apart from the identified roundabout plantings (G11, G17 & G18) which are young in age and sparsely planted, being rated as **low** landscape value (**C2**).

North-Western Survey Site Corner

(Figure 04a)

The trees lines G1-G3 are continuous and established broadleaved shelterbelts in good condition, which act as important visual and noise screening barriers to the industrial estate to the rear. G1-G3 is, therefore, considered to be of **moderate** landscape value (**B2**).

Eastern Survey Site Boundary

(Figures 06a & 07a)

Although young in age, and in some cases scattered in distribution, G6, G9 & G10 are noise and visual screening barriers to the adjacent filter road from the M6, which have the potential to be enhanced and strengthened – given time, these landscape features will also mature and establish. G6, G9 & G10 are, therefore, considered to be of **moderate** landscape value (**B2**).

5.4.4 Bradleys Brook

(Figures 05a & 06a)

Bradleys Brook comprises a long linear stretch of semi-mature to mature trees and scrub along the southern boundary of the Survey Site. It is, therefore, an established and prominent landscape feature (T232-290, G7 & G8). Trees along Bradleys Brook are, therefore, considered to be of **moderate** landscape value (**B2**).

5.4.5 Woodlands

Woodland W1

(Figure 04a)

Woodland W1 is a small but established copse of broadleaf trees and shrubs and is, therefore, considered to be of **moderate** landscape value (**B2**).

Woodland W2 – Wrights Covert

(Figure 06a)

Wright's Covert is a prominent woodland copse of mature and well-established broadleaved trees of importance to the local landscape. The copse is, therefore, considered to be of **high** landscape value (**A2**).

Woodland W3 – Bradleys Gorse

(Figure 06a)

Bradleys Gorse is a prominent woodland comprising mature and well-established broadleaved trees of notable importance to the local landscape and is, therefore, considered to be of **high** landscape value (**A2**).

Woodland W4

(Figure 08a)

Although very small in extent W4 is an established broadleaf woodland copse located directly along a main feeder road to the Junction 20 of the M6 – W4 is, therefore, considered to be of **high** landscape value (**A2**). W4 is located outside of the Survey Site boundary.

6.0 Impact Assessment

6.1 Proposed Development

The proposals relate to an outline planning application for a mixed employment development with associated servicing and infrastructure including car parking, internal vehicular access roads, drainage features and soft landscaping buffers.

Relevant submitted outline plans assessed for this Impact Assessment are:

- Green Infrastructure and Parameters Plan (SGP P111 Rev D 16-184);
- Development Cells Parameters Plan (SGP P110 Rev D 16-184);
- Illustrative Masterplan (SGP F013 Rev T 16-184).

The most valuable tree stock within the Survey Site is proposed for retention, incorporation and long-term protection within the development layout. This includes sizeable tree groups of high and moderate landscape value in locations such Bradley Farm (**Figure 03a**), Bradleys Brook (**Figures 05a & 06a**), Bradleys Gorse W3 and Wrights Covert W2 (**Figure 06a**), as well as other tree groups located along Survey Site boundaries.

A connective network of strategic landscaping is proposed around the entire perimeter of the proposed development and also as north-south corridors through development cells. The proposed network of strategic landscaping will provide effective long-term development buffer zones from existing stands of valuable tree stock, as well as provide significant opportunities to extend and strengthen the retained tree stock through new tree and shrub planting. In addition, an extensive ecological mitigation area is proposed within the south-eastern corner of the development layout, incorporating Wrights Covert (W2).

6.2 Impact Assessment

6.2.1 Tree Preservation Orders and Conservation Areas

No TPO's are present within or adjacent to the Survey Site. The Survey Site does not fall within a Conservation Area.

No statutory constraints from TPO's or Conservation Areas are, therefore, identified.

6.2.2 Proposed Tree Removal

Proposed tree removal is identified in **Figures 01b-08b** – Tree Removal Plans.

Approximately seventy individual trees are proposed for removal, as well as the majority of Woodland W1. The majority of hedgerows within the Survey Site will be removed. Small areas of shelter belt and planting associated with Cliff

Road and Grappenhall Lane, northern Survey Site boundary, will also be removed (G4, G11 & G12).

For a detailed impact assessment of tree and hedgerow removal in respect of ecology, see the relevant submitted Environmental Statement chapter.

Individual Tree Removal

Proposed individual tree removal will affect tree stock around field ponds (T19-T24, T37-T43, T50-T64 & T227-T229) as well as a small number of trees associated with hedgerows (T1, T99, T100, T225, T226, T230 & T231).

The majority of this tree stock was identified as being of **moderate** landscape value (**B2**) due to its late semi-mature to mature age and overall good condition. Typical tree species include native broadleaf specimens such as alder, ash, oak and willow, as well as hawthorn and elder scrub. Established trees of late semi-mature to mature ages are not easily replaceable in the short to medium term.

The majority of trees along the vehicle access tracks to Bradley Farm and associated houses will also be removed (T101-T110 & T115-T129). These trees comprise avenues of semi-mature silver birch trees, approximately 10m to 12m high.

The silver birch trees were identified as being of **moderate** landscape value (**B2**) as they provide a softening effect on the existing farm buildings and associated houses. However, several of the trees were identified as being in poor to moderate condition and the group typically suffered from reduced crown vitality. Silver birch is also a short-lived species, therefore, the functional contribution years of these trees in the existing setting would have only been within the short to medium-term.

Tree Groups

Tree groups G4, G11 & G12 are to be removed to facilitate highway works along Cliff Road and Grappenhall Lane, northern Survey Site boundary. These tree groups comprise small shelter belts or highway planting supporting young to early semi-mature broadleaf trees. Such specimens would be replaceable in the short to medium-term.

Woodland W1

The majority of the Woodland W1 is proposed for removal and comprises a small broadleaf copse (0.15ha).

W1 supports a mosaic of over-mature goat willow shrubs, bramble/hawthorn scrub and low ratio of higher canopy semi-mature alder and ash trees. W1 is not representative of the established high canopy mature oak/ash woodlands

within the remainder of the Survey Site (W2-W4) and has, therefore, been assigned a lower value category of **moderate** landscape value (**B2**).

The more established canopy trees within W1 are present along its southern boundary, part of which will be retained within the proposed strategic landscaping corridor.

Hedgerows

The majority of hedgerows within the Survey Site are proposed for removal. The hedgerows have been determined to be of **low** landscape value (**C2**) due to their overall species-poor composition, intensively managed nature and subsequent overall low height.

6.2.3 Potential Construction Impacts to Retained Trees

As the current application is outline, the submitted plans do not provide sufficient detail to determine precise construction impacts to tree stock proposed for retention. However, the proposed strategic landscaping surrounding development cells permits sufficient construction buffer zones around retained tree stock, therefore, the potential for direct construction impacts is predicted to be low.

Landscaping and acoustic bunds are proposed within some of these buffer zones, requiring above-ground works only. Whilst these works would still have the potential to adversely affect boundary trees, there would be the potential to refine bund footprints and formulate appropriate construction control measures during the detailed design phase of development.

Indirect construction works, such as the movement of plant and the storage of construction materials would have the potential to negatively affect retained trees, if appropriate protection measures are not implemented during construction to enforce the identified buffer zones.

6.2.4 Impact Assessment Conclusion

The proposed development layout will retain the most valuable tree stock within the Survey Site. Strategic landscaping buffers are proposed around the development cells which will provide opportunities to protect, extend and strengthen all retained tree stock in the long-term. An extensive ecological mitigation area is also proposed around Wrights Covert.

Proposed tree removal will affect approximately seventy, mostly established, individual trees, a small broadleaf copse, small highway shelterbelts/plantings and the majority of species-poor hedgerows. The majority of trees including the copse proposed for removal have been determined to be of **moderate** landscape value (**B2**).

Although the proposed tree removal mostly affects established trees in good condition, this accounts for a relatively small proportion of that which is to be retained, incorporated and protected within the development layout. Provided that an effective landscaping strategy is submitted as part of a future Reserved Matters application(s), it is considered that the proposed quanta of tree removal can be sufficiently compensated in the long-term and is not, at present, determined to significance adverse arboricultural impact.

The majority of hedgerows are proposed for removal. The hedgerows have been determined to be of low landscape value (**C2**), due to their overall species-poor composition, intensively managed nature and subsequent overall low height.

7.0 Site Specific Recommendations

The following recommendations presented are site-specific, based on the current assessment of the surveyed tree stock and the likely development impacts to them.

7.1 Detailed Design-Phase Recommendations

Detailed designs for development cells within the proposed development should aim to further reduce any impacts to retained trees and ensure that adjacent tree stock has sufficient space to maintain incremental growth. Generic recommendations in this respect are provided in Section 8.1.

A detailed landscaping strategy should be submitted as part of a future Reserved Matters application(s). The landscaping strategy should deliver effective and consolidated planting schemes to extend and strengthen retained tree stock and appropriately compensate for proposed tree loss.

Consideration should be given to ecological, arboricultural and general landscaping requirements for the planting schemes through liaison with the appropriate professionals during detailed design development.

The utilisation of a range of native and non-native tree and shrub species of ecological value is recommended in order to provide a varied tree stock which would be resilient and adaptable to the current and future threat from tree diseases and disorders, as well as climate change impacts.

7.2 Planning Condition/Construction Phase Recommendations

7.2.1 Arboricultural Method Statement and Tree Protection Plan

In order to protect retained trees during the construction phase of the development, an Arboricultural Method Statement (AMS) and Tree Protection Plan (TPP) is recommended. The AMS/TPP should follow the standards set out in BS 5837:2012.

It is recommended that the AMS and TPP are secured as part of a suitably worded planning condition or as part of a future Reserved Matters application(s), as appropriate.

The AMS and TPP must provide a detailed chronological, quantitative and qualitative account of construction impacts to trees and the protection measures proposed to control those impacts, in order to meet BS 5837:2012 requirements.

Detailed construction requirements for an AMS and TPP are listed below (note this list is not exhaustive and would be dependent on final development layout in proximity to retained trees):

- Specifications for buildings, built structures and their associated foundations;
- Specifications for site services, underground trenching and boreholes;
- Specifications for soft landscaping, such as grass seeding;
- Specifications for ground re-grading, excavation and infill;
- All temporary requirements for construction (e.g. specifications for materials storage, car parking, working areas, plant access and haul routes, welfare units/site offices and temporary ground cover);
- Specifications for hard landscaping such as fence lines, pavements, hard standing, car parking and roads (including the specification of materials to be used);
- Measures to protect boundary trees from landscape and acoustic bund installation;
- Exclusion of construction works from the proposed strategic buffer zones along retained boundary trees and tree groups;
- The phasing and duration of all construction elements impacting retained trees.

7.2.2 Schedule of Tree Works

A Schedule of Tree Works is recommended for inclusion within the AMS and TPP and should include pre-construction tree pruning specifications which are required to facilitate construction.

All specifications outlined within the Schedule of Tree Works must conform to current best practice methods outlined within BS 3998:2010 'Tree Work – Recommendations'.

7.3 Tree Works and Monitoring

During the Operational Phase, Tree Condition and Safety inspections of all tree stock on-site and along site boundaries should be undertaken on a cyclical basis by the landowner through an appropriately qualified professional, to adhere to their 'Duty of Care' prescribed under UK common law. The Operational Phase of the Proposed Development would increase the risk factor for harm to people or property from potentially hazardous trees.

8.0 Generic Recommendations

The generic recommendations below are provided to detail how trees should be protected during design development and construction in accordance with BS 5837:2012.

These generic recommendations should not be considered a replacement for a site-specific AMS during construction.

8.1 Generic Measures for Tree Protection during Design Development

8.1.1 Proximity of Structures to Trees

The default position should be that all built structures avoid the RPA's of trees to be retained. Where there is an overriding justification for construction within RPA's, mitigation measures should be implemented to ensure that the tree(s) remain viable in the long-term. Where possible, the site layout should be designed to avoid all ground level changes within the RPA of retained trees.

During design and development, consideration should also be given to the future influence of retained, removed and newly planted trees on built structures during the Operational Phase of the Proposed Development. Such factors may include:

- The influence of shading on built structures and open spaces, particularly as a result of incremental tree growth;
- Below and above ground damage to built structures as a result of incremental root and stem growth;
- The future pressure for removal or maintenance of trees where incremental stem and canopy growth may adversely affect built structures;
- Seasonal nuisance caused by leaf shedding, honeydew and fruiting;
- Where shrinkable soils are present, the influence of tree removal or planting;
- Bunds or other level changes above those existing, which have the potential to starve tree roots of oxygen;
- The design and specifications of hard standing and below ground compression systems within the RPA of retained trees, which may cause compaction of roots or adversely affect water transfer.

In all cases the detailed guidance provided within BS 5837:2012 should be referred and adhered to during the design and development process.

8.1.2 Permanent Hard Surfaces

Where the construction of hard surfaces within the RPA of trees is unavoidable and justified, site-specific and engineered mitigation measures should be implemented to avoid adverse impacts to retained trees.

No more than 20% of the RPA should be covered with impermeable hard surfaces. Surfaces covering an area over 20% of the RPA should be permeable to allow moisture infiltration and gaseous diffusion.

The design of hard surfacing within the RPA of trees should not involve re-grading or lowering of ground levels. The removal of the vegetative soil layer using hand or low-impact pneumatic tools may be acceptable. Any requirements for increasing ground levels should be achieved through the use of permeable granular materials to allow moisture infiltration and gaseous diffusion.

Hard surfaces should be designed to avoid localised root compaction from vehicles through appropriate weight distribution. To prevent contamination of the rooting area from potential pollution or de-icing operations, an appropriate geotextile or impermeable membrane should be utilised with run-off directed away from the RPA. Land drains should be appropriately designed to avoid waterlogging within the RPA of retained trees.

Hard surfaces should be set back from the stem of a tree to allow for future incremental growth (a minimum of 500mm is recommended in BS 5837:2012). Hard surfaces should also be tolerant to incremental growth from tree roots.

Appropriate sub-base options for new hard surfacing within RPA's include three dimensional cellular confinement systems. Alternatively, piles, pads or elevated beams can be used to support surfaces to bridge over the RPA or, following exploratory investigations to determine location, to provide support within the RPA whilst allowing the retention of roots greater than 25mm in diameter.

8.1.3 Foundations

The construction of foundations within the RPA of trees can cause significant root damage and should, therefore, be avoided. Where construction of foundations within RPA's is unavoidable and fully justified, suitable site-investigations (such as piling) and specialist engineered foundations should be implemented.

Slab foundations for minor structures should cover no more than 20% of a tree's RPA. Slab foundations for large structures should allow for moisture infiltration and gaseous diffusion, such as allowing for a ventilated air space between the underside of the slab and soil surface.

Subterranean construction (e.g. basements) within RPA's has the potential to cause extensive root damage and should be avoided.

8.1.4 Shrinkable Soils

Damage to built structures can occur through tree removal or planting on shrinkable soils such as clay through the processes of subsidence and heave. The volume of shrinkable soils can significantly change when moisture is removed, from the increasing expansion of tree roots, or added, from the removal of trees, causing ground movement.

Appropriate soil assessments and subsequent mitigation measures should, therefore, be implemented where tree removal and/or planting is proposed near to existing and/or proposed built structures, particularly in respect of damage to foundations.

8.2 Generic Measures for Tree Protection during Construction

8.2.1 Tree Protection Measures within RPA's

RPA's detail the minimum functional root mass of each retained tree which should be avoided to ensure it survives the construction process.

Restrictions within RPA's

During construction, the following works should not take place within the RPA of trees without suitable mitigation measures being implemented:

- No mechanical or manual excavation, digging or demolition;
- No vehicle access;
- No ground level changes.

There should be strictly no storage or handling of materials, chemicals, fuels or activities likely to cause waterlogging or fire lighting within the RPA of retained trees under any circumstances.

Protective Fencing Barriers

Protective barriers should be erected around the RPA of retained trees prior to any development or site clearance works commencing, in order to prevent damage to any part of the tree or accidental ingress from construction machinery. Protective barriers should be robust enough to exclude construction works and activity. The use of Heras fencing is recommended, which is braced to withstand impacts (Plate 1). All weather notices should be fixed to the barriers stating 'Construction Exclusion Zone - Keep Out' or similar. The protective barriers should remain in place for the entire construction zone and should not be removed without prior approval.

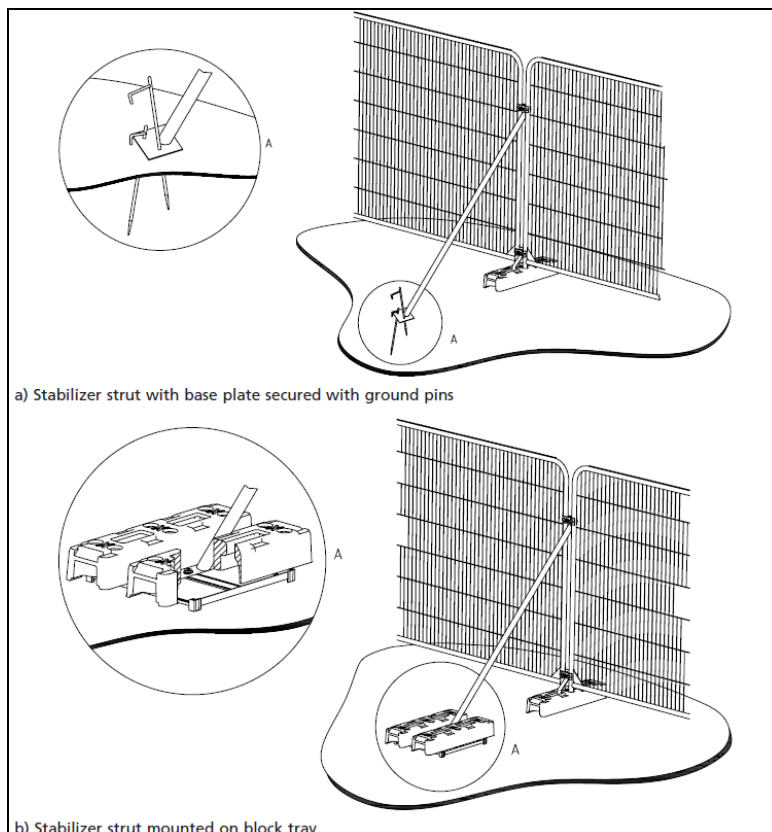
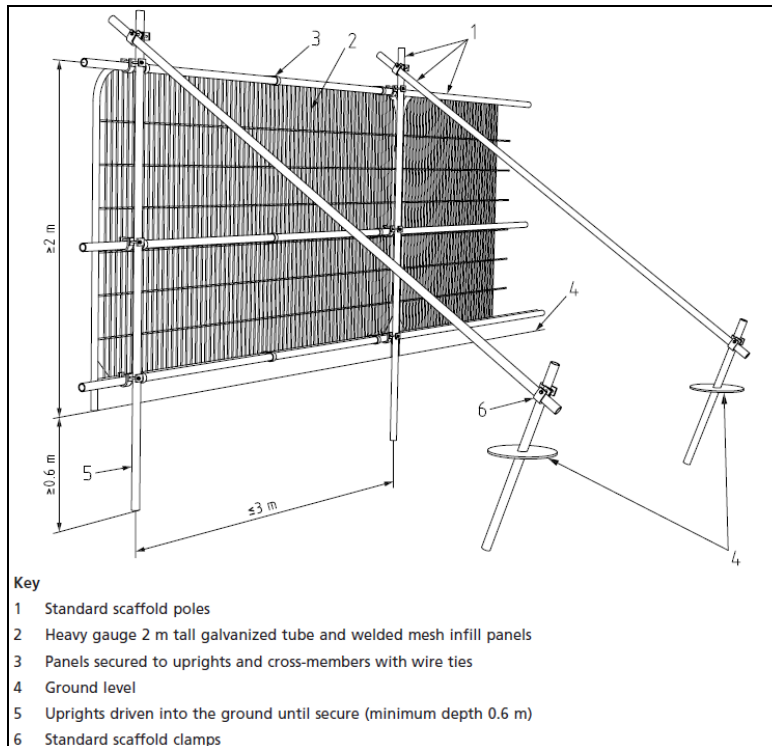


Plate 1: Specifications for protective barriers (Source: BS 5837:2012 Trees in Relation to Design, Demolition and Construction – Recommendations).

Ground Protection Systems

Where construction access or working space within the RPA is justified, ground protection systems should be designed by a qualified engineer to avoid soil compaction and root damage to retained trees. For pedestrian movements, this could include the use of scaffolding boards laid over a compressible layer (i.e. bark chippings) and a geotextile. For wheeled and tracked vehicle access a proprietary system of ground protection boards or pre-cast concrete slabs should be designed to an engineering specification, depending on vehicle weight.

A protective barrier (Plate 1) should be installed in those parts of the RPA where work is not to take place. The ground protection systems should remain in place throughout the construction period.

Demolition and Removal of Hard Surfaces

The potential removal of built structures and/or hard surfaces in RPA's or in close proximity of trees has the potential for adverse impacts and should be undertaken with caution. Specific working methods should be drawn up to avoid root damage through the use of ground protection systems and barriers, low impact pneumatic tools/hand tools and measures to protect exposed roots.

Installation of Underground Services

Trenching for underground services results in root damage and should be avoided within RPA's. If services must justifiably pass within an RPA, detailed methods to illustrate avoidance techniques of the proposed routing should be drawn up, including all changes of level and access spaces. Hand trenching, air spades and trenchless technology are suitable methods of working within RPA's.

8.2.2 Tree Protection Measures outside RPA's

Site operations should be planned to prevent damage to tree canopies from machinery or vehicle movements, particularly for plant with wide or tall loads and booms, jibs and counter-weights.

Care should be taken to avoid spillage or surface wash of chemicals or fuel towards tree roots. The creation of dust and other particulates should be minimised. Construction materials should not be stored near to trees. Where fires are unavoidable they should be lit in a position which would not affect vegetation, taking into account wind direction and the mass of burnable material.

8.2.3 Tree Pruning

Excessive 'lopping and topping' of trees should be avoided and pruning should aim to remove the bare minimum required to facilitate construction. All works

should be conducted by qualified arborists following current best practice methods to the British Standards document BS 3998:2010 'Tree Work – Recommendations'. A Schedule of Tree Works should be drawn up by a qualified Arboricultural Consultant to detail the scope of works to be undertaken to meet BS 3998:2010.

9.0 Conclusion

9.1 Overview

Landscape Science Consultancy Ltd (LSC Ltd) was commissioned by Langtree & Panattoni to conduct an Arboricultural Survey and Impact Assessment at Six 56 Warrington - referred to as the 'Survey Site'.

The proposals relate to an outline planning application for a mixed employment development with associated servicing and infrastructure including car parking, internal vehicular access roads, drainage features and soft landscaping buffers.

The Arboricultural Survey and Impact Assessment provides an evaluation of trees with regards to the species present, physiological parameters, structural factors and tree quality assessment, in line with British Standards BS 5837:2012 'Trees in Relation to Design, Demolition and Construction – Recommendations' (British Standards Institute, 2012).

9.2 Survey Results

9.2.1 Survey Site Description

The Survey Site comprises a span of arable land along the northern boundary with the remainder dominated by permanent pasture. Managed low hedgerows cross the Survey Site with very occasional mature standard trees. Several ponds are present to the north of the Survey Site and support a number of mature and established trees and scrub along the banksides. Outside of tree lines and woodlands, the majority of tree stock is located at Bradley Farm, within the centre of the Survey Site.

Bradleys Brook is located along the southern boundary of the Survey Site and supports a mosaic of scattered and grouped trees with associated scrub and hedgerows. Within the south-eastern corner of the Survey Site are two mature and established broadleaved woodlands; Bradleys Gorse and Wrights Covert.

The eastern boundary of the Survey Site is directly adjacent to a filter road from the M6 Junction 20 Warrington Interchange, along which is a more or less continuous linear screening belt of young broadleaf trees. The north-western corner of the Survey Site is adjacent to an industrial estate and is separated by maturing screening belts of broadleaved trees and scrub.

9.2.2 Tree Preservation Orders and Conservation Areas

No TPO's are present within or adjacent to the Survey Site. The Survey Site does not fall within a Conservation Area. No statutory constraints from TPO's or Conservation Areas are, therefore, identified.

9.2.3 Summary of Tree Characteristics and Value

The majority of tree stock within the Survey Site comprises established, broadleaf and native specimens in good condition with distinctive groups within and around Bradley Farm, along Bradleys Brook and in woodland settings. Most of these tree groups have been determined to be of **high** landscape value (**A2**), apart from trees along Bradleys Brook, which have been determined to be of **moderate** landscape value (**B2**).

A significantly smaller proportion of tree stock is present within and around field hedgerows and ponds, as well as along some field boundaries. These trees and tree groups are again established broadleaf specimens in good condition, and have mostly been determined to be of **moderate** landscape value (**B2**).

A number of hedgerows cross the Survey Site and are typically species-poor, intensively managed, low in height and homogenous in structure. Hedgerow trees are considered to be of **low** landscape value (**C2**).

9.3 Impact Assessment

The proposed development layout will retain the most valuable tree stock within the Survey Site. Strategic landscaping buffers are proposed around the development cells which will provide opportunities to protect, extend and strengthen all retained tree stock in the long-term. An extensive ecological mitigation area is also proposed around Wrights Covert.

Proposed tree removal will affect approximately seventy mostly-established individual trees, a small broadleaf copse, small highway shelterbelts/plantings and the majority of species-poor hedgerows.

Although the proposed tree removal affects mostly established trees in good condition, this accounts for a relatively small proportion of that which is to be retained, incorporated and protected within the development layout. Provided that an effective landscaping strategy is submitted as part of a future Reserved Matters application(s), it is considered that the proposed quantity of tree removal can be sufficiently compensated in the long-term and is not at present determined to be a significance arboricultural impact.

The majority of hedgerows are proposed for removal, due to their overall species-poor composition, intensively managed nature and subsequent overall low height.

9.4 Recommendations

9.4.1 Detailed Design Phase Recommendations

The following recommendations have been outlined:

- Generic measures to ensure the protection of trees from construction impacts and to allow incremental growth;

- A detailed soft landscaping strategy to deliver effective and consolidated planting schemes to extend and strengthen retained tree stock and appropriately compensate for proposed tree loss.

9.4.2 Planning Condition/Construction Phase Recommendations

The following recommendations have been outlined:

- An Arboricultural Method Statement (AMS) and Tree Protection Plan (TPP) in accordance to BS 5837:2012 to protect retained trees during construction;
- A Schedule of Tree Works to facilitate construction.

9.4.3 Additional Recommendations

During the Operational Phase, Tree Condition and Safety inspections of all tree stock on-site and along site boundaries should be undertaken on a cyclical basis by the landowner through an appropriately qualified professional, to adhere to their 'Duty of Care' prescribed under UK common law.

References

British Standards Institute (BSI) (2010). BS 3998 'Tree Works – Recommendations'.

British Standards Institute (BSI) (2012). BS 5837 'Guide for Trees in Relation to Design, Demolition and Construction – Recommendations'.

MoHCLG (2018). National Planning Policy Framework, MoHCLG, London.

APPENDIX 1
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TREE SCHEDULE

WARRINGTON INTERCHANGE - TREE SCHEDULE (UPDATED JAN 2019)



Tree No	Species	Scientific Name	Age Class	Condition	Comments	Contributing Years	Value Category	Recommendations	Overall Height (m)	Canopy Spread (m)	Ground - Canopy Height	DBH (m)	RPA (m ²)	RP Radius
1	Sycamore	<i>Acer pseudoplatanus</i>	Young	Good	None	20+	C2	None	5.50	N1 S1 E1 W1	2.1	0.11	5.94	1.38
2	Sycamore	<i>Acer pseudoplatanus</i>	Semi-Mature	Poor	Significant dysfunction in x2 stem leaders, x1 minor stem leader remains.	10+	C2	Consider remediation works if near to targets following development.	6.10	N4 S1 E3 W4	0.1	0.24	25.10	2.83
3	English oak	<i>Quercus robur</i>	Mature	Good	Moderate deadwood in crown, minor ivy cover on stem and in crown, minor wound N facing, 0.2m high on stem, no obvious dysfunction.	40+	B2	Remove deadwood if in close proximity to targets following development.	16.40	N6.5 S7.6 E4 W8.7	3	0.67	203.08	8.04
4	Sycamore	<i>Acer pseudoplatanus</i>	Semi-Mature	Moderate	U-shaped basal union with Kretzschmaria deusta, no evidence of crown die-back.	<10	U	Remove tree to base - Kretzschmaria deusta is a significant decay fungi of roots.	12.60	N5.5 S4.8 E5.9 W5.8	2.7	0.55	138.08	6.63
5	English oak	<i>Quercus robur</i>	Semi-Mature	Good	None	40+	B2	None	17.10	N2.7 S7.3 E7.4 W5.6	2.4	0.39	68.22	4.66

Tree No	Species	Scientific Name	Age Class	Condition	Comments	Contributing Years	Value Category	Recommendations	Overall Height (m)	Canopy Spread (m)	Ground - Canopy Height	DBH (m)	RPA (m ²)	RP Radius
6	English oak	<i>Quercus robur</i>	Semi-Mature	Good	Self-set tree.	40+	B2	None	17.50	N3.4 S3.7 E6.3 W5.4	3.8	0.37	62.75	4.47
7	Sycamore	<i>Acer pseudoplatanus</i>	Young	Good	None	20+	C2	None	3.10	N1 S1 E1 W1	0.3	0.11	5.61	1.34
8	English oak	<i>Quercus robur</i>	Semi-Mature	Good	None	40+	B2	None	9.70	N2.5 S5.1 E6.5 W6.7	2.3	0.40	71.62	4.77
9	Sycamore	<i>Acer pseudoplatanus</i>	Semi-Mature	Good	None	40+	B2	None	13.00	N6 S5 E3 W5.5	4.2	0.47	100.13	5.65
10	Sycamore	<i>Acer pseudoplatanus</i>	Semi-Mature	Moderate	Rot hole in base, west facing. Minor dead stump present in base.	20+	B2	Re-inspect rot hole in 18 months.	12.00	N1 S2.8 E2.5 W4.4	4.3	0.21	20.58	2.56
11	Sycamore	<i>Acer pseudoplatanus</i>	Semi-Mature	Moderate	Minor dysfunction in x1 stem leader, basal wound east facing. No obvious evidence of <i>Kretzschmaria deusta</i> .	20+	B2	Re-inspect stem leader in 18 months.	12.00	N4 S3.5 E4 W5	4.6	0.41	77.20	4.96
12	Sycamore	<i>Acer pseudoplatanus</i>	Semi-Mature	Moderate	None	20+	B2	None	12.00	N4.2 S3.2 E4.5 W5	4.6	0.38	65.48	4.57

Tree No	Species	Scientific Name	Age Class	Condition	Comments	Contributing Years	Value Category	Recommendations	Overall Height (m)	Canopy Spread (m)	Ground - Canopy Height	DBH (m)	RPA (m ²)	RP Radius
13	Sycamore	<i>Acer pseudoplatanus</i>	Young	Poor	Kretzschmaria deusta present in wound at base of stem.	C/O	U	Remove tree to base - Kretzschmaria deusta is a significant decay fungi of roots.	2.00	N0.5 S0.5 E0.5 W0.5	0.1	0.20	18.77	2.44
14	Sycamore	<i>Acer pseudoplatanus</i>	Semi-Mature	Good	None	40+	B2	None	12.00	N4 S5 E1.5 W4	4.6	0.47	99.05	5.61
15	Sycamore	<i>Acer pseudoplatanus</i>	Semi-Mature	Moderate	None	20+	B2	None	11.40	N3.5 S4.3 E0 W4.9	4.4	0.31	42.24	3.67
16	Sycamore	<i>Acer pseudoplatanus</i>	Semi-Mature	Good	None	40+	B2	None	12.00	N6 S6 E6 W6	5.5	0.41	77.46	4.97
17	Sycamore	<i>Acer pseudoplatanus</i>	Semi-Mature	Good	None	40+	B2	None	11.50	N4.5 S4.5 E4.5 W4.5	5.5	0.30	41.37	3.63
18	English oak	<i>Quercus robur</i>	Semi-Mature	Good	Tree off-site, parameters estimated.	20+	B2	None	14.00	N8 S6 E8 W6	4	1.00	452.39	12.00
19	English oak	<i>Quercus robur</i>	Young	Good	Minor deadwood in crown.	20+	C2	Remove deadwood if in close proximity to targets following development.	9.20	N3 S2 E2 W4.7	0.5	0.20	18.19	2.41
20	English oak	<i>Quercus robur</i>	Semi-Mature	Good	None	20+	B2	None	11.80	N6.3 S6 E1 W7	1.8	0.33	50.53	4.01

Tree No	Species	Scientific Name	Age Class	Condition	Comments	Contributing Years	Value Category	Recommendations	Overall Height (m)	Canopy Spread (m)	Ground - Canopy Height	DBH (m)	RPA (m ²)	RP Radius
21	Silver birch	<i>Betula pendula</i>	Young	Moderate	10° uncorrected lean to east due to shading from T20.	10+	C2	None	8.00	N3 S1 E5 W0	1.8	0.15	10.56	1.83
22	English oak	<i>Quercus robur</i>	Young	Poor	Crown vigour suppressed by T23.	10+	C2	None	2.70	N1 S3 E0 W5.5	2	0.17	12.88	2.02
23	English oak	<i>Quercus robur</i>	Mature	Good	Tree off-site, parameters estimated. Moderate deadwood in crown and stem.	40+	B2	Remove deadwood if in close proximity to targets following development.	11.90	N6.5 S6.5 E6.5 W8.4	2.5	0.55	136.85	6.60
24	English oak	<i>Quercus robur</i>	Semi-Mature	Good	None	40+	B2	None	12.40	N5 S6.5 E6.3 W5.5	7.1	0.39	69.35	4.70
25	Silver birch	<i>Betula pendula</i>	Young	Good	None	20+	B2	None	10.70	N3 S3 E3 W3	2	0.21	19.97	2.52
26	Silver birch	<i>Betula pendula</i>	Semi-Mature	Good	Tree off-site parameters estimated.	20+	B2	None	10.60		1.8	0.30	40.72	3.60
27	Silver birch	<i>Betula pendula</i>	Semi-Mature	Good	Tree off-site parameters estimated.	20+	B2	None	11.90		1.8	0.20	18.10	2.40
28	Silver birch	<i>Betula pendula</i>	Semi-Mature	Good	Tree off-site parameters estimated.	20+	B2	None	9.50		1.8	0.20	18.10	2.40

Tree No	Species	Scientific Name	Age Class	Condition	Comments	Contributing Years	Value Category	Recommendations	Overall Height (m)	Canopy Spread (m)	Ground - Canopy Height	DBH (m)	RPA (m ²)	RP Radius
29	Silver birch	<i>Betula pendula</i>	Semi-Mature	Good	Tree off-site parameters estimated.	20+	B2	None	9.40		1.8	0.15	10.18	1.80
30	Silver birch	<i>Betula pendula</i>	Semi-Mature	Good	Tree off-site parameters estimated.	20+	B2	None	10.70		1.8	0.35	55.42	4.20
31	Silver birch	<i>Betula pendula</i>	Semi-Mature	Good	Tree off-site parameters estimated.	20+	B2	None	12.40		1.8	0.50	113.10	6.00
32	Silver birch	<i>Betula pendula</i>	Semi-Mature	Moderate	Tree off-site parameters estimated. Poor vitality in crown, some tip die-back evident.	10+	C2	Consider remediation works if near to targets following development.	9.10		1.8	0.30	40.72	3.60
33	Silver birch	<i>Betula pendula</i>	Young	Poor	Tree off-site parameters estimated. Poor vitality in crown, some tip die-back evident.	10+	C2	Consider remediation works if near to targets following development.	8.20		1.8	0.20	18.10	2.40
34	Silver birch	<i>Betula pendula</i>	Semi-Mature	Good	Tree off-site parameters estimated.	20+	B2	None	9.80		1.8	0.30	40.72	3.60
35	Silver birch	<i>Betula pendula</i>	Semi-Mature	Good	Tree off-site parameters estimated. Moderate ivy cover in stem and crown.	20+	B2	None	7.80		1.8	0.35	55.42	4.20

Tree No	Species	Scientific Name	Age Class	Condition	Comments	Contributing Years	Value Category	Recommendations	Overall Height (m)	Canopy Spread (m)	Ground - Canopy Height	DBH (m)	RPA (m ²)	RP Radius
36	Silver birch	<i>Betula pendula</i>	Semi-Mature	Moderate	Tree off-site parameters estimated. Moderate vitality in crown.	10+	C2	Consider remediation works if near to targets following development.	9.50		1.8	0.40	72.38	4.80
37	Alder	<i>Alnus glutinosa</i>	Mature	Good	None	40+	B2	None	12.00	N6.7 S6.5 E7 W4.7	1.5	0.72	232.96	8.61
38	Alder	<i>Alnus glutinosa</i>	Mature	Good	None	40+	B2	None	9.80	N4 S6 E4 W3.8	1	0.28	34.44	3.31
39	Sycamore	<i>Acer pseudoplatanus</i>	Semi-Mature	Good	None	20+	B2	None	11.90	N5 S4.3 E4.6 W1.5	2	0.36	58.20	4.30
40	Sycamore	<i>Acer pseudoplatanus</i>	Semi-Mature	Good	None	20+	B2	None	11.90	N5 S4.5 E2 W2	6.6	0.35	55.46	4.20
41	Sycamore	<i>Acer pseudoplatanus</i>	Semi-Mature	Good	None	20+	B2	None	11.90	N5 S6.1 E1.5 W1	4.9	0.40	73.73	4.84
42	Ash	<i>Fraxinus excelsior</i>	Semi-Mature	Good	Minor cover ivy on stem, minor basal wound to stem east facing, no obvious evidence of dysfunction.	40+	B2	None	10.30	N4.8 S6.3 E4.4 W3.9	5.3	0.59	155.84	7.04
43	English oak	<i>Quercus robur</i>	Mature	Good	None	40+	B2 + B1	None	14.80	N8.7 S7.1 E7.2 W7	2.2	0.58	150.17	6.91

Tree No	Species	Scientific Name	Age Class	Condition	Comments	Contributing Years	Value Category	Recommendations	Overall Height (m)	Canopy Spread (m)	Ground - Canopy Height	DBH (m)	RPA (m ²)	RP Radius
44	English oak	<i>Quercus robur</i>	Mature	Moderate	Minor deadwood in crown and stem, x1 fused stem leader, moderate vitality in crown, wound present on pond side not possible to inspect.	40+	B2 + B1	Remove deadwood if in close proximity to targets following development. Consider remediation works if near to targets following development.	14.50	N7.5 S8 E7.5 W6.5	6.8	0.73	241.17	8.76
45	English oak	<i>Quercus robur</i>	Semi-Mature	Moderate	Moderate ivy cover on stem, minor deadwood in crown, poor-moderate vitality in crown.	20+	B2	Remove deadwood if in close proximity to targets following development. Consider remediation works if near to targets following development.	11.10	N1.5 S0.5 E4.6 W6	2.5	0.40	73.93	4.85
46	Silver birch	<i>Betula pendula</i>	Over-mature	Moderate	Minor ivy cover on stem.	20+	B2	None	12.90	N4.5 S4.5 E4.5 W4.5	6.4	0.56	143.61	6.76
47	Hawthorn	<i>Crataegus monogyna</i>	Semi-Mature	Moderate	Minor ivy cover on stem.	20+	C2	None	5.60	N2 S2 E2 W2	4	0.25	27.89	2.98
48	Alder	<i>Alnus glutinosa</i>	Mature	Good	Uncorrected 25° lean to north-west.	20+	B2	None	12.00	N6.5 S1 E3.5 W5.5	0	0.45	89.84	5.35
49	English oak	<i>Quercus robur</i>	Semi-Mature	Moderate	Uncorrected 25° lean to west, minor ivy cover on stem.	20+	B2	None	9.00	N4.8 S0 E1 W4.2	2	0.27	33.12	3.25

Tree No	Species	Scientific Name	Age Class	Condition	Comments	Contributing Years	Value Category	Recommendations	Overall Height (m)	Canopy Spread (m)	Ground - Canopy Height	DBH (m)	RPA (m ²)	RP Radius
50	Alder	<i>Alnus glutinosa</i>	Mature	Good	Previously coppiced.	40+	B2	None	12.30	N5.6 S5.2 E6.5 W5.6	2.3	0.68	210.45	8.18
51	Alder	<i>Alnus glutinosa</i>	Semi-Mature	Good	Inaccessible, parameters estimated.	40+	B2	None	9.90	N5 S5 E2.5 W5	1.8	0.25	29.34	3.06
52	Alder	<i>Alnus glutinosa</i>	Semi-Mature	Good	Inaccessible, parameters estimated.	40+	B2	None	9.90	N3 S3 E1.5 W3	1.8	0.22	22.46	2.67
53	English oak	<i>Quercus robur</i>	Semi-Mature	Good	Inaccessible, parameters estimated.	40+	B2	None	11.00	N5.3 S4.1 E4.8 W4.6	5	0.49	107.30	5.84
54	Alder	<i>Alnus glutinosa</i>	Semi-Mature	Good	Inaccessible, parameters estimated.	40+	B2	None	9.60	N5 S5.2 E4 W5	4.5	0.47	99.39	5.62
55	English oak	<i>Quercus robur</i>	Mature	Good	Inaccessible, parameters estimated.	40+	B2	None	9.70	N4.3 S5.2 E4.4 W5	4.7	0.60	162.86	7.20
56	English oak	<i>Quercus robur</i>	Mature	Poor	Open stem cavity N facing from base to 1.5m, vigour suppressed by surrounding trees.	10+	C2	Re-inspect stem cavity in 18 months.	8.60	N4.2 S0 E5.5 W4.4	4.7	0.40	72.38	4.80
57	English oak	<i>Quercus robur</i>	Mature	Good	Split in stem 2.2m south facing, not able to directly inspect.	40+	B2	Re-inspect stem split in 18 months.	10.00	N6.5 S4.9 E7.6 W4	2.2	0.75	254.47	9.00

Tree No	Species	Scientific Name	Age Class	Condition	Comments	Contributing Years	Value Category	Recommendations	Overall Height (m)	Canopy Spread (m)	Ground - Canopy Height	DBH (m)	RPA (m ²)	RP Radius
58	English oak	<i>Quercus robur</i>	Mature	Good	None	40+	B2	None	10.00	N5 S6.5 E6.5 W7.6	3	0.75	254.47	9.00
59	Goat willow	<i>Salix caprea</i>	Mature	Moderate	None	20+	C2	None	9.80	N6 S6 E6 W6	2.5	0.43	82.99	5.14
60	Goat willow	<i>Salix caprea</i>	Semi-Mature	Poor	Fallen stem with harp branches.	10+	C2	Consider remediation works if near to targets following development.	7.80	N1 S4.5 E0.5 W7	0.1	0.26	30.82	3.13
61	English oak	<i>Quercus robur</i>	Mature	Good	Minor deadwood in crown.	40+	B2	Remove deadwood if in close proximity to targets following development.	9.20	N5.8 S5.5 E6.3 W5.7	4.5	0.65	191.13	7.80
62	English oak	<i>Quercus robur</i>	Young	Good	None	40+	B2	None	9.50	N3 S3 E3 W3	5.4	0.18	14.89	2.18
63	English oak	<i>Quercus robur</i>	Young	Good	None	40+	B2	None	9.50	N3 S1 E1 W3	5.4	0.18	14.89	2.18
64	Goat willow	<i>Salix caprea</i>	Semi-Mature	Moderate	Historic and recent wounds by flail.	10+	C2	None	8.90	N3.6 S2 E0 W4.2	4.8	0.19	17.06	2.33
65	Scot's pine	<i>Pinus sylvestris</i>	Semi-Mature	Good	Tree off-site, parameters estimated.	20+	C2	None	9.80	N4.9 S2 E6 W4.2	4.3	0.35	55.42	4.20

Tree No	Species	Scientific Name	Age Class	Condition	Comments	Contributing Years	Value Category	Recommendations	Overall Height (m)	Canopy Spread (m)	Ground - Canopy Height	DBH (m)	RPA (m ²)	RP Radius
66	Alder	<i>Alnus glutinosa</i>	Semi-Mature	Good	Tree off-site, parameters estimated.	20+	C2	None	9.70	N4 S4 E4 W4	2.5	0.30	40.72	3.60
67	Scot's pine	<i>Pinus sylvestris</i>	Semi-Mature	Good	Tree off-site, parameters estimated.	20+	C2	None	9.50	N3.7 S3.8 E4.2 W3.5	1.9	0.30	40.72	3.60
68	Norway maple	<i>Acer platanoides</i>	Semi-Mature	Good	None	40+	B2	None	11.10		4	0.29	37.13	3.44
69	Cherry	<i>Prunus sp.</i>	Semi-Mature	Good	Minor deadwood on stem.	20+	B2	Remove deadwood if in close proximity to targets following development.	14.10		4	0.31	44.02	3.74
70	Ash	<i>Fraxinus excelsior</i>	Semi-Mature	Good	None	40+	B2	None	15.70		4	0.32	45.84	3.82
71	English oak	<i>Quercus robur</i>	Mature	Good	Moderate deadwood on stem.	40+	B2	Remove deadwood if in close proximity to targets following development.	13.80		4	0.55	136.85	6.60
72	Cherry	<i>Prunus sp.</i>	Semi-Mature	Moderate	Crown vigour suppressed by surrounding trees.	20+	C2	None	9.30		4	0.30	39.64	3.55
73	Hawthorn	<i>Crataegus monogyna</i>	Semi-Mature	Good	None	40+	B2	None	10.00		4	0.22	22.46	2.67

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74	Cherry	<i>Prunus sp.</i>	Semi-Mature	Good	Moderate deadwood on stem.	20+	B2	Remove deadwood if in close proximity to targets following development.	12.60		4	0.31	43.13	3.71
75	Ash	<i>Fraxinus excelsior</i>	Semi-Mature	Good	Moderate deadwood on stem.	40+	B2	Remove deadwood if in close proximity to targets following development.	16.70		4	0.37	60.62	4.39
76	Norway maple	<i>Acer platanoides</i>	Semi-Mature	Good	Minor deadwood on stem.	40+	B2	Remove deadwood if in close proximity to targets following development.	11.70		4	0.35	54.46	4.16
77	Ash	<i>Fraxinus excelsior</i>	Semi-Mature	Good	Minor deadwood on stem.	40+	B2	Remove deadwood if in close proximity to targets following development.	18.00		4	0.48	105.89	5.81
78	Cherry	<i>Prunus sp.</i>	Semi-Mature	Moderate	Minor to moderate deadwood on stem and in crown, crown vigour suppressed by surrounding trees.	10+	C2	Remove deadwood if in close proximity to targets following development.	6.90		4	0.27	33.12	3.25
79	Ash	<i>Fraxinus excelsior</i>	Semi-Mature	Good	None	40+	B2	None	15.90		4	0.41	75.10	4.89
80	Hawthorn	<i>Crataegus monogyna</i>	Semi-Mature	Good	None	40+	B2	None	9.80		4	0.21	19.37	2.48

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81	Ash	<i>Fraxinus excelsior</i>	Semi-Mature	Good	None	40+	B2	None	14.20		4	0.39	69.42	4.70
82	Ash	<i>Fraxinus excelsior</i>	Semi-Mature	Good	None	40+	B2	None	10.40		4	0.26	30.82	3.13
83	Ash	<i>Fraxinus excelsior</i>	Semi-Mature	Good	Minor deadwood in crown.	40+	B2	Remove deadwood if in close proximity to targets following development.	14.50		4	0.29	37.13	3.44
84	Norway maple	<i>Acer platanoides</i>	Semi-Mature	Good	None	40+	B2	None	14.80		4	0.50	111.38	5.95
85	Hawthorn	<i>Crataegus monogyna</i>	Semi-Mature	Good	None	40+	B2	None	7.30		4	0.21	19.37	2.48
86	Rowan	<i>Sorbus aucuparia</i>	Semi-Mature	Moderate	Minor deadwood on stem and in crown, crown vigour suppressed by surrounding trees.	20+	B2	Remove deadwood if in close proximity to targets following development.	7.30		4	0.20	17.62	2.37
87	Ash	<i>Fraxinus excelsior</i>	Semi-Mature	Good	Minor deadwood in crown.	40+	B2	Remove deadwood if in close proximity to targets following development.	15.60		4	0.39	67.11	4.62
88	Sycamore	<i>Acer pseudoplatanus</i>	Semi-Mature	Moderate	Fused stems near base.	40+	B2	Re-inspected fused stems in 18 months.	12.50	N6 S3 E5.5 W6	0.5	0.45	91.61	5.40

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89	English oak	<i>Quercus robur</i>	Semi-Mature	Poor	Significant die-back in crown.	<10	U	Remove to base.	10.00	N1 S1 E5.18 W1	8	0.50	113.10	6.00
90	Sycamore	<i>Acer pseudoplatanus</i>	Young	Moderate	Self-set tree with suppressed crown vigour due to surrounding trees.	10+	C2	None	10.50	N4.5 S2 E4.7 W3	4.3	0.16	11.46	1.91
91	English oak	<i>Quercus robur</i>	Mature	Good	Tree off-site, parameters estimated. Minor deadwood in crown.	40+	B2	Remove deadwood if in close proximity to targets following development.	16.40	N6.1 S3 E7.9 W7.8	6.3	0.80	289.53	9.60
92	Horse Chestnut	<i>Aesculus hippocastanum</i>	Mature	Good	Tree off-site parameters estimated. Leaf miner <i>Cameraria ohridella</i> present.	40+	B2	None	14.30	N3 S5 E5.6 W6	2.9	0.55	136.85	6.60
93	English oak	<i>Quercus robur</i>	Mature	Good	Top of crown previously snapped out, re-growth present.	40+	B2	None	11.50	N3.5 S6 E5.1 W6	4.8	0.48	105.90	5.81
94	Sycamore	<i>Acer pseudoplatanus</i>	Mature	Good	Tree off-site, parameters estimated.	40+	B2	None	17.10	N6.3 S6 E6 W6	3.9	0.75	254.47	9.00
95	Ash	<i>Fraxinus excelsior</i>	Mature	Good	Longitudinal split from base of stem to 1.5m south fencing, minor hollowing, occluding.	40+	B2	Re-inspect split in 18 months.	15.00	N4.4 S8.7 E6.9 W5	4.5	0.57	148.51	6.88

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96	Sycamore	<i>Acer pseudoplatanus</i>	Mature	Good	Tree off-site, parameters estimated.	40+	B2	None	14.00	N5 S5 E5.8 W4	5.8	0.60	162.86	7.20
97	Horse chestnut	<i>Aesculus hippocastanum</i>	Mature	Good	Tree off-site parameters estimated. Leaf miner <i>Cameraria ohridella</i> present.	40+	B2	None	13.20	N3 S4.5 E5.5 W5	5.8	0.50	113.10	6.00
98	Horse chestnut	<i>Aesculus hippocastanum</i>	Mature	Good	Tree off-site parameters estimated. Leaf miner <i>Cameraria ohridella</i> present.	40+	B2	None	13.00	N7 S5.5 E6.2 W6	5.1	0.60	162.86	7.20
99	English oak	<i>Quercus robur</i>	Young	Good	Tree off-site, parameters estimated.	40+	C2	None	7.40	N2.6 S2.6 E4.3 W1	4.8	0.25	28.27	3.00
100	English oak	<i>Quercus robur</i>	Young	Good	Tree off-site, parameters estimated.	40+	C2	None	7.40	N2 S2 E1 W2	4.8	0.15	10.18	1.80
101	Silver birch	<i>Betula pendula</i>	Semi-Mature	Moderate	Crown lacking vitality, some pruning wounds on stem, <i>Piptoporus betulinus</i> evident.	10+	C2	Consider remediation works if near to targets following development.	10.20	N4 S3.8 E1.8 W2	2	0.34	51.50	4.05
102	Silver birch	<i>Betula pendula</i>	Young	Good	None	20+	C2	None	2.50	N1 S1 E1 W1	1	0.09	3.85	1.11

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103	Silver birch	<i>Betula pendula</i>	Semi-Mature	Good	None	20+	B2	None	9.50	N3.7 S2.6 E3.6 W3.6	1.5	0.28	36.31	3.40
104	Silver birch	<i>Betula pendula</i>	Semi-Mature	Good	None	20+	B2	None	9.50	N4.3 S2.7 E3.4 W3	1.7	0.52	123.28	6.26
105	Silver birch	<i>Betula pendula</i>	Semi-Mature	Moderate	None	20+	B2	None	11.80	N3.9 S4.6 E5.8 W4.3	2	0.36	59.57	4.35
106	Silver birch	<i>Betula pendula</i>	Semi-Mature	Moderate	Crown lacking vitality.	20+	B2	Consider remediation works if near to targets following development.	10.90	N3.3 S3.2 E2.9 W3.6	1.6	0.32	44.92	3.78
107	Silver birch	<i>Betula pendula</i>	Semi-Mature	Poor	Some lifting bark on stem, poor vitality in crown.	10+	C2	Consider remediation works if near to targets following development.	12.00	N4.5 S4.5 E4.8 W2.2	2.7	0.36	58.53	4.32
108	Silver birch	<i>Betula pendula</i>	Semi-Mature	Good	None	20+	B2	None	11.30	N3.2 S3.8 E3.5 W4.1	1	0.35	55.46	4.20
109	Silver birch	<i>Betula pendula</i>	Semi-Mature	Poor	Poor vitality in crown, open wounds in stem, not occluding.	10+	C2	None	8.00	N2.9 S2.4 E3.3 W1.5	1.6	0.24	25.10	2.83
110	Silver birch	<i>Betula pendula</i>	Semi-Mature	Good	None	20+	B2	None	8.90	N3.1 S2.8 E4 W3	1.6	0.31	44.02	3.74

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111	Silver birch	<i>Betula pendula</i>	Semi-Mature	Good	Tree off-site, parameters estimated. Lacking vitality in crown.	20+	B2	Consider remediation works if near to targets following development.	13.60	N4.2 S1 E4.9 W4.5	2	0.31	44.02	3.74
112	Silver birch	<i>Betula pendula</i>	Semi-Mature	Good	Tree off-site parameters estimated.	20+	B2	None	16.10	N4.5 S5 E7 W6.5	1.5	0.45	89.84	5.35
113	Silver birch	<i>Betula pendula</i>	Semi-Mature	Good	Tree off-site parameters estimated.	20+	B2	None	14.20	N3.5 S4.5 E5.4 W4	1.5	0.38	66.00	4.58
114	Silver birch	<i>Betula pendula</i>	Semi-Mature	Good	Tree off-site parameters estimated.	20+	B2	None	12.00	N5.2 S4.9 E5.3 W4.8	1.8	0.38	66.00	4.58
115	Silver birch	<i>Betula pendula</i>	Semi-Mature	Good	Tree off-site parameters estimated.	20+	B2	None	12.10	N2.9 S6.4 E5.1 W4.9	1.6	0.38	66.00	4.58
116	Silver birch	<i>Betula pendula</i>	Semi-Mature	Poor	Poor vitality in crown, some tip die-back evident.	10+	C2	Consider remediation works if near to targets following development.	9.70	N1.9 S3.2 E3.6 W1.9	1.6	0.30	40.50	3.59
117	Silver birch	<i>Betula pendula</i>	Semi-Mature	Good	Lacking vitality in crown.	20+	B2	Consider remediation works if near to targets following development.	8.70	N3 S2.3 E3.5 W1.3	2.8	0.30	39.64	3.55
118	Silver birch	<i>Betula pendula</i>	Semi-Mature	Poor	Poor vitality in crown, some tip die-back evident.	10+	C2	Consider remediation works if near to targets following development.	8.20	N4 S3.7 E4.5 W2.2	2	0.34	51.50	4.05

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119	Silver birch	<i>Betula pendula</i>	Semi-Mature	Poor	Longitudinal split in stem from ground level to 1m, leader snapped-out in crown at 3.5m, form compromised.	10+	C2	Consider remediation works if near to targets following development.	7.30	N4.2 S3.6 E7.5 W4.5	1.6	0.38	66.00	4.58
120	Silver birch	<i>Betula pendula</i>	Semi-Mature	Moderate	Crown vigour somewhat suppressed by surrounding trees.	20+	B2	Consider remediation works if near to targets following development.	8.00	N1.4 S2.1 E2.9 W2	2	0.16	11.92	1.95
121	Silver birch	<i>Betula pendula</i>	Mature	Good	None	20+	B2	None	14.60	N4.1 S4.6 E5.8 W5.1	3.5	0.47	101.76	5.69
122	Silver birch	<i>Betula pendula</i>	Semi-Mature	Good	None	20+	B2	None	10.80	N2.8 S2.8 E2.6 W2.6	1.2	0.25	27.89	2.98
123	Silver birch	<i>Betula pendula</i>	Semi-Mature	Poor	Significant die-back throughout crown.	10+	C2	Consider remediation works if near to targets following development.	12.00	N4.8 S4.8 E4.8 W4.8	2.5	0.41	77.46	4.97
124	Silver birch	<i>Betula pendula</i>	Semi-Mature	Good	None	20+	B2	None	13.20	N4 S4 E4 W4	1.5	0.32	46.76	3.86
125	Silver birch	<i>Betula pendula</i>	Semi-Mature	Good	U-shaped union present in main stem.	20+	B2	None	13.10	N3.4 S3.4 E4.5 W2.5	2	0.28	35.50	3.36

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126	Silver birch	<i>Betula pendula</i>	Semi-Mature	Good	None	20+	B2	None	12.00	N1.9 S3 E3.2 W2.5	2.3	0.25	27.18	2.94
127	Silver birch	<i>Betula pendula</i>	Semi-Mature	Good	None	20+	B2	None	12.00	N2.9 S3 E3.6 W2.5	1.8	0.29	37.13	3.44
128	Silver birch	<i>Betula pendula</i>	Semi-Mature	Good	None	20+	B2	None	12.00	N1.5 S2.9 E2.3 W2.8	1.6	0.30	40.50	3.59
129	Silver birch	<i>Betula pendula</i>	Semi-Mature	Good	None	20+	B2	None	10.90	N1 S3.2 E3.2 W1.5	1.6	0.23	23.76	2.75
130	Balsam poplar	<i>Populus balsamifera</i>	Semi-Mature	Moderate	Some tip die-back evident.	20+	C2	Consider remediation works if near to targets following development.	16.40	N2.6 S3.2 E1 W6.2	2.2	0.68	209.18	8.16
131	Balsam poplar	<i>Populus balsamifera</i>	Semi-Mature	Moderate	None	20+	C2	None	16.40	N2.6 S4.8 E2.1 W1.5	2.2	0.44	86.03	5.23
132	Balsam poplar	<i>Populus balsamifera</i>	Semi-Mature	Moderate	None	20+	C2	None	164.00	N1.9 S4.5 E3.7 W1	2.2	0.50	112.98	6.00
133	Sycamore	<i>Acer pseudoplatanus</i>	Mature	Moderate	Major wound on stem 0.5-1.8m west facing, occluding, not obviously effecting vitality of tree.	20+	BS - A2	Re-inspect wound in 18 months.	11.80	N5 S3.9 E5 W4.4	2.5	0.50	114.43	6.04

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134	Sycamore	<i>Acer pseudoplatanus</i>	Mature	Good	Minor deadwood in crown.	20+	BS - A2	Remove deadwood if in close proximity to targets following development.	12.70	N4.1 S4.5 E6.9 W4	5.3	0.39	68.22	4.66
135	Sycamore	<i>Acer pseudoplatanus</i>	Semi-Mature	Moderate	Crown vitality somewhat suppressed by surrounding trees.	20+	BS - A2	None	13.20	N1.9 S2.2 E0 W4.6	4.8	0.30	40.50	3.59
136	Sycamore	<i>Acer pseudoplatanus</i>	Mature	Good	Adjacent to moat, parameters estimated. Minor deadwood in crown.	20+	BS - A2	Remove deadwood if in close proximity to targets following development.	16.30	N5 S5 E5 W5	5	0.51	117.34	6.11
137	Sycamore	<i>Acer pseudoplatanus</i>	Mature	Good	None	40+	BS - A2	None	14.60	N5.7 S7.9 E7.3 W7	8	0.70	221.67	8.40
138	Sycamore	<i>Acer pseudoplatanus</i>	Mature	Moderate	Large wound on stem base to 1.6m west facing, not obviously effecting vitality of tree.	10+	BS - A2	Re-inspect wound in 18 months.	13.50	N5.1 S6 E6.5 W7	5.4	0.63	179.55	7.56
139	Sycamore	<i>Acer pseudoplatanus</i>	Mature	Good	None	40+	BS - A2	None	13.10	N2 S5 E5 W5.2	5	0.49	107.30	5.84
140	Silver birch	<i>Betula pendula</i>	Semi-Mature	Moderate	Numerous splits and cavities in stem and lower crown, not significantly affecting vitality of tree at present.	10+	C2	Re-inspect splits/cavities in 18 months.	10.40	N3 S3 E3 W6	3	0.33	49.27	3.96

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141	Silver birch	<i>Betula pendula</i>	Semi-Mature	Poor	Uncorrected 20° lean to east, longitudinal open wound on stem from base to 1.7m	<10	U	Re-inspect wound in 18 months.	4.00	N2 S2 E0 W2	1.8	0.25	29.34	3.06
142	Sycamore	<i>Acer pseudoplatanus</i>	Mature	Good	Adjacent to moat, parameters estimated.	40+	B2 - A2	None	12.50	N5.5 S5.5 E5.5 W5.5	5.5	0.53	124.79	6.30
143	Sycamore	<i>Acer pseudoplatanus</i>	Mature	Good	Adjacent to moat, parameters estimated.	40+	B2 - A2	None	12.60	N3.7 S2 E4 W4	2	0.32	45.84	3.82
144	Crack willow	<i>Salix fragilis</i>	Mature	Good	Adjacent to moat, parameters estimated.	20+	B2 - A2	None	15.10	N7.4 S4 E7.4 W7.4	4	0.60	162.86	7.20
145	Crack willow	<i>Salix fragilis</i>	Mature	Good	Adjacent to moat, parameters estimated.	20+	B2 - A2	None	16.70	N4 S7 E7 W7	4	6.00	16286.02	72.00
146	Sycamore	<i>Acer pseudoplatanus</i>	Mature	Good	Western stem leader snapped at 4m.	40+	B2 - A2	None	11.50	N2 S7.5 E7.5 W5.7	5.5	0.70	221.67	8.40
147	Crack willow	<i>Salix fragilis</i>	Mature	Moderate	None	20+	B2 - A2	None	17.60	N6 S10.5 E5 W8	3	0.28	35.89	3.38
148	Sycamore	<i>Acer pseudoplatanus</i>	Semi-Mature	Good	None	40+	B2 - A2	None	14.90	N4.3 S3 E3.3 W2	3.5	0.36	57.50	4.28

Tree No	Species	Scientific Name	Age Class	Condition	Comments	Contributing Years	Value Category	Recommendations	Overall Height (m)	Canopy Spread (m)	Ground - Canopy Height	DBH (m)	RPA (m ²)	RP Radius
149	Sycamore	<i>Acer pseudoplatanus</i>	Mature	Good	Occluding pruning wound at 1.8m south facing.	40+	B2 - A2	None	16.70	N9 S7.6 E3.7 W5.6	4.3	0.53	124.79	6.30
150	Silver birch	<i>Betula pendula</i>	Semi-Mature	Moderate	Crown vitality somewhat suppressed by surrounding trees.	20+	B2 - A2	None	15.10	N2 S4.3 E2 W2	2	0.56	140.37	6.68
151	Sycamore	<i>Acer pseudoplatanus</i>	Mature	Good	None	40+	B2 - A2	None	16.70	N5.3 S7.7 E5 W3	4	0.48	104.51	5.77
152	Sycamore	<i>Acer pseudoplatanus</i>	Mature	Good	Adjacent to moat, parameters estimated.	40+	B2 - A2	None	17.00	N8 S8.2 E8 W8	6.5	1.00	452.39	12.00
153	Silver birch	<i>Betula pendula</i>	Young	Poor	Tree topped, from compromised, several pruning wounds and splits in stem.	<10	U	None	22.00	N0.5 S0.5 E0.5 W0.5	1.8	0.17	12.88	2.02
154	Silver birch	<i>Betula pendula</i>	Semi-Mature	Moderate	None	20+	C2	None	7.50	N1.8 S2.7 E3 W1	3	0.28	34.69	3.32
155	Silver birch	<i>Betula pendula</i>	Semi-Mature	Good	None	20+	C2	None	15.70	N5.1 S5.1 E2.1 W3.1	5.6	0.42	79.87	5.04

Tree No	Species	Scientific Name	Age Class	Condition	Comments	Contributing Years	Value Category	Recommendations	Overall Height (m)	Canopy Spread (m)	Ground - Canopy Height	DBH (m)	RPA (m ²)	RP Radius
156	English oak	<i>Quercus robur</i>	Mature	Moderate	Adjacent to moat, parameters estimated. Access to tree limited, most of crown split and fallen, wounding to stem.	20+	B2 - A2	Consider remediation works if near to targets following development.	10.50	N2 S2 E2 W2	5	0.60	162.86	7.20
157	Sycamore	<i>Acer pseudoplatanus</i>	Mature	Good	None	40+	B2 - A2	None	18.80	N7 S9.8 E5.1 W7.5	8.8	0.75	254.47	9.00
158	Sycamore	<i>Acer pseudoplatanus</i>	Mature	Good	U-shaped union present in main stem.	40+	B2 - A2	None	17.00	N7.5 S7.7 E5.5 W2	6	0.50	110.92	5.94
159	Crack willow	<i>Salix fragilis</i>	Young	Poor	Adjacent to moat, parameters estimated. Uncorrected 30 ° lean to south-east.	<10	B2 - A2	None	5.00	N1 S7 E7 W0	0.5	0.13	7.33	1.53
160	Sycamore	<i>Acer pseudoplatanus</i>	Mature	Good	None	40+	B2 - A2	None	14.70	N6.5 S6.5 E6.5 W6.5	2	0.39	69.35	4.70
161	Holly	<i>Ilex aquifolium</i>	Mature	Good	Multi-stem shrub.	20+	B2 - A2	None	9.50	N5 S5 E5 W5	2	0.35	55.46	4.20
162	Holly	<i>Ilex aquifolium</i>	Mature	Good	Multi-stem shrub.	20+	B2 - A2	None	8.20	N3.5 S3.5 E3.5 W3.5	2	0.36	59.63	4.36

Tree No	Species	Scientific Name	Age Class	Condition	Comments	Contributing Years	Value Category	Recommendations	Overall Height (m)	Canopy Spread (m)	Ground - Canopy Height	DBH (m)	RPA (m ²)	RP Radius
163	Silver birch	<i>Betula pendula</i>	Mature	Moderate	Moderate crown vitality.	20+	B2 - A2	None	15.10	N5.2 S5.2 E5.2 W5.2	4	0.39	69.35	4.70
164	Silver birch	<i>Betula pendula</i>	Mature	Good	None	20+	B2 - A2	None	13.80	N3.5 S3.5 E3.5 W3.5	1.6	0.13	7.71	1.57
165	Contorted willow	<i>Salix sp.</i>	Semi-Mature	Good	None	20+	B2 - A2	None	11.50	N3 S3.8 E3.8 W3.2	1	0.23	24.43	2.79
166	Silver birch	<i>Betula pendula</i>	Mature	Good	None	20+	B2 - A2	None	18.30	N7 S7.4 E5.7 W7	4	0.35	55.42	4.20
167	Maple	<i>Acer spp.</i>	Semi-Mature	Moderate	Crown vigour suppressed by T166.	20+	B2 - A2	None	10.00	N2.1 S4.3 E5.5 W1	1.8	0.38	65.84	4.58
168	Copper beech	<i>Fagus sylvatica purpurea</i>	Semi-Mature	Moderate	None	20+	B2 - A2	None	11.40	N5.2 S3.8 E5.2 W3.5	2	0.40	72.61	4.81
169	Copper beech	<i>Fagus sylvatica purpurea</i>	Semi-Mature	Good	None	40+	B2	None	11.80	N3.5 S3.5 E3.5 W3.5	2	0.41	76.28	4.93
170	Pine sp.	<i>Pinus sp.</i>	Semi-Mature	Good	Mostly corrected lean to east.	40+	B2	None	14.80	N5.6 S2 E7 W7.3	1.8	0.60	162.86	7.20

Tree No	Species	Scientific Name	Age Class	Condition	Comments	Contributing Years	Value Category	Recommendations	Overall Height (m)	Canopy Spread (m)	Ground - Canopy Height	DBH (m)	RPA (m ²)	RP Radius
171	Silver birch	<i>Betula pendula</i>	Mature	Good	None	20+	B2	None	16.00	N4 S4 E4 W4	4	0.34	53.46	4.13
172	Plum	<i>Prunus spp.</i>	Young	Moderate	Some evidence of wither tip.	20+	C2	None	4.20	N3 S3 E0 W0	1	0.13	7.71	1.57
173	Maple	<i>Acer spp.</i>	Semi-Mature	Moderate	Minor wound to main stem, occluding.	20+	C2	None	7.50	N3.9 S1 E3.5 W1.3	0.5	0.17	13.29	2.06
174	Magnolia sp	<i>Magnolia sp.</i>	Mature	Good	None	20+	B2	None	5.50	N3.5 S3.8 E4 W4	1.3	0.33	49.86	3.98
175	Apple	<i>Malus sp.</i>	Mature	Poor	Wind thrown apple tree.	<10	U	None	0.00		0	0.00	0.00	0.00
176	Apple	<i>Malus sp.</i>	Mature	#N/A	Standing deadwood.	<10	U	None	8.00		0	0.00	0.00	0.00
177	Silver birch	<i>Betula pendula</i>	Semi-Mature	Poor	Adjacent to moat, parameters estimated.	10+	C2	None	10.30	N1.5 S2 E3 W1	3	0.19	16.50	2.29
178	Cedar sp	<i>Cedrus sp.</i>	Semi-Mature	Moderate	Adjacent to moat, parameters estimated. High crown to stem with increased lever arm.	10+	C2	Consider remediation works if near to targets following development.	14.60	N2 S2 E2 W2	2	0.00	0.00	0.00

Tree No	Species	Scientific Name	Age Class	Condition	Comments	Contributing Years	Value Category	Recommendations	Overall Height (m)	Canopy Spread (m)	Ground - Canopy Height	DBH (m)	RPA (m ²)	RP Radius
179	Plum	<i>Prunus spp.</i>	Semi-Mature	Poor	Die-back in crown, <i>Phellinus pomaceus</i> present.	<10	C2	Consider remediation works if near to targets following development.	5.40	N3 S3 E2 W2	0.5	0.19	16.07	2.26
180	Apple	<i>Malus sp.</i>	Semi-Mature	Poor	General die-back in crown and dysfunction in stem.	10+	C2	Consider remediation works if near to targets following development.	5.40	N2 S3 E3 W2	0.1	0.18	14.37	2.14
181	Apple	<i>Malus sp.</i>	Semi-Mature	Moderate	None	20+	C2	None	6.00	N3 S2.2 E3 W2.3	0.1	0.20	17.62	2.37
182	Apple	<i>Malus sp.</i>	Semi-Mature	Moderate	None	20+	C2	None	5.60	N3 S3 E3.5 W2.5	0.5	0.22	22.06	2.65
183	Cherry	<i>Prunus sp.</i>	Semi-Mature	Moderate	Minor wounds present in fused stem.	10+	C2	None	5.80	N1.2 S2.3 E2.2 W1	1.6	0.15	9.72	1.76
184	Apple	<i>Malus sp.</i>	Semi-Mature	Moderate	None	20+	C2	None	8.50	N3.5 S3.8 E3.8 W2.6	0.1	0.20	18.77	2.44
185	Silver birch	<i>Betula pendula</i>	Semi-Mature	Good	None	20+	C2	None	7.90	N4.5 S4.5 E4.5 W4.5	1.8	0.33	50.53	4.01
186	Variegated holly	<i>Ilex aquifolium</i>	Semi-Mature	Good	None	20+	C2	None	4.10	N2 S2 E2 W2	0.1	0.10	4.13	1.15

Tree No	Species	Scientific Name	Age Class	Condition	Comments	Contributing Years	Value Category	Recommendations	Overall Height (m)	Canopy Spread (m)	Ground - Canopy Height	DBH (m)	RPA (m ²)	RP Radius
187	Leylandii sp	<i>Leylandii sp.</i>	Mature	Moderate	Multi-stemmed tree.	20+	C2	None	9.30	N1.8 S3 E3 W3	1.7	0.32	45.82	3.82
188	Cherry	<i>Prunus sp.</i>	Semi-Mature	Moderate	None	20+	C2	None	6.30	N2.3 S4 E5 W2.3	0.5	0.16	11.92	1.95
189	Crack willow	<i>Salix fragilis</i>	Semi-Mature	Moderate	Adjacent to moat, parameters estimated. Large split on lower stem fencing east, not able to inspect.	10+	C2	Consider remediation works if near to targets following development.	7.50	N4.5 S3 E4 W4	1	0.50	113.10	6.00
190	Variegated holly	<i>Ilex aquifolium</i>	Mature	Moderate	Girth estimated.	20+	C2	None	6.80	N2 S2 E2 W2	0.5	0.35	55.42	4.20
191	Leylandii sp	<i>Leylandii sp.</i>	Semi-Mature	Moderate	Girth estimated.	20+	C2	None	8.40	N2 S2 E2 W2	1.6	0.30	40.72	3.60
192	English oak	<i>Quercus robur</i>	Semi-Mature	Good	None	40+	B2	None	10.70	N3.5 S4.5 E4.5 W4.5	2.5	0.28	36.31	3.40
193	Goat willow	<i>Salix caprea</i>	Semi-Mature	Good	None	20+	C2	None	7.30	N3.5 S3.5 E3.5 W3.5	2	0.24	25.78	2.86

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194	Silver birch	<i>Betula pendula</i>	Mature	Good	Adjacent to moat, parameters estimated.	20+	B2	None	16.30	N3 S4.5 E4.5 W4.5	2.2	0.40	72.38	4.80
195	English oak	<i>Quercus robur</i>	Semi-Mature	Good	Adjacent to moat, parameters estimated.	40+	B2	None	12.40	N4 S5 E5 W5	2	0.35	55.42	4.20
196	Cherry	<i>Prunus sp.</i>	Semi-Mature	Moderate	Defoliation evident in crown, split in lower stem from base to 1m, east facing.	10+	C2	Consider remediation works if near to targets following development.	3.80	N3 S3 E3 W3	0.5	0.14	8.48	1.64
197	Cherry	<i>Prunus sp.</i>	Semi-Mature	Moderate	Significant defoliation in crown.	10+	C2	Consider remediation works if near to targets following development.	6.00	N3.5 S3.5 E3.5 W3.5	0.3	0.19	16.50	2.29
198	Cherry	<i>Prunus sp.</i>	Semi-Mature	Moderate	None	20+	C2	None	4.50	N3 S3 E3 W3	0.3	0.18	14.66	2.16
199	Silver birch	<i>Betula pendula</i>	Semi-Mature	Moderate	Moderate crown vitality with some tip die-back evident.	20+	B2 (G)	Consider remediation works if near to targets following development.	9.20	N3.5 S3.5 E3.5 W3.5	2.2	0.26	31.58	3.17
200	Silver birch	<i>Betula pendula</i>	Young	Poor	15° uncorrected lean to east.	<10	U	None	8.00	N1 S1 E3 W0	0.1	0.13	7.33	1.53

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201	Scots Pine	<i>Pinus sylvestris</i>	Semi-Mature	Good	Occluding wounds near stem base, probably as a result of livestock. Moderate deadwood on stem.	40+	B2	Remove deadwood if in close proximity to targets following development. Re-inspect for <i>Phaeolus schweinitzii</i> in 12 months.	11.10	N4.2 S4.2 E3.5 W3.9	2	0.37	62.75	4.47
202	Cedar sp	<i>Cedrus sp.</i>	Semi-Mature	Moderate	<i>Phaeolus schweinitzii</i> present at base of stem, reduced vitality in crown, moderate deadwood also present.	<10	C2	Remove tree to base - <i>Phaeolus schweinitzii</i> is a significant decay fungi of roots.	15.50	N3.5 S3.3 E2.5 W3.2	5.3	0.40	72.77	4.81
203	Silver birch	<i>Betula pendula</i>	Semi-Mature	Good	None	20+	B2	None	12.30	N5.5 S4.6 E5.5 W6.1	3.3	0.38	64.91	4.55
204	Cedar sp	<i>Cedrus sp.</i>	Semi-Mature	Moderate	Reduced vitality in crown, no obvious evidence of <i>Phaeolus</i> .	10+	C2	Re-inspect for <i>Phaeolus schweinitzii</i> in 12 months.	15.60	N3 S3 E4 W4	4.7	0.43	83.65	5.16
205	Scots Pine	<i>Pinus sylvestris</i>	Semi-Mature	Good	Occluding wounds near stem base, probably as a result of livestock. Moderate deadwood on stem.	40+	B2	Re-inspect for <i>Phaeolus schweinitzii</i> in 12 months.	12.30	N4.5 S5 E3.5 W2.8	3.1	0.43	84.78	5.19
206	English oak	<i>Quercus robur</i>	Mature	Good	Minor wound to base of stem 0.5m high south facing, occluding, long split in limb N fencing at 2.5m, occluding.	40+	A2	Re-inspect wounds in 18 months.	17.10	N9 S11.1 E9 W10.3	3	0.81	295.72	9.70

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207	English oak	<i>Quercus robur</i>	Mature	Good	Stem has grown round post-and-rail fence.	40+	A2	None	17.60	N9 S11.1 E9 W10.3	3	0.90	369.70	10.85
208	English oak	<i>Quercus robur</i>	Mature	Good	Minor tip die-back in crown with minor deadwood also present, possibly as a result of cattle poaching along adjacent lane and leaching of manure.	40+	A2	None	15.10	N9.5 S9.4 E6.5 W8	2	0.94	398.89	11.27
209	English oak	<i>Quercus robur</i>	Mature	Good	None	40+	A2	None	13.40	N6.5 S5 E9 W9	2	0.86	334.15	10.31
210	Sycamore	<i>Acer pseudoplatanus</i>	Semi-Mature	Good	Adjacent to moat, parameters estimated.	40+	B2 - A2	None	13.20	N4.3 S5 E6.2 W6.9	2.7	0.45	91.61	5.40
211	Sycamore	<i>Acer pseudoplatanus</i>	Semi-Mature	Good	Adjacent to moat, parameters estimated.	40+	B2 - A2	None	10.30	N3.5 S3.5 E3.5 W3	0.5	0.25	28.27	3.00
212	Sycamore	<i>Acer pseudoplatanus</i>	Semi-Mature	Good	Adjacent to moat, parameters estimated.	40+	B2 - A2	None	10.80	N4 S4 E4 W4	1.6	0.30	40.72	3.60
213	Silver birch	<i>Betula pendula</i>	Semi-Mature	Good	Adjacent to moat, parameters estimated.	20+	B2 - A2	None	11.60	N4 S4 E3 W5	3.8	0.30	40.72	3.60

Tree No	Species	Scientific Name	Age Class	Condition	Comments	Contributing Years	Value Category	Recommendations	Overall Height (m)	Canopy Spread (m)	Ground - Canopy Height	DBH (m)	RPA (m ²)	RP Radius
214	Horse chestnut	<i>Aesculus hippocastanum</i>	Mature	Good	Adjacent to moat, parameters estimated. Leaf miner <i>Cameraria ohridella</i> present.	40+	B2 - A2	None	15.60	N6 S6 E5 W6	3.7	0.75	254.47	9.00
215	English oak	<i>Quercus robur</i>	Mature	Good	Adjacent to moat, parameters estimated.	40+	B2 - A2	None	15.60	N6 S11.8 E6 W6	2.5	0.70	221.67	8.40
216	Silver birch	<i>Betula pendula</i>	Mature	Good	Adjacent to moat, parameters estimated.	20+	B2 - A2	None	15.60	N4 S4 E4 W4	10	0.35	56.48	4.24
217	Beech	<i>Fagus sylvatica</i>	Mature	Good	Adjacent to moat, parameters estimated. Shallow split in stem south facing, from base to 1.3m, occluding.	40+	B2 - A2	Re-inspect split in 18 months.	15.60	N4.6 S6 E6 W5	2.8	0.55	136.85	6.60
218	Sycamore	<i>Acer pseudoplatanus</i>	Mature	Good	Adjacent to moat, parameters estimated. Moderate ivy to stem and lower crown.	40+	B2 - A2	None	14.00	N5.5 S8 E5 W5	2.2	0.70	221.67	8.40
219	Sycamore	<i>Acer pseudoplatanus</i>	Mature	Good	Adjacent to moat, parameters estimated. Uncorrected 15 degree lean to south.	40+	B2 - A2	None	14.00	N6 S9.5 E7 W8	2	0.60	162.86	7.20

Tree No	Species	Scientific Name	Age Class	Condition	Comments	Contributing Years	Value Category	Recommendations	Overall Height (m)	Canopy Spread (m)	Ground - Canopy Height	DBH (m)	RPA (m ²)	RP Radius
220	Sycamore	<i>Acer pseudoplatanus</i>	Mature	Good	Adjacent to moat, parameters estimated. Target canker present on stem 1m high east facing.	40+	B2 - A2	Re-inspect for cankers in 12 months.	17.50	N6 S8 E7 W7	2	0.85	326.85	10.20
221	Horse chestnut	<i>Aesculus hippocastanum</i>	Mature	Good	Leaf miner Cameraria ohridella present. Minor ivy cover on lower stem.	40+	B2 - A2	None	11.70	N5 S6 E6 W6	2.5	0.70	221.67	8.40
222	Cedar	<i>Cedrus spp.</i>	Semi-Mature	Poor	Stem snapped out at 6.5m.	<10	U	None	6.40	N3 S2 E6 W3	3	0.30	40.72	3.60
223	Silver birch	<i>Betula pendula</i>	Mature	Good	None	20+	C2	None	15.70	N3.5 S3.5 E3.5 W3.5	2	0.39	69.35	4.70
224	Silver birch	<i>Betula pendula</i>	Semi-Mature	Moderate	Stem leader snapped out at 8m, re-growth present.	10+	C2	None	16.40	N3 S4.5 E3.7 W1.7	3	0.30	40.50	3.59
225	Ash	<i>Fraxinus excelsior</i>	Semi-Mature	Moderate	Significant cattle poaching around rooting zone, dead fungi on stem south facing at 5m, possibly Polyporus squamosus?	20+	C2	In-inspect for dysfunction by fungi in 12 months.	11.20	N5 S6 E5 W5	2	0.65	191.13	7.80
226	Ash	<i>Fraxinus excelsior</i>	Mature	Good	Tear-out north facing at 2m on stem, occluding.	40+	B2	Re-inspect tear-out in 18 months.	16.40	N6.8 S10.5 E11.5 W11.5	2.5	0.95	408.28	11.40

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227	English oak	<i>Quercus robur</i>	Mature	Good	Several tear outs in lower crown, occluding, minor deadwood in crown, slight corrected lean to east.	40+	B2	Remove deadwood if in close proximity to targets following development.	15.00	N9.5 S9.5 E9.5 W9.5	6.2	1.05	498.76	12.60
228	English oak	<i>Quercus robur</i>	Semi-Mature	Good	Uncorrected 20 degree lean to south.	20+	C2	None	7.30	N3 S7 E5.5 W5.5	2	0.45	91.61	5.40
229	English oak	<i>Quercus robur</i>	Semi-Mature	Moderate	Die-back in crown, possible presence of Armillaria?	10+	C2	None	4.00	N3 S3 E3 W3	19	0.47	100.40	5.65
230	English oak	<i>Quercus robur</i>	Mature	Good	None	40+	B2	None	12.40	N5 S8 E8 W8	3	0.60	162.86	7.20
231	English oak	<i>Quercus robur</i>	Semi-Mature	Good	None	40+	B2	None	9.30	N5 S5 E5 W4	5.5	0.44	87.58	5.28
232	Hawthorn	<i>Crataegus monogyna</i>	Semi-Mature	Good	Outgrown shrub.	20+	C2	None	6.20	N2 S2 E2 W2	4	0.30	40.72	3.60
233	Oak	<i>Quercus robur</i>	Mature	Good	None	40+	B2	None	10.80	N5 S5 E3 W5	3.8	0.76	261.30	9.12

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234	Ash	<i>Fraxinus excelsior</i>	Mature	Moderate	Tall coppice re-growth, multi-stemmed tree.	20+	B2	None	11.90	N6 S6 E7 W7	4.4	0.27	33.66	3.27
235	Alder	<i>Alnus glutinosa</i>	Semi-Mature	Good	Within inaccessible part of brook, parameters estimated.	40+	B2	None	12.00	N5 S3 E5 W3	2	0.70	221.67	8.40
236	Ash	<i>Fraxinus excelsior</i>	Mature	Moderate	x2 stem leaders, x1 leader split and snapped out at 2m.	20+	B2	None	17.80	N8.5 S4 E5 W8	3.5	0.37	61.93	4.44
237	Sycamore	<i>Acer pseudoplatanus</i>	Mature	Good	Within inaccessible part of brook, parameters estimated. Multi-stem tree.	40+	B2	None	13.00	N6 S5 E4 W4	3.5	0.37	63.25	4.49
238	Cherry	<i>Prunus sp.</i>	Over-mature	Moderate	Compression fork in stem, no obvious evidence of included bark.	20+	B2	Re-inspect compression fork in 12 months.	11.00	N3 S3 E3 W3	3.5	0.80	289.53	9.60
239	Sycamore	<i>Acer pseudoplatanus</i>	Young	Good	Within inaccessible part of brook, parameters estimated.	20+	C2	None	8.00	N2 S2 E2 W2	3	0.30	40.72	3.60
240	English oak	<i>Quercus robur</i>	Mature	Good	Within inaccessible part of brook, parameters estimated.	40+	B2	None	14.30	N8 S8 E8 W8	3.5	0.70	221.67	8.40

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241	Alder	<i>Alnus glutinosa</i>	Semi-Mature	Good	None	40+	B2	None	12.30	N6 S6 E6.5 W1	3.5	0.48	104.23	5.76
242	English oak	<i>Quercus robur</i>	Semi-Mature	Good	Within inaccessible part of brook, parameters estimated.	40+	B2	None	10.20	N7 S6 E2 W8	3.5	0.55	136.85	6.60
243	Alder	<i>Alnus glutinosa</i>	Semi-Mature	Moderate	Notable die-back in crown, upwards facing cavity at 3m western aspect, possibly hollow?	20+	B2	None	10.30	N5 S7 E5 W5	3.5	0.60	162.86	7.20
244	English oak	<i>Quercus robur</i>	Semi-Mature	Good	Within inaccessible part of brook, parameters estimated.	40+	B2	None	11.50	N6 S6 E6 W6	3.5	0.60	162.86	7.20
245	Alder	<i>Alnus glutinosa</i>	Semi-Mature	Good	None	40+	B2	None	11.00	N5 S5 E5 W5	3.5	0.70	221.67	8.40
246	Alder	<i>Alnus glutinosa</i>	Semi-Mature	Good	None	40+	B2	None	11.50	N6 S6 E6 W6	4	0.65	191.13	7.80
247	Alder	<i>Alnus glutinosa</i>	Semi-Mature	Good	None	40+	B2	None	10.10	N6 S6 E6 W7	3.8	0.65	191.13	7.80

Tree No	Species	Scientific Name	Age Class	Condition	Comments	Contributing Years	Value Category	Recommendations	Overall Height (m)	Canopy Spread (m)	Ground - Canopy Height	DBH (m)	RPA (m ²)	RP Radius
248	English oak	<i>Quercus robur</i>	Semi-Mature	Good	Within inaccessible part of brook, parameters estimated.	40+	B2	None	10.00	N6.5 S8 E8 W3	3.5	0.70	221.67	8.40
249	Alder	<i>Alnus glutinosa</i>	Semi-Mature	Good	None	40+	B2	None	10.50	N5.5 S6 E5.5 W4	3.8	0.55	136.85	6.60
250	Alder	<i>Alnus glutinosa</i>	Semi-Mature	Good	Within inaccessible part of brook, parameters estimated. Multi-stemmed tree.	40+	B2	None	9.00	N6 S6 E7 W7	3.8	0.80	289.53	9.60
251	English oak	<i>Quercus robur</i>	Semi-Mature	Good	Within inaccessible part of brook, parameters estimated.	40+	B2	None	11.40	N7.5 S7.5 E7.5 W7.5	4	0.70	221.67	8.40
252	Alder	<i>Alnus glutinosa</i>	Semi-Mature	Good	Within inaccessible part of brook, parameters estimated. Multi-stemmed tree.	40+	B2	None	10.60	N7.5 S7.5 E9 W5	3.8	0.80	289.53	9.60
253	Goat willow	<i>Salix caprea</i>	Young	Moderate	Uncorrected 10 degree lean to north-west.	20+	C2	None	10.50	N5 S5 E1 W7	4	0.25	28.27	3.00
254	Ash	<i>Fraxinus excelsior</i>	Semi-Mature	Good	Within inaccessible part of brook, parameters estimated.	40+	B2	None	11.30	N5.5 S5.5 E5.5 W5.5	3.5	0.50	113.10	6.00
255	English oak	<i>Quercus robur</i>	Semi-Mature	Good	None	40+	B2	None	8.20	N5.5 S5.5 E4 W5.5	3.5	0.45	91.61	5.40

Tree No	Species	Scientific Name	Age Class	Condition	Comments	Contributing Years	Value Category	Recommendations	Overall Height (m)	Canopy Spread (m)	Ground - Canopy Height	DBH (m)	RPA (m ²)	RP Radius
256	Alder	<i>Alnus glutinosa</i>	Semi-Mature	Good	Within inaccessible part of brook, parameters estimated. Multi-stemmed tree.	40+	B2	None	9.70	N5 S5 E7 W7	3	0.80	289.53	9.60
257	English oak	<i>Quercus robur</i>	Mature	Good	Within inaccessible part of brook, parameters estimated.	40+	B2	None	11.80	N6 S6 E6 W6	3.5	0.70	221.67	8.40
258	Sycamore	<i>Acer pseudoplatanus</i>	Semi-Mature	Good	Multi-stemmed tree.	40+	B2	None	12.00	N5.5 S5.5 E5.5 W5.5	3.5	0.47	101.69	5.69
258a	Alder	<i>Alnus glutinosa</i>	Semi-Mature	Good	Within inaccessible part of brook, parameters estimated. Multi-stemmed tree.	40+	B2	None	11.60	N6 S6 E8 W8	3	0.80	289.53	9.60
259	Alder	<i>Alnus glutinosa</i>	Semi-Mature	Moderate	Within inaccessible part of brook, parameters estimated. Multi-stemmed tree, die-back in crown.	20+	C2	Consider remediation works if near to targets following development.	11.40	N6 S6 E6 W5.5	3	0.65	191.13	7.80
260	Alder	<i>Alnus glutinosa</i>	Semi-Mature	Moderate	Within inaccessible part of brook, parameters estimated. Multi-stemmed tree, die-back in crown.	20+	C2	Consider remediation works if near to targets following development.	8.70	N5 S6 E5 W3	3	0.45	91.61	5.40
261	English oak	<i>Quercus robur</i>	Mature	Good	Moderate ivy cover in stem and crown.	40+	B2	None	10.30	N6 S6 E6 W5	3.5	0.70	221.67	8.40

Tree No	Species	Scientific Name	Age Class	Condition	Comments	Contributing Years	Value Category	Recommendations	Overall Height (m)	Canopy Spread (m)	Ground - Canopy Height	DBH (m)	RPA (m ²)	RP Radius
262	Ash	<i>Fraxinus excelsior</i>	Mature	Good	None	40+	B2	None	19.20	N11.5 S10 E9 W8	4.5	1.05	498.76	12.60
263	Sycamore	<i>Acer pseudoplatanus</i>	Semi-Mature	Good	None	40+	B2	None	16.60	N6.5 S6 E4 W3	3.5	0.45	91.61	5.40
264	Sycamore	<i>Acer pseudoplatanus</i>	Semi-Mature	Good	None	40+	B2	None	12.30	N6 S6 E6 W3	3.5	0.40	72.38	4.80
265	Ash	<i>Fraxinus excelsior</i>	Semi-Mature	Moderate	Within inaccessible part of brook, parameters estimated.	40+	B2	None	15.90	N7 S7 E3 W7	3	0.55	136.85	6.60
266	Sycamore	<i>Acer pseudoplatanus</i>	Semi-Mature	Good	Within inaccessible part of brook, parameters estimated.	40+	B2	None	14.20	N5.5 S4 E4 W4	2.5	0.40	72.38	4.80
267	Crack willow	<i>Salix fragilis</i>	Mature	Good	Within inaccessible part of brook, parameters estimated. Multi-stemmed tree, die-back in crown.	40+	B2	None	15.30	N11 S8 E11 W11	4	0.80	289.53	9.60
268	English oak	<i>Quercus robur</i>	Mature	Good	Within inaccessible part of brook, parameters estimated.	40+	B2	None	12.00	N7 S7 E7 W7	3.5	0.70	221.67	8.40

Tree No	Species	Scientific Name	Age Class	Condition	Comments	Contributing Years	Value Category	Recommendations	Overall Height (m)	Canopy Spread (m)	Ground - Canopy Height	DBH (m)	RPA (m ²)	RP Radius
269	Ash	<i>Fraxinus excelsior</i>	Mature	Good	Some tip die-back evident in crown.	40+	B2	Consider remediation works if near to targets following development.	13.90	N6 S6 E6 W6	3	0.75	254.47	9.00
270	Alder	<i>Alnus glutinosa</i>	Semi-Mature	Moderate	Within inaccessible part of brook, parameters estimated. Multi-stemmed tree, die-back in crown, stunted growth.	20+	B2	Consider remediation works if near to targets following development.	8.00	N7 S7 E5 W5	3	0.70	221.67	8.40
271	Alder	<i>Alnus glutinosa</i>	Semi-Mature	Good	Within inaccessible part of brook, parameters estimated.	40+	B2	None	11.00	N7 S7 E7 W7	3	0.85	326.85	10.20
272	Alder	<i>Alnus glutinosa</i>	Semi-Mature	Good	Within inaccessible part of brook, parameters estimated. Multi-stemmed tree.	40+	B2	None	11.50	N8 S8 E8 W8	3.5	0.80	289.53	9.60
273	Alder	<i>Alnus glutinosa</i>	Semi-Mature	Good	Within inaccessible part of brook, parameters estimated. Multi-stemmed tree.	40+	B2	None	10.00	N4 S5 E2 W5	3	0.50	113.10	6.00
274	Alder	<i>Alnus glutinosa</i>	Semi-Mature	Good	Within inaccessible part of brook, parameters estimated. Moderate ivy ion stem and in lower crown.	40+	B2	None	9.80	N5 S5 E4 W5	3	0.50	113.10	6.00
275	Alder	<i>Alnus glutinosa</i>	Semi-Mature	Good	Within inaccessible part of brook, parameters estimated. Moderate ivy ion stem and in lower crown.	40+	B2	None	10.00	N6 S6 E3 W3	3	0.40	72.38	4.80

Tree No	Species	Scientific Name	Age Class	Condition	Comments	Contributing Years	Value Category	Recommendations	Overall Height (m)	Canopy Spread (m)	Ground - Canopy Height	DBH (m)	RPA (m ²)	RP Radius
276	ash	<i>Fraxinus excelsior</i>	Semi-Mature	Good	Minor ivy cover on stem, compression fork present in lower stem, covered with ivy, no obvious evidence of included bark.	40+	B2	None	16.00	N6 S9.5 E6 W6	3	0.71	227.68	8.51
277	Ash	<i>Fraxinus excelsior</i>	Semi-Mature	Good	Minor ivy cover on stem.	40+	B2	None	16.00	N8 S10 E6 W6	5	0.57	147.25	6.85
278	Ash	<i>Fraxinus excelsior</i>	Mature	Good	Minor to moderate deadwood in crown.	40+	B2	None	13.30	N6.5 S8.5 E10 W6	3.5	0.70	221.67	8.40
279	Ash	<i>Fraxinus excelsior</i>	Mature	Good	Within inaccessible part of brook, parameters estimated. Minor ivy cover to lower stem minor deadwood in crown.	40+	B2	Remove deadwood if in close proximity to targets following development.	15.60	N6 S6.5 E7 W6.5	3	0.65	191.13	7.80
280	English oak	<i>Quercus robur</i>	Mature	Good	Moderate deadwood in crown.	40+	B2	Remove deadwood if in close proximity to targets following development.	12.70	N7 S7 E7 W7	3	0.75	254.47	9.00
281	Sycamore	<i>Acer pseudoplatanus</i>	Semi-Mature	Moderate	Large basal pruning wound on stem, rotten.	20+	B2	Consider remediation works if near to targets following development.	12.50	N3 S5 E5 W5	3	0.45	91.61	5.40

Tree No	Species	Scientific Name	Age Class	Condition	Comments	Contributing Years	Value Category	Recommendations	Overall Height (m)	Canopy Spread (m)	Ground - Canopy Height	DBH (m)	RPA (m ²)	RP Radius
282	Sycamore	<i>Acer pseudoplatanus</i>	Mature	Good	Within inaccessible part of brook, parameters estimated.	40+	B2	None	16.50	N8 S8 E8 W8	2.5	0.75	254.47	9.00
283	Sycamore	<i>Acer pseudoplatanus</i>	Mature	Good	Within inaccessible part of brook, parameters estimated. Minor ivy cover to lower stem.	40+	B2	None	16.50	N7 S7 E7 W7	3	0.70	221.67	8.40
284	Ash	<i>Fraxinus excelsior</i>	Semi-Mature	Moderate	None	20+	B2	None	13.80	N3 S6.5 E0 W5	3	0.32	46.32	3.84
285	Cherry	<i>Prunus sp.</i>	Semi-Mature	Moderate	Moderate ivy cover on stem.	20+	B2	None	13.20	N1 S5 E2 W2	3	0.65	191.13	7.80
286	Sycamore	<i>Acer pseudoplatanus</i>	Semi-Mature	Good	Within inaccessible part of brook, parameters estimated.	40+	B2	None	14.00	N7 S8 E3 W7	3.5	0.40	72.38	4.80
287	Sycamore	<i>Acer pseudoplatanus</i>	Semi-Mature	Good	Within inaccessible part of brook, parameters estimated.	40+	B2	None	14.90	N7 S8 E7.5 W4	3.5	0.50	113.10	6.00
288	Sycamore	<i>Acer pseudoplatanus</i>	Semi-Mature	Good	Within inaccessible part of brook, parameters estimated.	40+	B2	None	15.50	N3 S7 E7 W6	3.8	0.40	72.38	4.80

Tree No	Species	Scientific Name	Age Class	Condition	Comments	Contributing Years	Value Category	Recommendations	Overall Height (m)	Canopy Spread (m)	Ground - Canopy Height	DBH (m)	RPA (m ²)	RP Radius
289	Sycamore	<i>Acer pseudoplatanus</i>	Semi-Mature	Good	Within inaccessible part of brook, parameters estimated.	40+	B2	None	15.30	N6 S3 E8 W8	4.5	0.60	162.86	7.20
290	Sycamore	<i>Acer pseudoplatanus</i>	Semi-Mature	Good	Within inaccessible part of brook, parameters estimated.	40+	B2	None	17.40	N5 S3 E5 W7	3.5	0.50	113.10	6.00
291	Sycamore	<i>Acer pseudoplatanus</i>	Mature	Good	Shallow longitudinal split south facing at 1.5m, occluding.	40+	B2	Re-inspect split in 18 months.	16.80	N6 S6 E6 W6	1.8	0.57	148.51	6.88
292	English oak	<i>Quercus robur</i>	Mature	Moderate	Die-back throughout crown.	20+	B2	Consider remediation works if near to targets following development.	18.80	N4 S4 E4 W4	2	0.64	183.35	7.64
293	Horse chestnut	<i>Aesculus hippocastanum</i>	Mature	Good	None	40+	B2	None	12.00	N5 S5 E8 W4	1.8	0.80	289.53	9.60
294	Horse chestnut	<i>Aesculus hippocastanum</i>	Mature	Good	Previous branch reduction works to N facing crown, x1 cavity present in secondary stem. SURVEYED 2019.	40+	B2	None	12.00	N6 S7 E8.5 W4.5	2.5	0.84	319.21	10.08
295	Horse chestnut	<i>Aesculus hippocastanum</i>	Mature	Good	SURVEYED 2019.	40+	B2	None	12.00	N6 S8 E6.5 W5	3	0.79	282.34	9.48

Tree No	Species	Scientific Name	Age Class	Condition	Comments	Contributing Years	Value Category	Recommendations	Overall Height (m)	Canopy Spread (m)	Ground - Canopy Height	DBH (m)	RPA (m ²)	RP Radius
296	Horse chestnut	<i>Aesculus hippocastanum</i>	Mature	Good	SURVEYED 2019.	40+	B2	None	12.00	N4 S6 E6 W4	2.5	0.76	261.30	9.12
297	Horse chestnut	<i>Aesculus hippocastanum</i>	Mature	Good	SURVEYED 2019.	40+	B2	None	12.00	N5 S7 E6 W7	2.5	0.82	304.19	9.84
298	English oak	<i>Quercus robur</i>	Young	Good	SURVEYED 2019.	40+	B2	None	4.10	N1 S1 E1 W1	1.9	0.17	13.37	2.06
G1	Ash, cherry, alder, Norway maple, sycamore, rowan, blackthorn, hawthorn	<i>Various</i>	Semi-Mature	Good	Broadleaved shelterbelt ~14m high ~13 to 26m wide. Row of semi-mature staggered trees to site edge (see T68-T87) behind which are younger trees which have been closely planted. T68-T87 have been recorded for purposes of calculating RPA's.	40+	B2	General 'crown clean' to remove deadwood of group trees.	14.00		4	0.00	0.00	0.00
G2	As G1	<i>Various</i>	Semi-Mature	Good	Broadleaved shelterbelt connected to G1 but lower (~12m) and significantly thinner (~5m). Single staggered line of early semi-mature trees mostly inaccessible, girth therefore estimated to determine RPA.	40+	B2	General 'crown clean' to remove deadwood of group trees.	12.00		4	0.27	33.12	3.25

Tree No	Species	Scientific Name	Age Class	Condition	Comments	Contributing Years	Value Category	Recommendations	Overall Height (m)	Canopy Spread (m)	Ground - Canopy Height	DBH (m)	RPA (m ²)	RP Radius
G3	Horse chestnut, oak, ash, sycamore, hawthorn.	<i>Various</i>	Mature	Good	Line of mostly mature broadleaved trees (see T88 to T98) with younger self-set re-growth and scrub. Trees mostly present along off-side site of drain where regrading of bank along industrial estate boundary has been undertaken at potential detriment to the trees. First line of trees recorded T88-T98 for purposes of calculating RPA's.	40+	B2	None	15.00		0	0.00	0.00	0.00
G4	Ash	<i>Fraxinus excelsior</i>	Semi-Mature	Good	Linear group of close planted early-semi-mature ash along a roadside.	20+	C2	None	10.00		2	0.16	11.46	1.91
G5	Horse chestnut, oak.	<i>Various</i>	Mature	Good	Line of tall and mature horse chestnut trees along the A50 trunk road, two oak trees are present across the road in front of a small copse.	40+	B2	None	16.00		3	0.00	0.00	0.00
G6	Ash, rowan, field maple, hazel, hawthorn, goat willow	<i>Various</i>	Young	Good	Homogenous thin belt of tree planting along a verge to a filter road of the M6. Planted off the site but overhanging by ~4m.	40+	B2	None	9.00		2.5	0.22	21.19	2.60

Tree No	Species	Scientific Name	Age Class	Condition	Comments	Contributing Years	Value Category	Recommendations	Overall Height (m)	Canopy Spread (m)	Ground - Canopy Height	DBH (m)	RPA (m ²)	RP Radius
G7	Sycamore, alder, oak	<i>Various</i>	Mature	Good	Off-site and along brook, a group of mature broadleaved trees set 5.5m behind boundary fence and 3, below the current site level.	40+	B2	None	19.00		4	0.80	289.53	9.60
G8	Sycamore, alder, oak, hawthorn	<i>Various</i>	Mature	Good	Group of broadleaved trees and shrubs mainly along off-side bank of brook but fairly near to boundary fence.	40+	B2	None	16.00		4	0.80	289.53	9.60
G9	Ash, field maple	<i>Various</i>	Young	Good	Thin group of young broadleaved trees along the verge of a filter lane to the M6.	20+	B2	None	7.60		2	0.15	10.18	1.80
G10	Ash, field maple, hawthorn	<i>Various</i>	Young	Good	Thin group of young broadleaved trees along the verge of a filter lane to the M6.	20+	B2	None	8.50		2	0.25	28.27	3.00
G11	Hawthorn	<i>Crataegus monogyna</i>	Young	Good	Group of ornamental hawthorn on Cliff Lane roundabout. SURVEYED 2019.	20+	C2	None	2.50		1.8	0.12	6.62	1.45
G12	Ash, English oak, Silver birch, sycamore	<i>Various</i>	Semi-Mature	Good	Plantation shelterbelt adjacent to Cliff Lane roundabout. SURVEYED 2019.	20+	B2	None	10.00		0.5-1.5	0.24	25.78	2.86
G13	Horse chestnut, hawthorn, English oak	<i>Various</i>	Semi-Mature	Moderate	Small group of trees, somewhat neglected. SURVEYED 2019.	20+	C2	None	4.50		1	0.36	59.57	4.35

Tree No	Species	Scientific Name	Age Class	Condition	Comments	Contributing Years	Value Category	Recommendations	Overall Height (m)	Canopy Spread (m)	Ground - Canopy Height	DBH (m)	RPA (m ²)	RP Radius
G14	Sycamore, poplar, willow, hawthorn	<i>Various</i>	Semi-Mature	Moderate	Small group of trees in a field corner, somewhat neglected. SURVEYED 2019.	20+	C2	None	10.70		3	0.30	40.72	3.60
G15	Hawthorn, sycamore	<i>Various</i>	Semi-Mature	Good	Outgrown field boundary hedge adjacent to Cliff Lane and M6 filter lane, with occasional semi-mature trees, mostly on a raised bank. SURVEYED 2019.	40+	B2	None	11.00		0.5	0.30	40.72	3.60
G16	Various	<i>Various</i>	Young	Good	Part of a mixed plantation shelterbelt of trees and scrub along the M6 embankment. SURVEYED 2019.	40+	B2	None	12.00		0.5	0.20	18.10	2.40
G17	Goat willow, Scot's pine, silver birch	<i>Various</i>	Young	Good	Dense planting of low ornamental shrubs on M6 interchange roundabout, with occasional scattered trees present. SURVEYED 2019.	20+	C2	None	4.00		0.2	0.15	10.18	1.80
G18	Goat willow, Scot's pine, silver birch	<i>Various</i>	Young	Good	Dense planting of low ornamental shrubs on M6 interchange roundabout, with occasional scattered trees present. SURVEYED 2019.	20+	C2	None	4.00		0.2	0.15	10.18	1.80
G19	Silver birch, hawthorn, English oak, sycamore, ash.	<i>Various</i>	Semi-Mature	Good	Plantation shelterbelt adjacent to M6 filter lane. SURVEYED 2019.	40+	B2	None	10.00		0.2	0.20	18.10	2.40

Tree No	Species	Scientific Name	Age Class	Condition	Comments	Contributing Years	Value Category	Recommendations	Overall Height (m)	Canopy Spread (m)	Ground - Canopy Height	DBH (m)	RPA (m ²)	RP Radius
G20	Silver birch	<i>Betula pendula</i>	Semi-Mature	Good	Scattered planting of trees along the boundary to Lymm Services and an M6 filter lane. SURVEYED 2019.	20+	B2	None	10.00		2.5	0.20	18.10	2.40

BS 5837:2012 TREE SCHEDULE KEY

AGE CLASS classifications are as follows ('early' and 'late' prefixes denote sub-divisions between the main classifications):

Young = in first third of normal life expectancy

Semi-mature = in middle third of normal life expectancy

Mature = in final third of normal life expectancy

Dead = no longer functional physiologically

CONDITION classifications are as follows:

Good = no significant defects noted in either physiological or structural condition

Moderate = physiological and/or structural condition slightly compromised

Poor = physiological and/or structural condition significantly compromised

CONTRIBUTING YEARS classifications follow BS 5837:2012 and are ranked as: **<10, 10+, 20+, 40+**.

OVERALL HEIGHT, CROWN SPREAD, CANOPY TO GROUND HEIGHT and STEM DIAMETER/GIRTH (@1.5M) is measured in **metres (m)**.

GL - Ground level; **N** - North; **S** - South, **E** - East; **W** - West.

PRESENCE OF DEADWOOD:

Minor = <25mm diameter

Moderate = 25-50mm diameter

Major = >50mm diameter

PRESENCE OF IVY COVER:

Minor = Light ivy cover rendering branches and/or stems mostly conspicuous

Moderate = Ivy cover somewhat dense, often patchy and with branches and/or stems partly conspicuous

Major = Dense ivy cover rendering branches and/or stems mostly inconspicuous

**Appendix 4.5 – MS Environmental
Photography and Photomontage
Methodology**

Appendix 1

Technical Photography,
3D Modelling and Verified Visualisations

Proposed Development
and Tree Removal Proposals

Six56

Warrington

March 2019



LAYER

Landscape
Institute
Registered
Practice

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Introduction

Mike Spence BA (Hons), MLD, CMLI, REIA, FRGS is a one of the UK's leading independent exponents of technical photography, verified photomontages and visualisations. Since 2013 Mike has been a technical advisor to the Landscape Institute on 'photography and photomontage in landscape and visual impact assessment', and has been undertaking this work for over 25 years. He is one of the main authors of the forthcoming update to Advice Note 01/11 and provided technical support to Scottish Natural Heritage on their windfarm visualisation guidance. His background as a Chartered Landscape Architect, Registered EIA Practitioner and Fellow of the Royal Geographic Society working on strategic infrastructure projects has meant that the accuracy of the visualisation work is paramount, and technical photography, together with extensive surveying experience and detailed 3D modelling using real world co-ordinates ensures that the visualisations produced follow a clear and transparent methodology to ensure they are as accurate as possible.

Recent projects include the UNESCO World Heritage Sites at Kew Royal Botanic Gardens, Fountains Abbey for The National Trust, and Derwent Valley Mills for Amber Valley Borough Council. Mike has also been working closely with Bath City Council on proposed development in the UNESCO World Heritage City of Bath. Mike's work and objective technical checks have been used at numerous Public Inquiries and Planning Hearings, on behalf of both local authorities and developers.

In September 2018 Layer contacted MSEnvironmental to request Technical Photography, GNSS/RTK Surveying, 3D Modelling and Visualisation support for the proposed Six56 development.

Verified Photography and 3D Modelling

The photographs were taken with a full frame camera (Canon EOS 5D Mark III) and 50mm lens combination consistent with Landscape Institute's Advice Note 01/11, GLVIA3 and the emerging understanding of the requirement for technical photography for visualisation work.

As part of the work 24 viewpoints were identified providing views of the site and visited on 24 & 25 September 2018. The weather was excellent with clear visibility.



Technical Photography

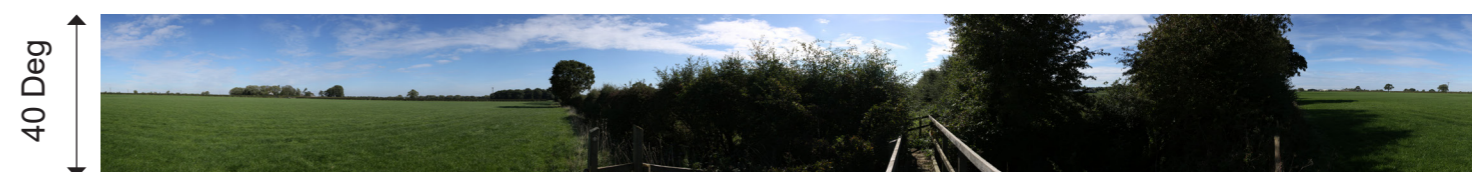
The camera was mounted on a Manfrotto 303 SPH panoramic tripod head, levelled using a Manfrotto Leveller, supported on a Manfrotto Tripod. The tripod head was levelled using a spirit level, to avoid pitch and roll. The camera was set with the centre of the lens 1.60m above ground level. Photographs were taken in Manual mode with an aperture of f/8 or f/11 and a fixed focal length throughout. The panoramic tripod head was set with increments to give approximately 50% overlap

between frames. Photographs were taken in both landscape and portrait format. From each photograph location a full 360 degree field of view was taken centred around a nodal point. The nodal point was set to avoid any problems of foreground parallax. A Sigma 50mm f/1.4 lens was used for all viewpoint photographs.

The reason why different lenses were used in both landscape and portrait orientation can be understood as follows:



50mm lens in Landscape Orientation



50mm lens in Portrait Orientation

For each 360 degree panorama the images were cylindrically corrected and stitched together. This allowed an accurate cylindrical view to be extracted from the full panorama.

Technical information for the camera locations is provided in Appendix 1.1.

Surveying

The position of each camera location was surveyed using Spectra Precision GNSS equipment with Real Time Kinematic Correction (RTK) which achieves an accuracy down to 1cm in eastings, northings and height (metres Above Ordnance Datum). The equipment included Spectra Precision SP80 GNSS smart antennae with Mobile Mapper 20 data recorder. Points were saved using DigiTerra software. A photograph of the camera location was taken, and shown in Appendix 1.1.



3D Modelling

MSEnvironmental constructed a geo-referenced 3D model using Rhino 3D from a 3D surface model supplied by Cundall (for generation of a surface mesh and geo-referencing) together with Ordnance Survey Terrain 5 data. The Six56 development layout was supplied by Stephen George and Partners LLP. The model was re-built and geo-referenced and placed in the Cundall model with ground heights to correspond with the site layout.

Camera locations surveyed on site were added to the geo-referenced 3D model.

Target points were taken from the existing features in the view and built into the 3D model. This allowed the horizontal and vertical alignment of the photograph and 3D model to be checked, cross-referenced and verified.

Cylindrical renders generated using V-Ray for Rhino were exported from the 3D modelling software and used to overlay the cylindrical panorama.

Target points from both the photograph and the model view were aligned to ensure a precise fit between the two images.

The results are presented as a sequence of visualisations as follows:

1. Existing View



2. 3D Model View



3. Composite 3D Model Photo-Overlay View



4. Photomontage

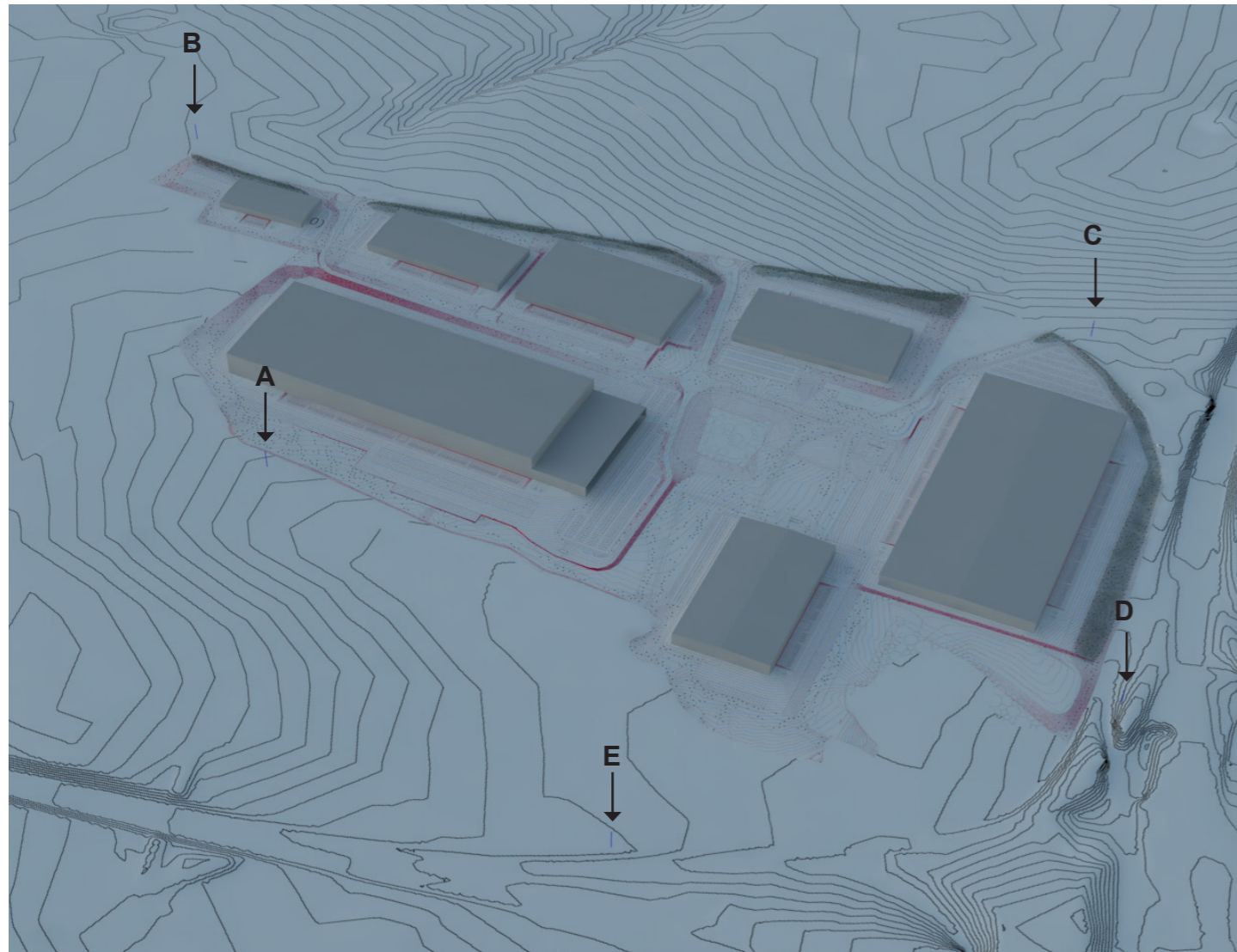


The topography of the site has been generated from a site topographical survey supplied by Layer. The surrounding landform has been created using a combination of 1m LiDAR data, downloaded from the Environment Agency Opensource datasets, and Ordnance Survey Terrain 5 DTM data, with triangulated surfaces generated using Rhinoterrain.

The 3D Model was built by MSEnvironmental. It is fully geo-referenced and positioned to correspond with the site layout and elevations supplied in the planning application drawings:

Two stages of planting have been modelled: Year 1 and Year 15:

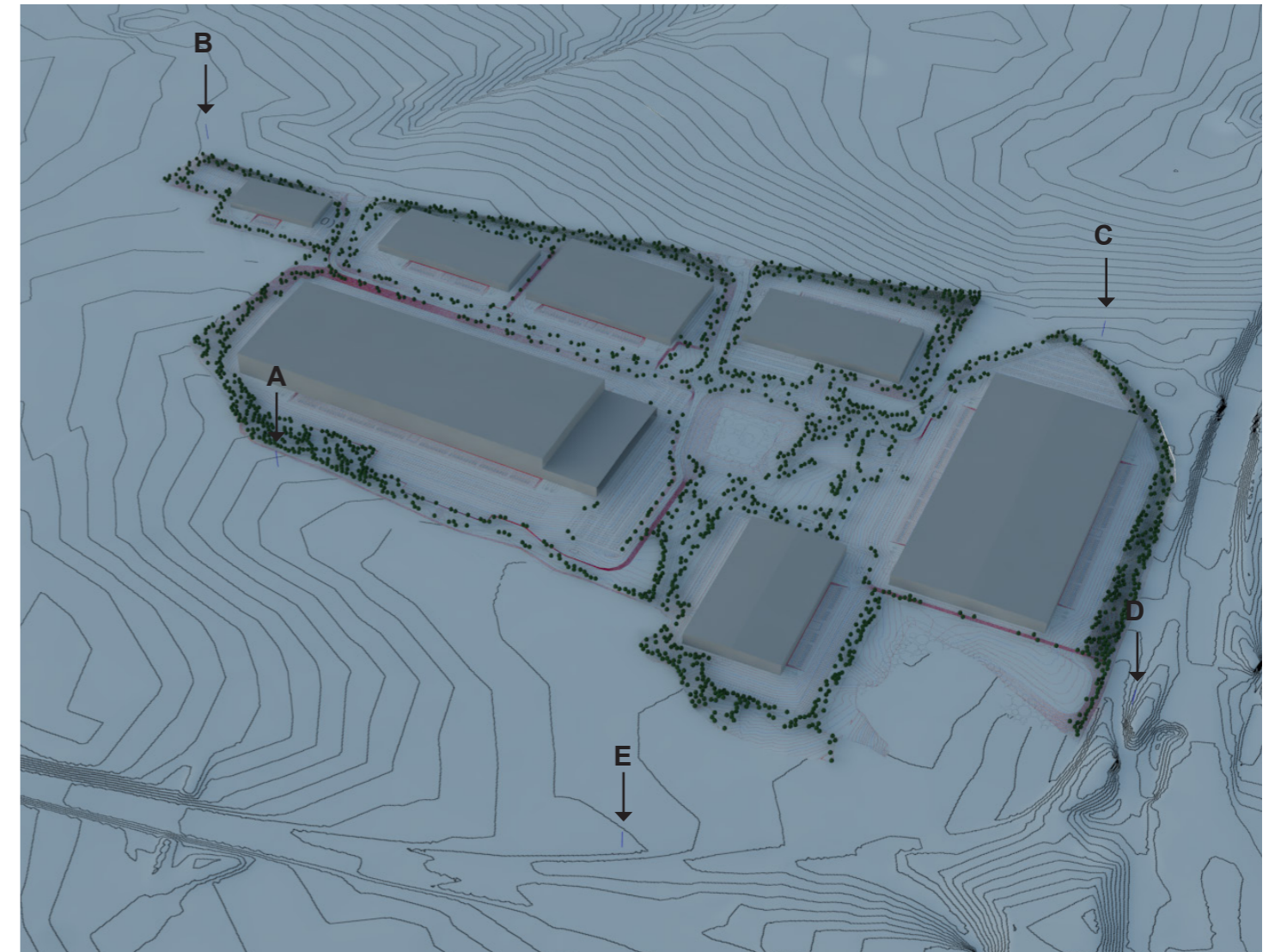
Year 1	Trees 2.5m
Year 15	Trees 8m



Six56 Layout with 30m tall columns for camera/model matching (Year 1)

Column locations (A-E):

364704	384611	66.71 mAOD
365988	384993	56.67 mAOD
366333	384407	52.42 mAOD
365969	383892	55.77 mAOD
365262	384132	59.26 mAOD



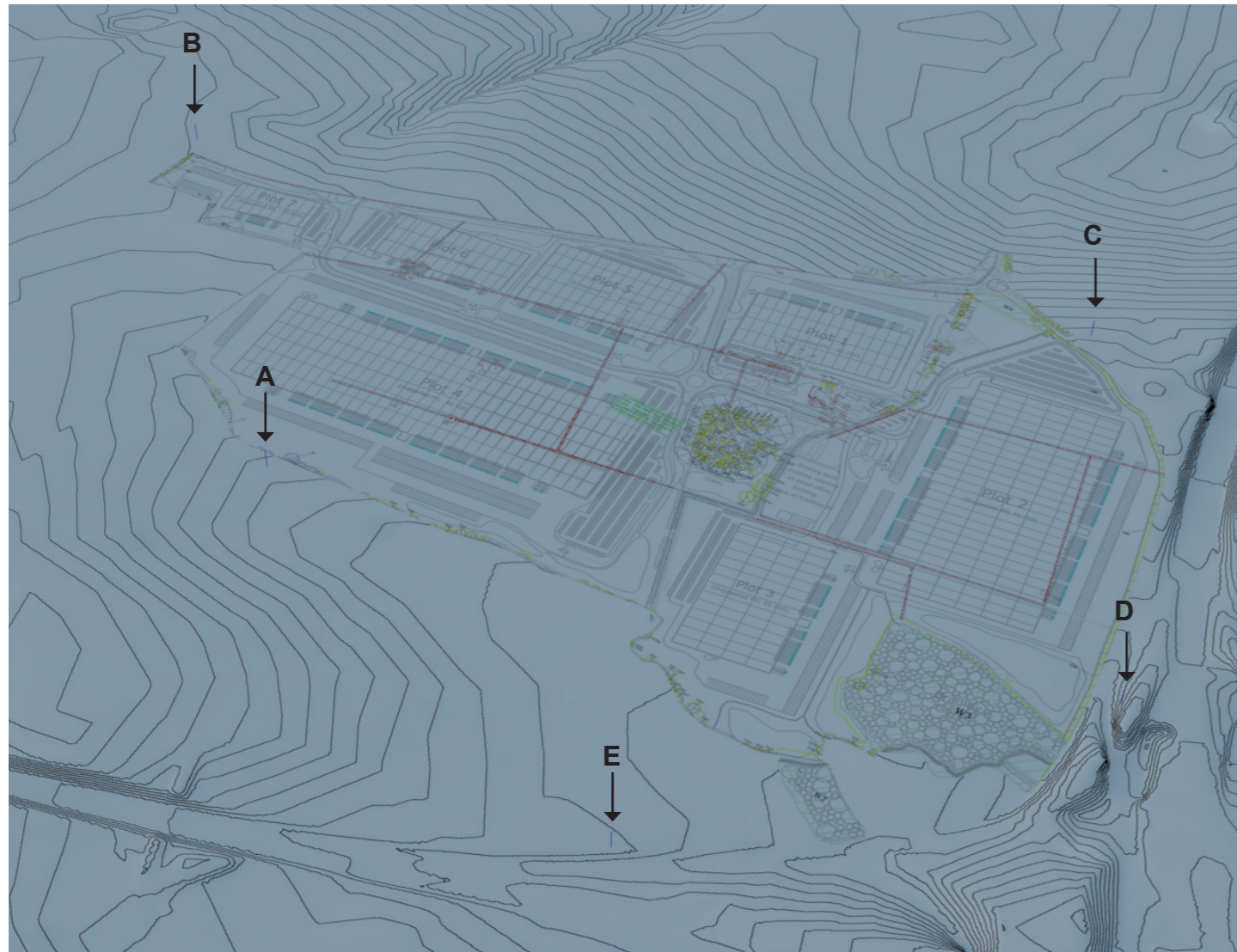
Six56 Layout with 30m tall columns for camera/model matching (Year 15)

The tree removal proposals were added into the model based on the trees removal plans supplied by Landscape Science Consultancy Ltd.

The photomontages have been edited to remove trees shown to be removed.

Trees have been included at a height of 8metres. Hedgerows are set at 1.5m
The colours used in the 3D model correspond with the LSC Ltd key

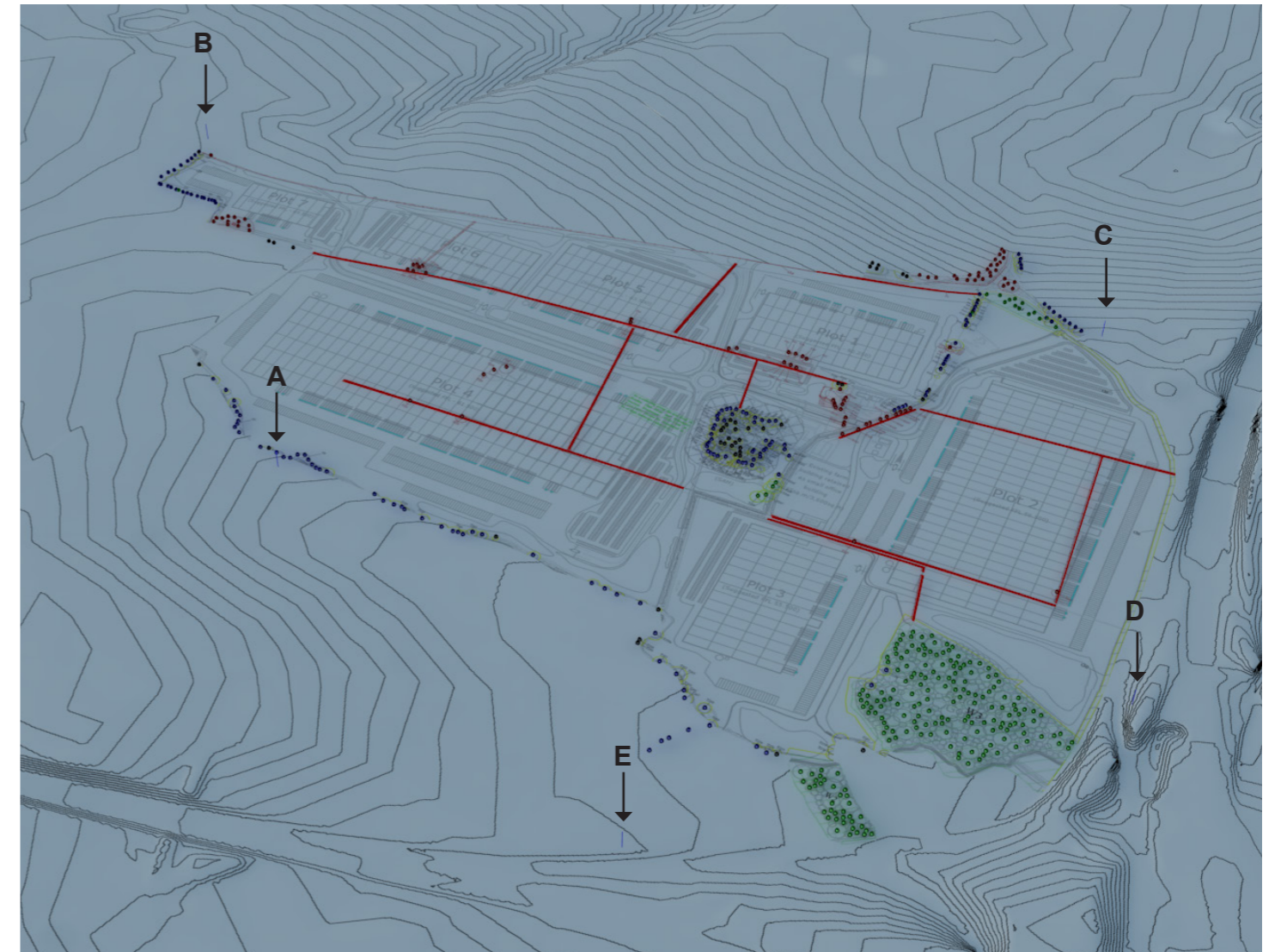
- Red** To be Removed
- Green** High Value retained
- Blue** Moderate Value retained
- Grey** Low Value retained
- Black** Negligible Value retained



Six56 Tree Removal Plan with 30m tall columns for camera/model matching

Column locations (A-E):

364704	384611	66.71 mAOD
365988	384993	56.67 mAOD
366333	384407	52.42 mAOD
365969	383892	55.77 mAOD
365262	384132	59.26 mAOD



Six56 Tree Removal Plan 3D Model with 30m tall columns for camera/model matching

Planar vs Cylindrical Projection

All photographs are taken as a series of single frame planar images. A planar image is a single frame image which has a single point of perspective lying centrally in the image. The limitation of single frame images is that they have a limited horizontal field of view. To allow a wider field of view there is the opportunity to stitch the individual planar images using software, such as PTGUI which automatically corrects the geometrically to give a cylindrical panoramic image. To undertake this accurately the use of a levelled tripod and panoramic tripod head set up to avoid foreground parallax is necessary.

A full 360 degree panorama is taken with overlapping images. These images are stitched together and cylindrically projected, as if the panorama was being located in the inner face of a cylinder.

The 3D model renders are rendered out in cylindrical perspective to allow the image re-mapping to match the photograph.

3D Modelling software

The work has largely been undertaken using Rhino 3D. All 3D modelling has been undertaken in metres and geo-referenced to align with OSGB36. RESOFT Windfarm was also used which is a 3D modelling package which we use to check on vertical alignment of the 3D model. This is also set up to OSGB36 and the alignment of the 30metre tall columns between the two 3D modelling packages ensures that we have complete understanding of the positioning and vertical extent of the proposed building. RESOFT Windfarm has been used to generate the geometric grid from LiDAR DTM data present in all 3D model visualisations.

VRay for Rhino has been used for rendering. The use of a sunlight system adds a 3 dimensional effect with shadow, to understand the form and materials of the proposed building.

Viewing Printed Images

The visualisations have been prepared to be printed at A1 wide by A4 high (841mm x 297mm).

The existing view and visualisations have been produced in cylindrical projection.

Summary

This work has been undertaken in accordance with the the Landscape Institute Advice Note 01/11 and the developing understanding of visualisation work.

The photography has been undertaken in a robust manner, using professional full frame sensor DSLR and 50mm lens with panoramic head and tripod. The camera position has been surveyed using highly accurate GNSS equipment, giving high levels of accuracy of camera location. The 3D model has been built in Rhino 3D. An additional check on the vertical scaling has been undertaken using RESOFT Windfarm. The resultant visualisations are highly accurate

The existing photographic panoramas have been edited to remove those trees and hedges identified as being removed as part of the construction works.

The photography, surveying and 3D modelling have followed a transparent methodology, and the resultant visualisations are considered robust and fit for purpose to illustrate the positioning, and scale and massing of the proposed development in its local context.

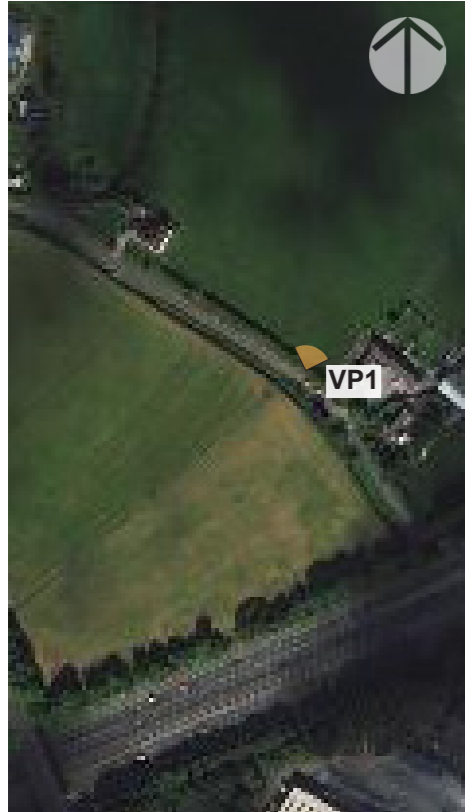


M.A.Spence BA(Hons), MLD, CMLI, REIA, FRGS 6 March 2019
Principal, MSE Environmental

The following photographs with accompanying maps and grid co-ordinates illustrate precisely where the photographs were taken from. This would allow anyone to visit the camera location and gain the same view as that used for the visualisations:



Camera Location:



Camera Location:

365687.78 (E) 383840.08(N)
61.07 mAOD(Sensor Height)

Date/Time of Photography:
25 September 2018/12:40

Camera Equipment:
Canon EOS 5D Mark III
50mm f1.4 Lens

Survey Equipment:
SP80 GNSS/RTK
Mobilemapper 20
DigiTerra

Panorama:





No visualisations produced



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Camera Location:

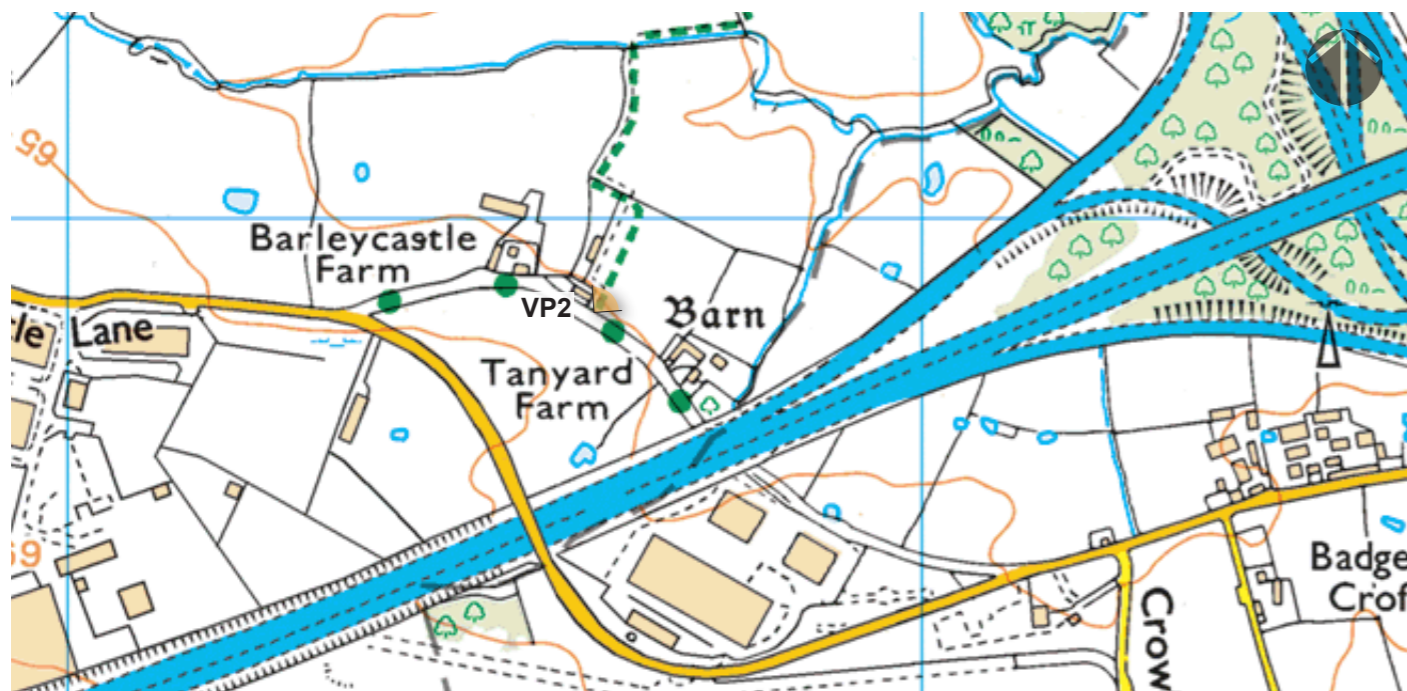



Camera Location:
365613.79 (E) 383892.48(N)
61.94 mAOD(Sensor Height)

Date/Time of Photography:
25 September 2018/12:50

Camera Equipment:
Canon EOS 5D Mark III
50mm f1.4 Lens

Survey Equipment:
SP80 GNSS/RTK
Mobilemapper 20
DigiTerra



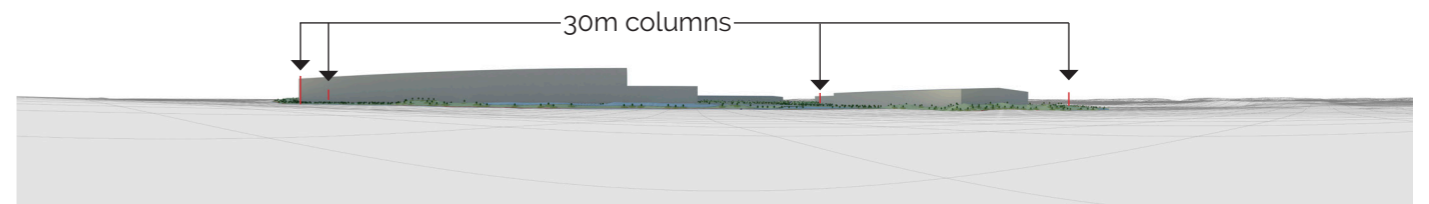
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Photograph - 3D Model Mapping:

Existing View



3D Model with columns



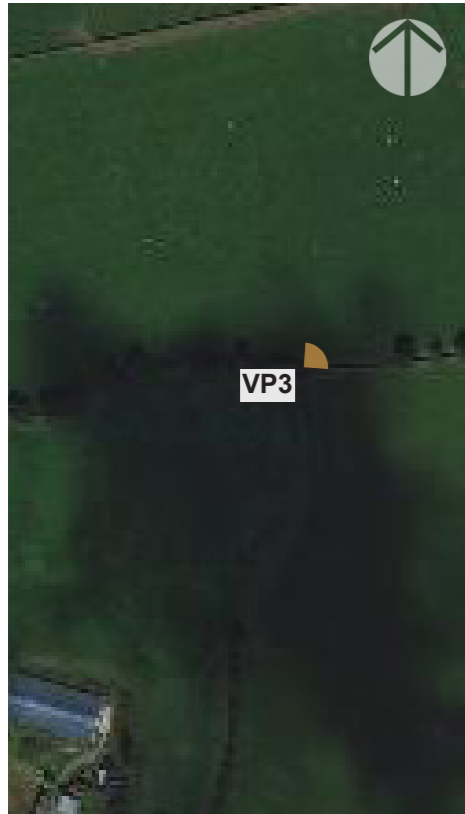
Composite View



Photomontage View



Camera Location:



Camera Location:
365655.85 (E) 384197.31(N)
57.51 mAOD(Sensor Height)

Date/Time of Photography:
25 September 2018/13:00

Camera Equipment:
Canon EOS 5D Mark III
50mm f1.4 Lens

Survey Equipment:
SP80 GNSS/RTK
Mobilemapper 20
DigiTerra

Panorama:



No visualisations produced



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Camera Location:



Camera Location:
365811.56 (E) 384421.09N
58.70 mAOD(Sensor Height)

Date/Time of Photography:
25 September 2018/13:15

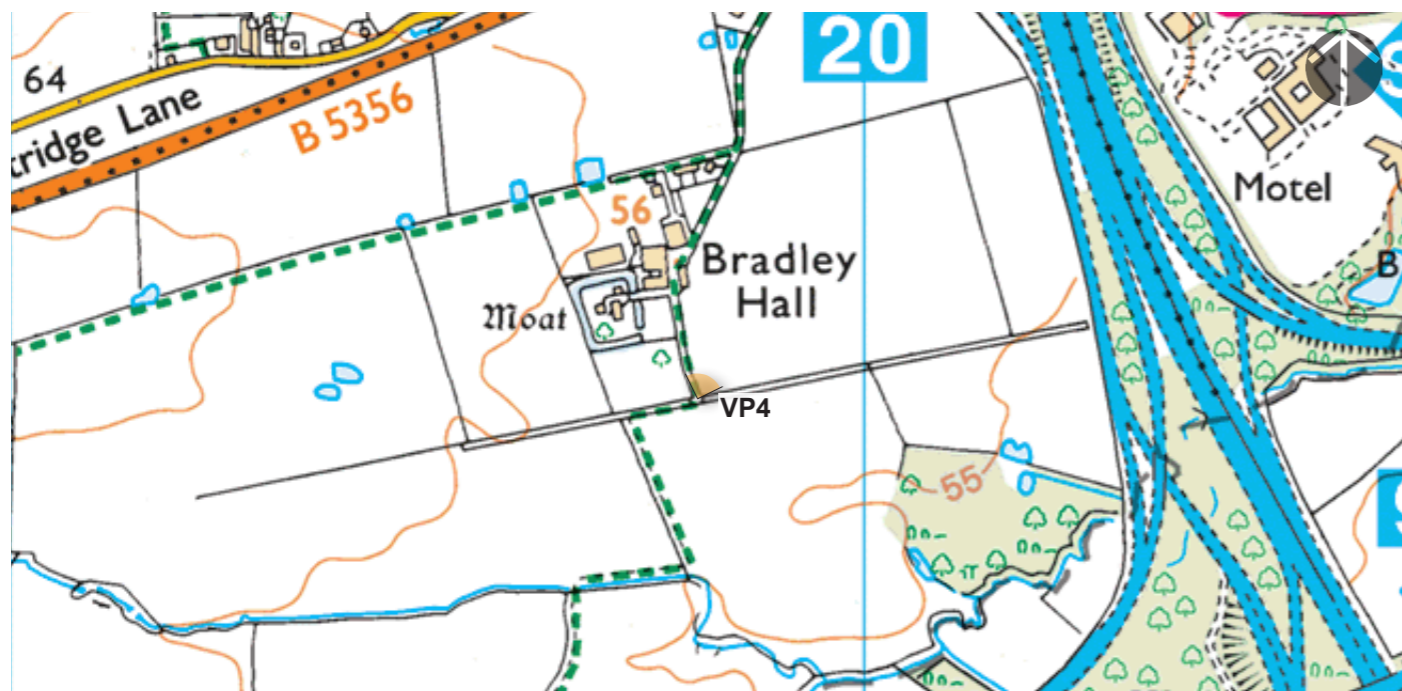
Camera Equipment:
Canon EOS 5D Mark III
50mm f1.4 Lens

Survey Equipment:
SP80 GNSS/RTK
Mobilemapper 20
DigiTerra

Panorama:



No visualisations produced



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Camera Location:



Camera Location:
365728.10 (E) 384679.02N
60.72 mAOD(Sensor Height)

Date/Time of Photography:
25 September 2018/13:30

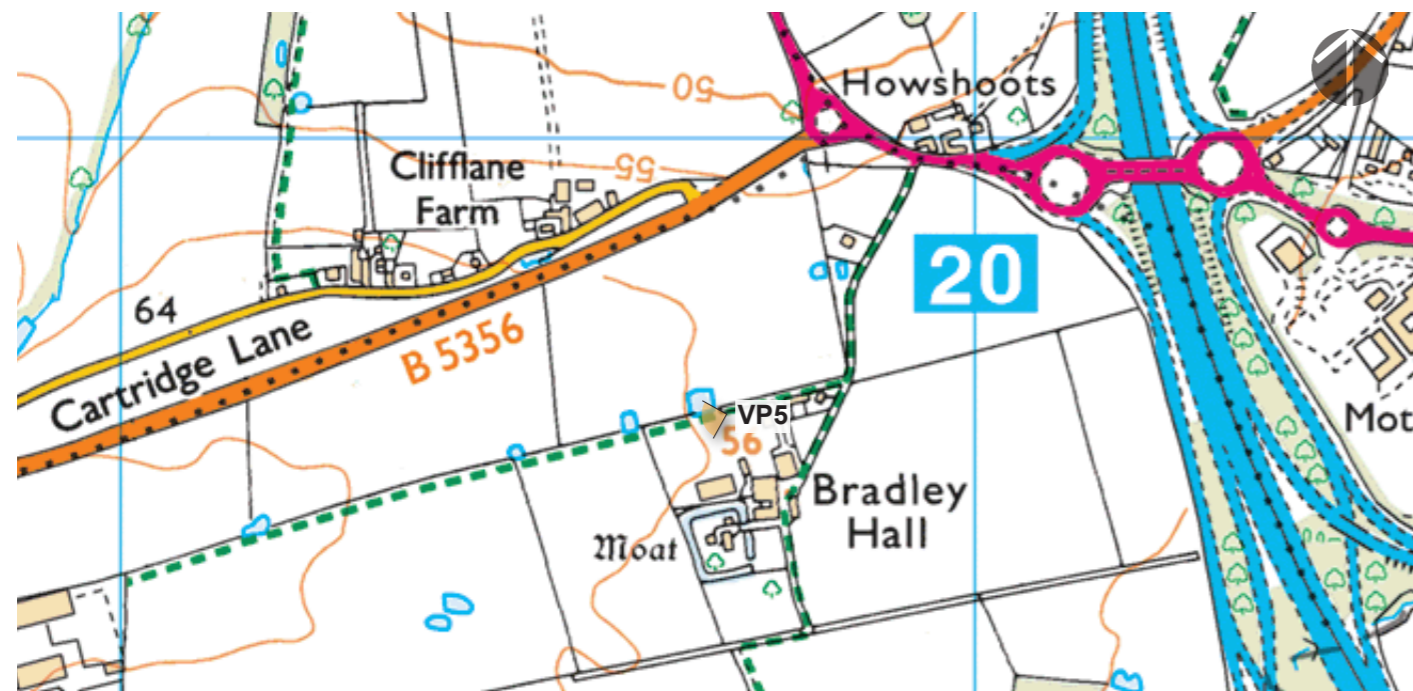
Camera Equipment:
Canon EOS 5D Mark III
50mm f1.4 Lens

Survey Equipment:
SP80 GNSS/RTK
Mobilemapper 20
DigiTerra

Panorama:



No visualisations produced



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Camera Location:

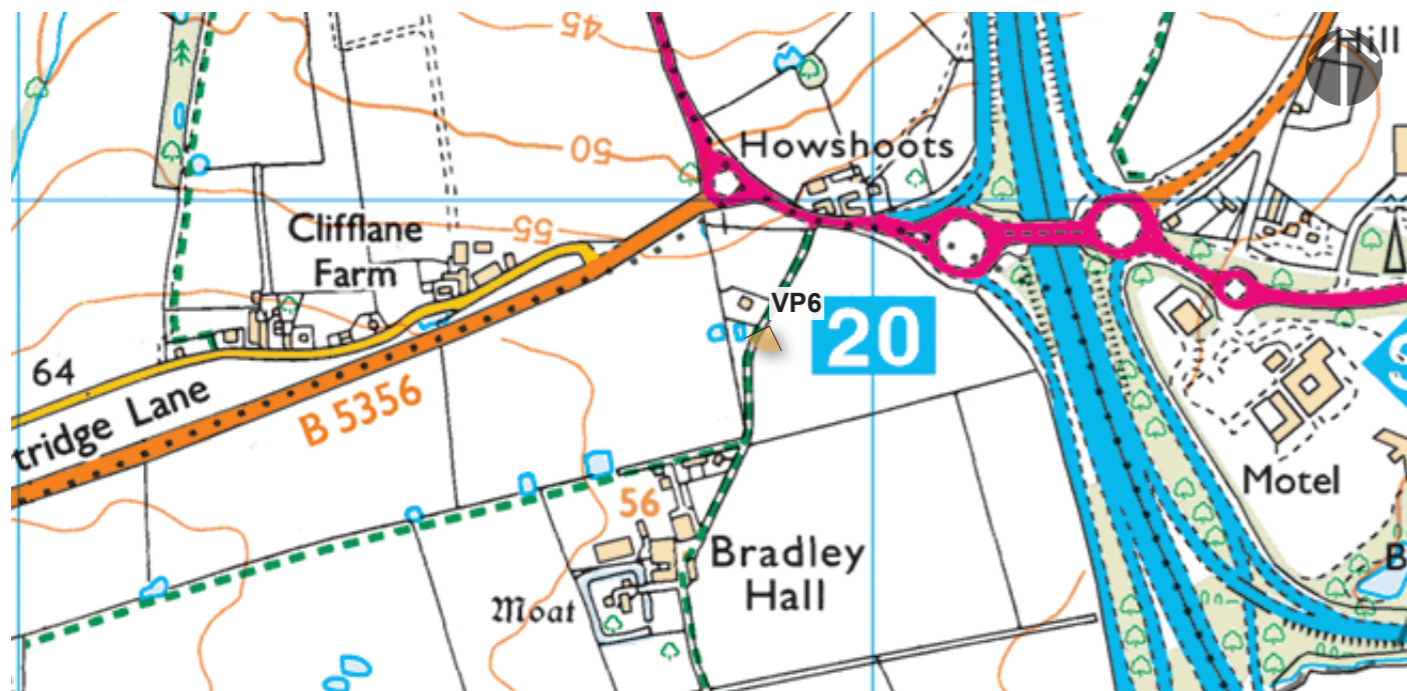


Camera Location:
 365879.10 (E) 384851.18 (N)
 60.37 mAOD(Sensor Height)

Date/Time of Photography:
 25 September 2018/16:10

Camera Equipment:
 Canon EOS 5D Mark III
 50mm f1.4 Lens

Survey Equipment:
 SP80 GNSS/RTK
 Mobilemapper 20
 DigiTerra



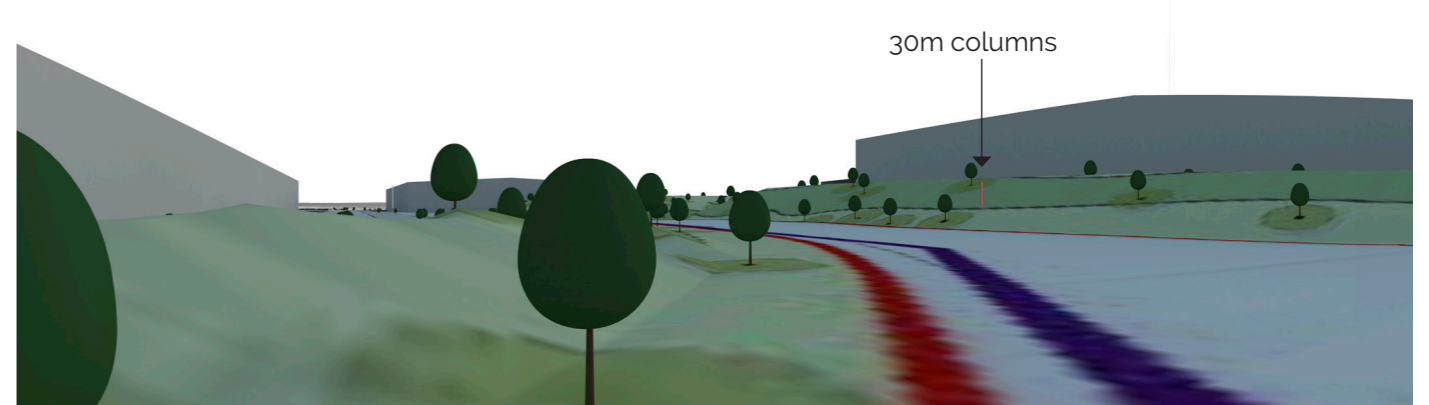
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Photograph - 3D Model Mapping:

Existing View



3D Model with columns



Composite View



Camera Location:

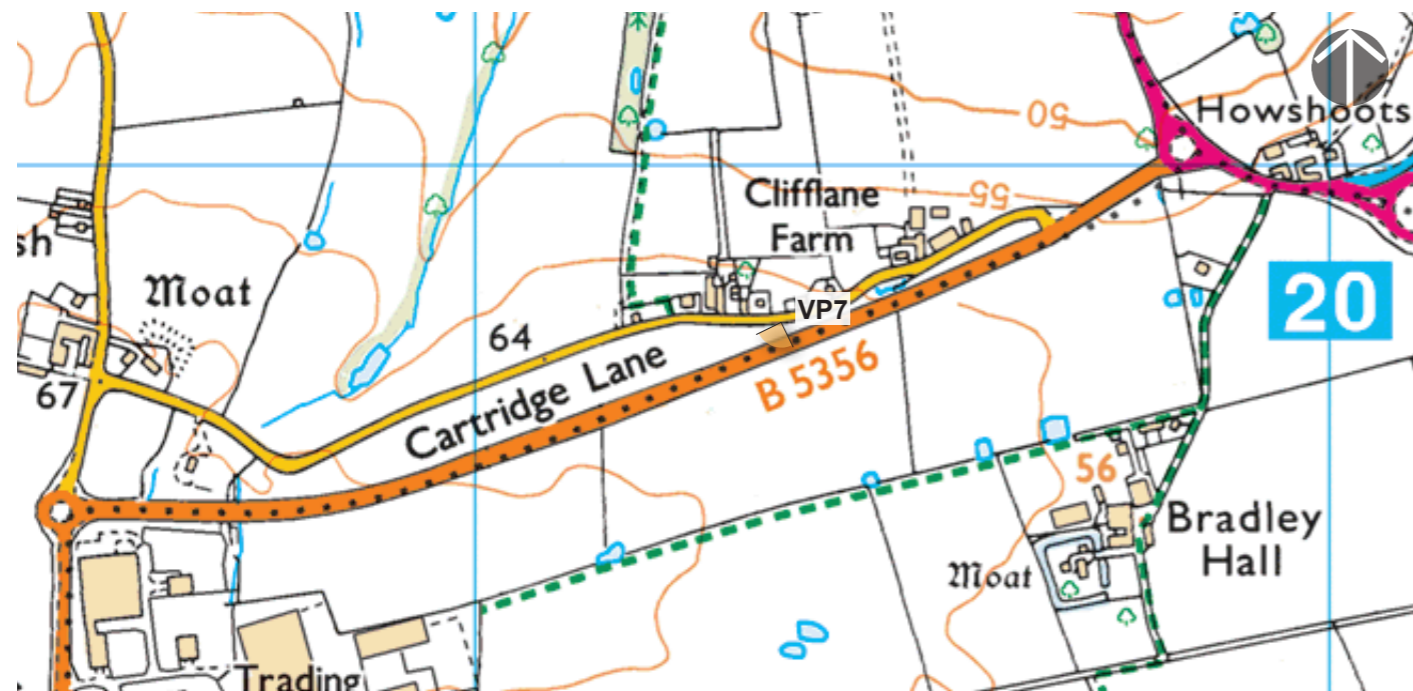


Camera Location:
 365302.78 (E) 384824.76 (N)
 63.26 mAOD(Sensor Height)

Date/Time of Photography:
 25 September 2018/15:45

Camera Equipment:
 Canon EOS 5D Mark III
 50mm f1.4 Lens

Survey Equipment:
 SP80 GNSS/RTK
 Mobilemapper 20
 DigiTerra



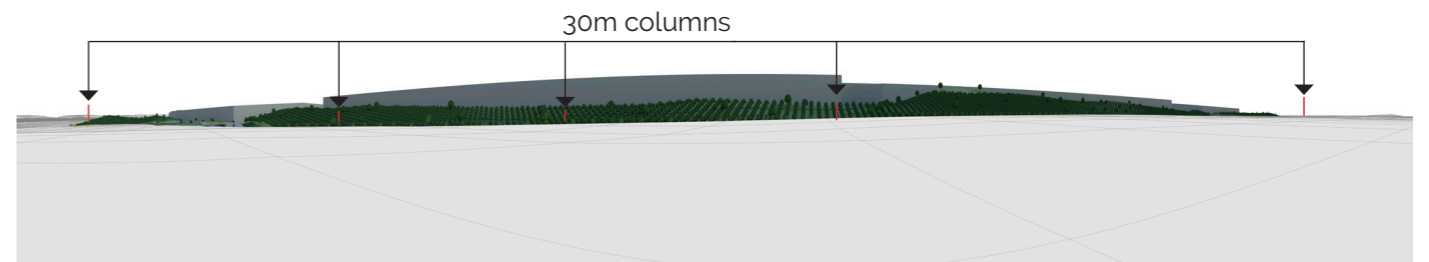
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Photograph - 3D Model Mapping:

Existing View



3D Model with columns



Composite View



Photomontage View



Camera Location:



Camera Location:
365194.82 (E) 384990.18 (N)
56.59 mAOD(Sensor Height)

Date/Time of Photography:
25 September 2018/15:40

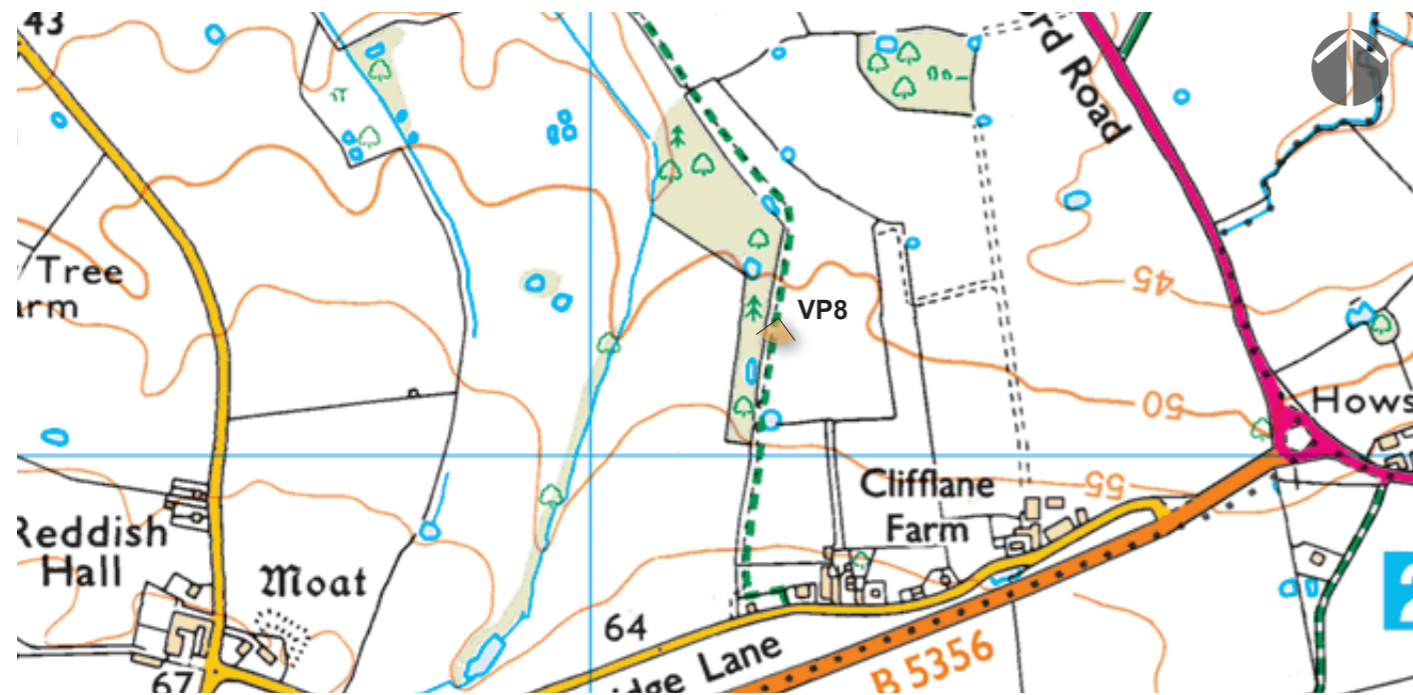
Camera Equipment:
Canon EOS 5D Mark III
50mm f1.4 Lens

Survey Equipment:
SP80 GNSS/RTK
Mobilemapper 20
DigiTerra

Panorama:



No visualisations produced



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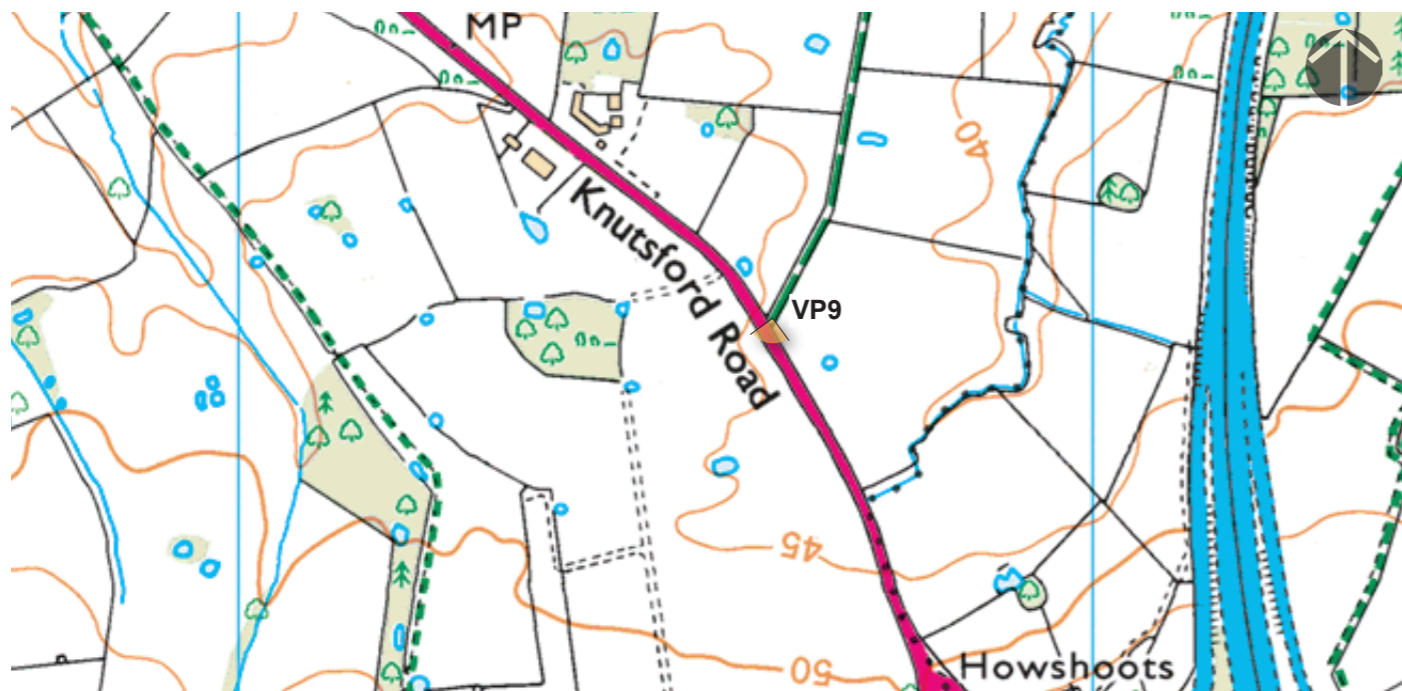
Camera Location:

Camera Location:
 365634.43 (E) 385476.15 (N)
 46.39 mAOD(Sensor Height)

Date/Time of Photography:
 25 September 2018/16:00

Camera Equipment:
 Canon EOS 5D Mark III
 50mm f1.4 Lens

Survey Equipment:
 SP80 GNSS/RTK
 Mobilemapper 20
 DigiTerra



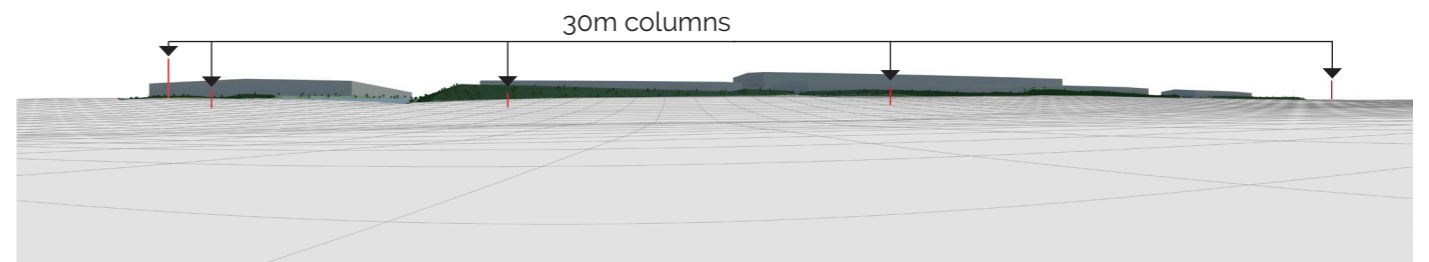
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Photograph - 3D Model Mapping:

Existing View



3D Model with columns



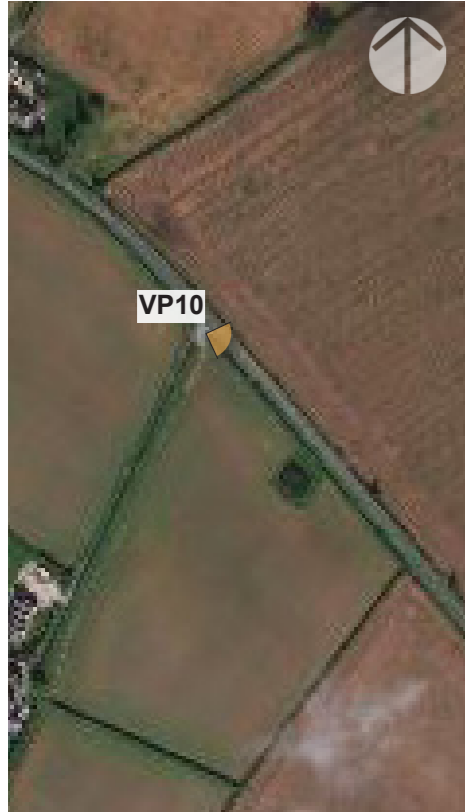
Composite View



Photomontage View



Camera Location:



Camera Location:
364337.08 (E) 385471.50 (N)
44.83 mAOD(Sensor Height)

Date/Time of Photography:
24 September 2018/15:10

Camera Equipment:
Canon EOS 5D Mark III
50mm f1.4 Lens

Survey Equipment:
SP80 GNSS/RTK
Mobilemapper 20
DigiTerra

Panorama:

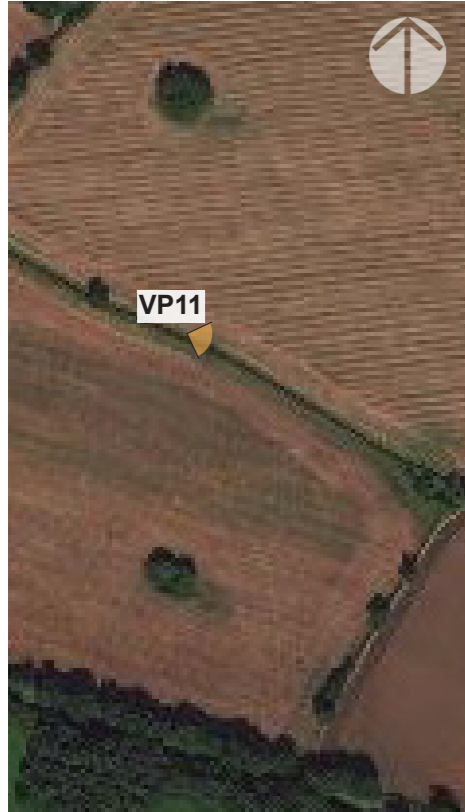


No visualisations produced



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Camera Location:



Camera Location:
363805.47 (E) 384599.26 (N)
67.93 mAOD(Sensor Height)

Date/Time of Photography:
24 September 2018/15:40

Camera Equipment:
Canon EOS 5D Mark III
50mm f1.4 Lens

Survey Equipment:
SP80 GNSS/RTK
Mobilemapper 20
DigiTerra

Panorama:



No visualisations produced



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Camera Location:



Camera Location:
366630.74 (E) 385408.33 (N)
52.16 mAOD(Sensor Height)

Date/Time of Photography:
25 September 2018/10:00

Camera Equipment:
Canon EOS 5D Mark III
50mm f1.4 Lens

Survey Equipment:
SP80 GNSS/RTK
Mobilemapper 20
DigiTerra

Panorama:

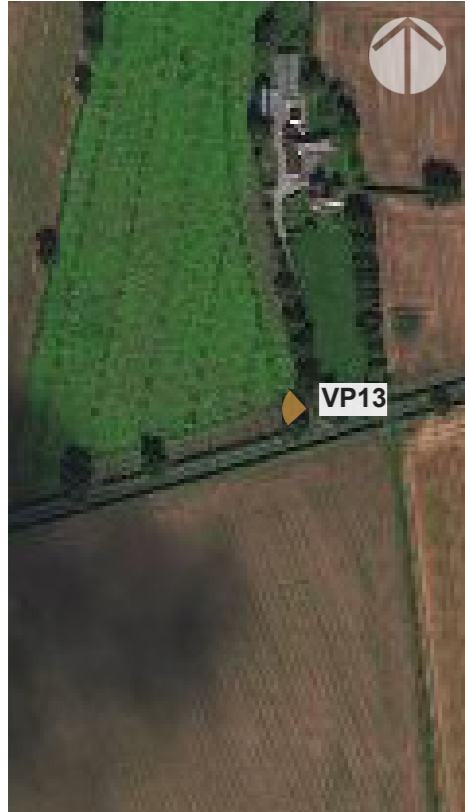


No visualisations produced



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Camera Location:



Camera Location:
368191.92 (E) 383997.98 (N)
66.02 mAOD(Sensor Height)

Date/Time of Photography:
25 September 2018/11:10

Camera Equipment:
Canon EOS 5D Mark III
50mm f1.4 Lens

Survey Equipment:
SP80 GNSS/RTK
Mobilemapper 20
DigiTerra

Panorama:

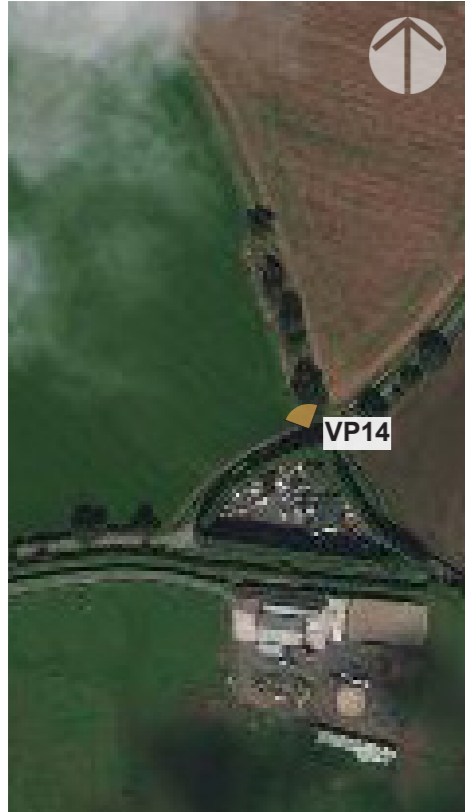


No visualisations produced



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Camera Location:



Camera Location:
368081.71 (E) 382600.03 (N)
53.80 mAOD(Sensor Height)

Date/Time of Photography:
25 September 2018/11:20

Camera Equipment:
Canon EOS 5D Mark III
50mm f1.4 Lens

Survey Equipment:
SP80 GNSS/RTK
Mobilemapper 20
DigiTerra

Panorama:




No visualisations produced



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Camera Location:


Camera Location:
 366261.87 (E) 382814.22 (N)
 64.31 mAOD(Sensor Height)

Date/Time of Photography:
 25 September 2018/11:40

Camera Equipment:
 Canon EOS 5D Mark III
 50mm f1.4 Lens

Survey Equipment:
 SP80 GNSS/RTK
 Mobilemapper 20
 DigiTerra



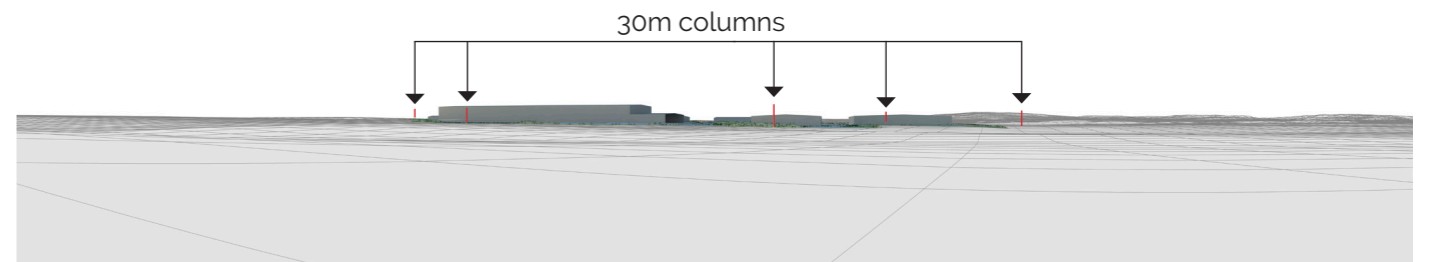
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Photograph - 3D Model Mapping:

Existing View



3D Model with columns



Composite View



Photomontage View



Camera Location:



Camera Location:
 364884.52 (E) 381466.36 (N)
 60.06 mAOD(Sensor Height)

Date/Time of Photography:
 25 September 2018/11:55

Camera Equipment:
 Canon EOS 5D Mark III
 50mm f1.4 Lens

Survey Equipment:
 SP80 GNSS/RTK
 Mobilemapper 20
 DigiTerra



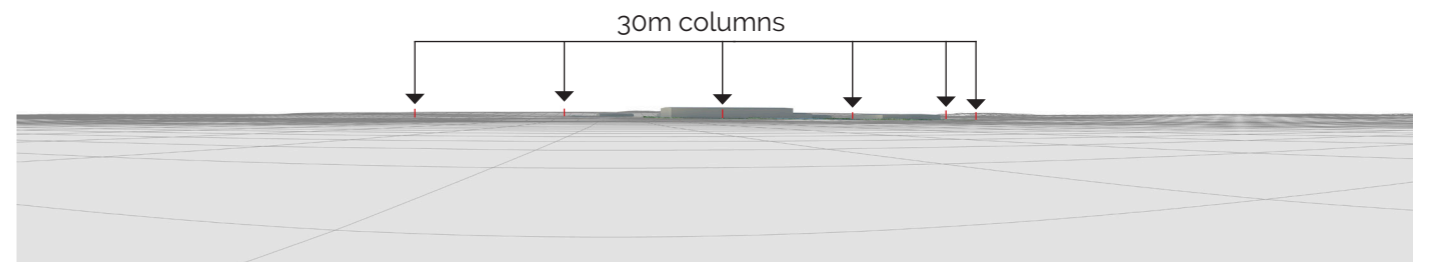
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Photograph - 3D Model Mapping:

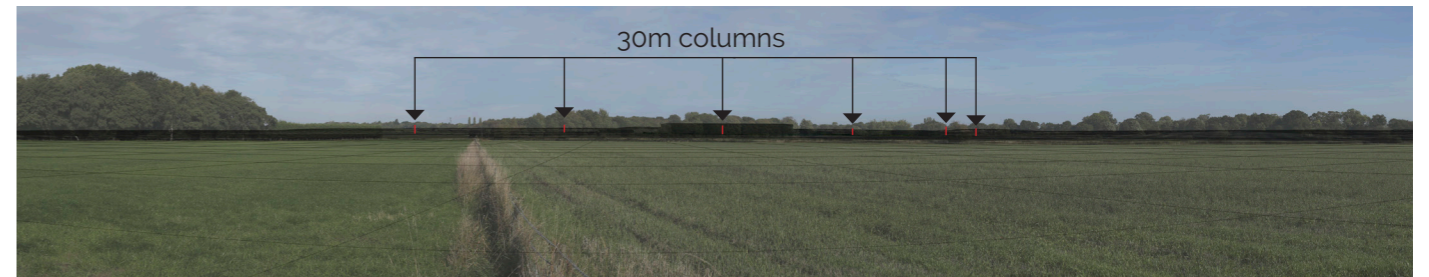
Existing View



3D Model with columns



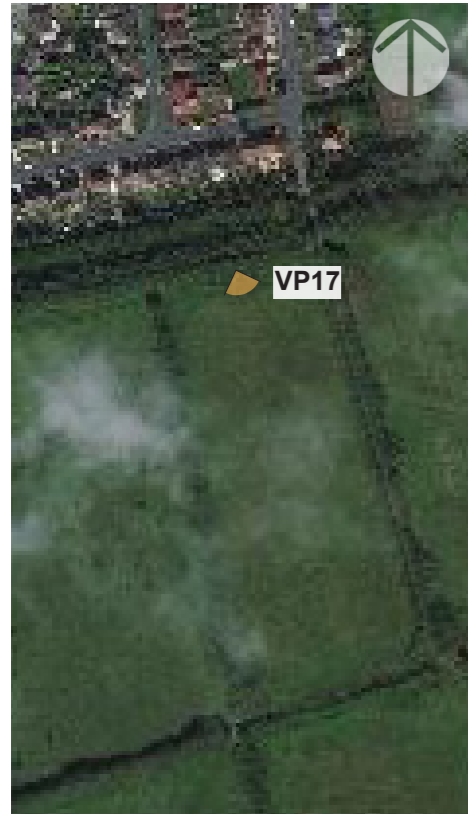
Composite View



Photomontage View



Camera Location:



Camera Location:
362963.63 (E) 388835.74 (N)
8.18 mAOD(Sensor Height)

Date/Time of Photography:
25 September 2018/14:15

Camera Equipment:
Canon EOS 5D Mark III
50mm f1.4 Lens

Survey Equipment:
SP80 GNSS/RTK
Mobilemapper 20
DigiTerra

Panorama:



No visualisations produced



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Camera Location:

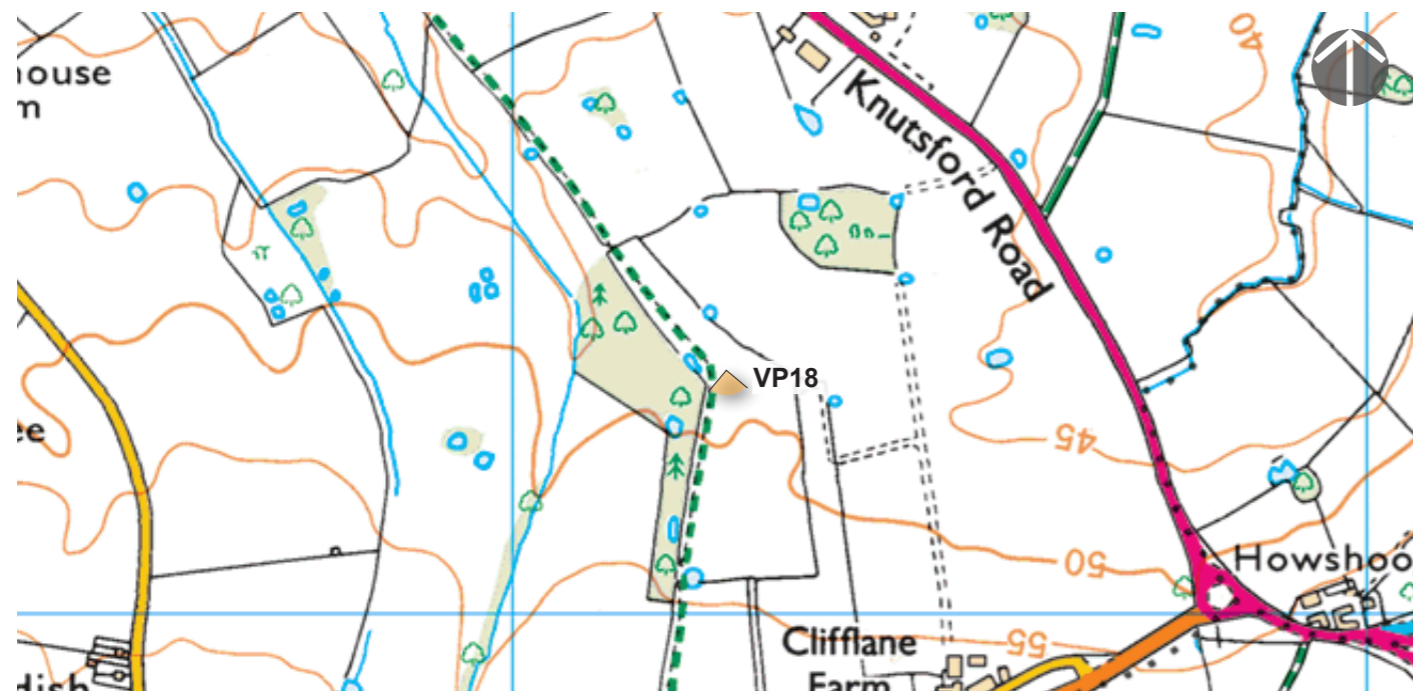


Camera Location:
 365242.47 (E) 385284.36 (N)
 53.66 mAOD(Sensor Height)

Date/Time of Photography:
 25 September 2018/15:15

Camera Equipment:
 Canon EOS 5D Mark III
 50mm f1.4 Lens

Survey Equipment:
 SP80 GNSS/RTK
 Mobilemapper 20
 DigiTerra



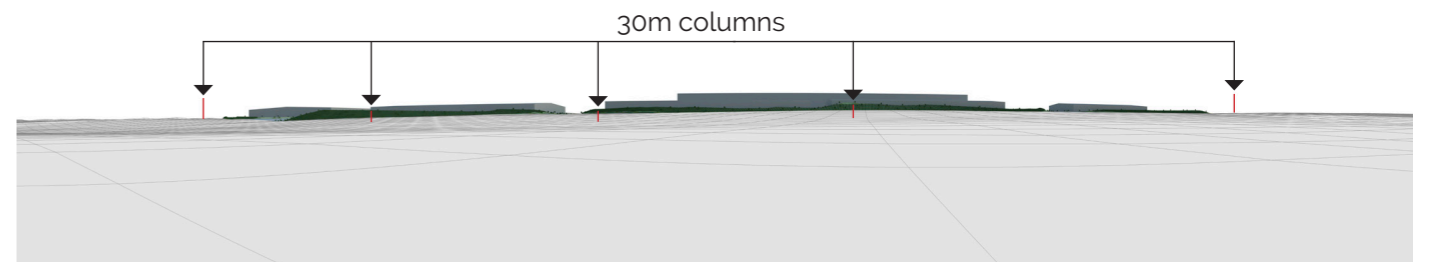
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Photograph - 3D Model Mapping:

Existing View



3D Model with columns



Composite View



Photomontage View



Camera Location:



Camera Location:

366264.67 (E) 385448.02 (N)
49.47 mAOD(Sensor Height)

Date/Time of Photography:
25 September 2018/10:40

Camera Equipment:
Canon EOS 5D Mark III
50mm f1.4 Lens

Survey Equipment:
SP80 GNSS/RTK
Mobilemapper 20
DigiTerra

Panorama:

Existing View



No visualisations produced



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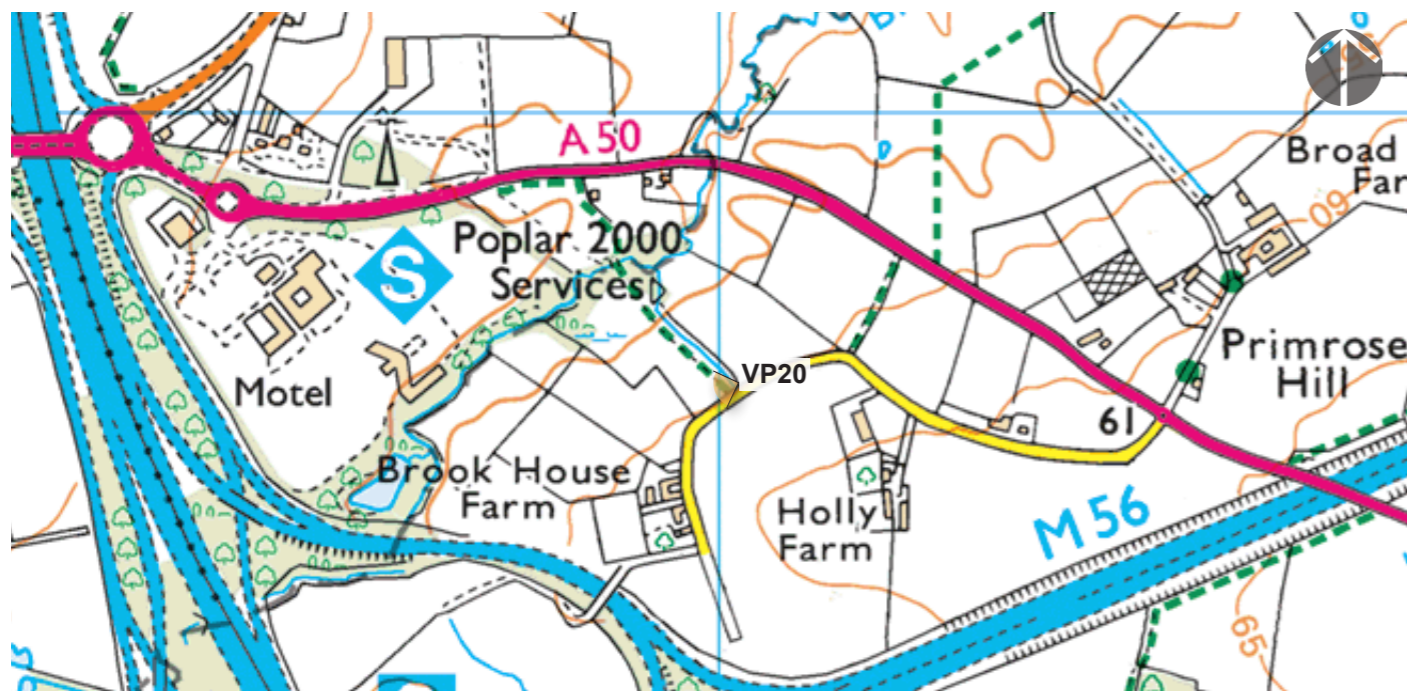
Camera Location:

Camera Location:
367024.59 (E) 384673.49 (N)
54.45 mAOD(Sensor Height)

Date/Time of Photography:
25 September 2018/11:00

Camera Equipment:
Canon EOS 5D Mark III
50mm f1.4 Lens

Survey Equipment:
SP80 GNSS/RTK
Mobilemapper 20
DigiTerra



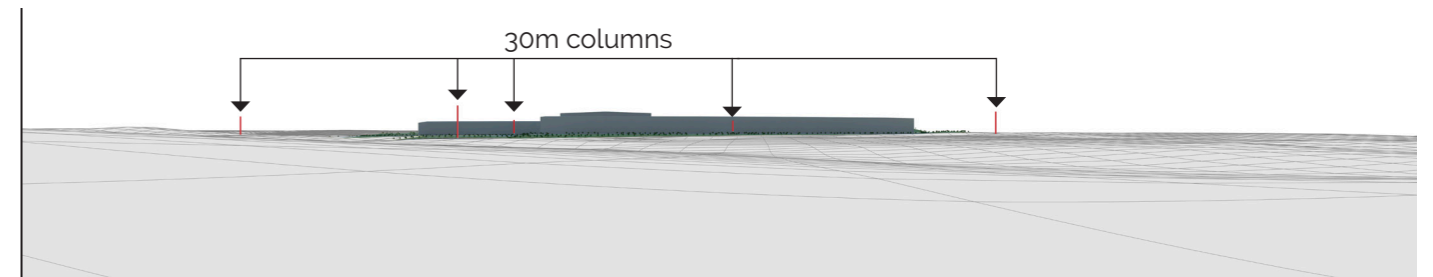
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Photograph - 3D Model Mapping:

Existing View



3D Model with columns



Composite View



Photomontage View



Camera Location:



Camera Location:
364416.42 (E) 383127.05 (N)
73.85 mAOD(Sensor Height)

Date/Time of Photography:
25 September 2018/12:10

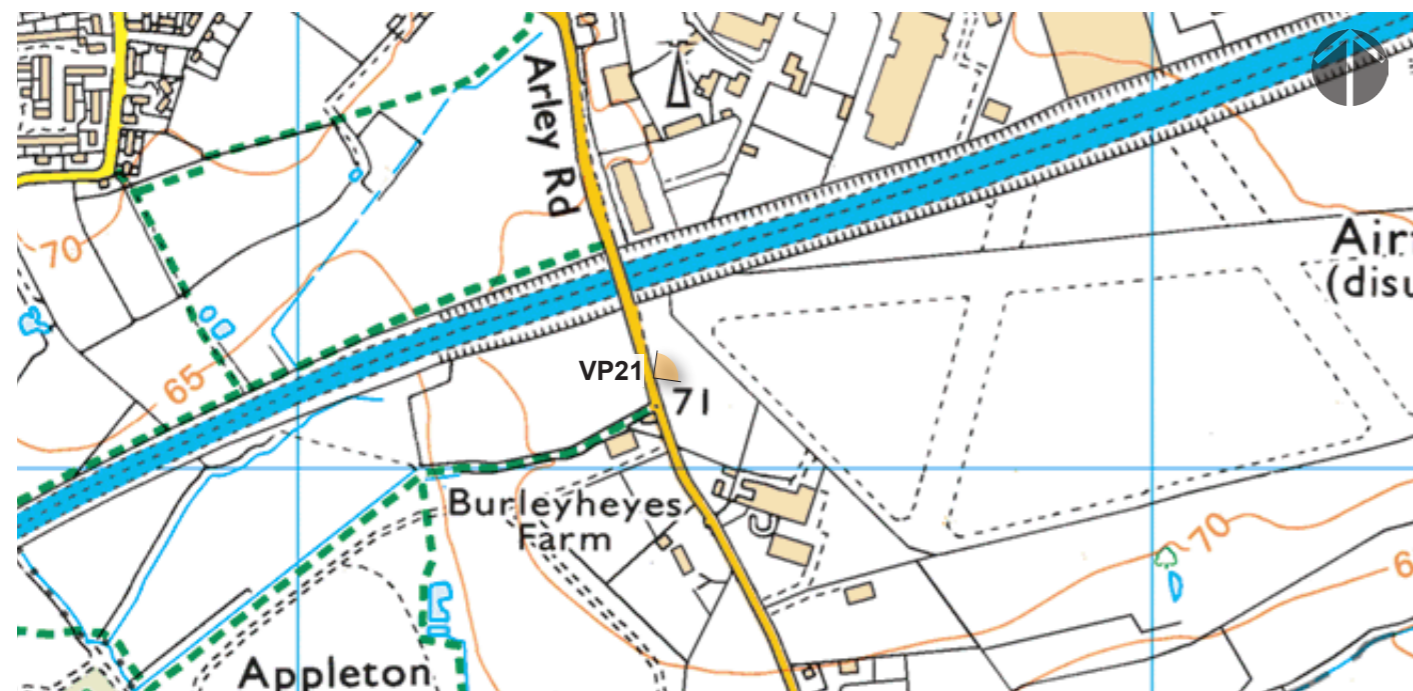
Camera Equipment:
Canon EOS 5D Mark III
50mm f1.4 Lens

Survey Equipment:
SP80 GNSS/RTK
Mobilemapper 20
DigiTerra

Panorama:



No visualisations produced



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Camera Location:



Camera Location:
 364703.65 (E) 385958.02 (N)
 32.06 mAOD(Sensor Height)

Date/Time of Photography:
 25 September 2018/15:00

Camera Equipment:
 Canon EOS 5D Mark III
 50mm f1.4 Lens

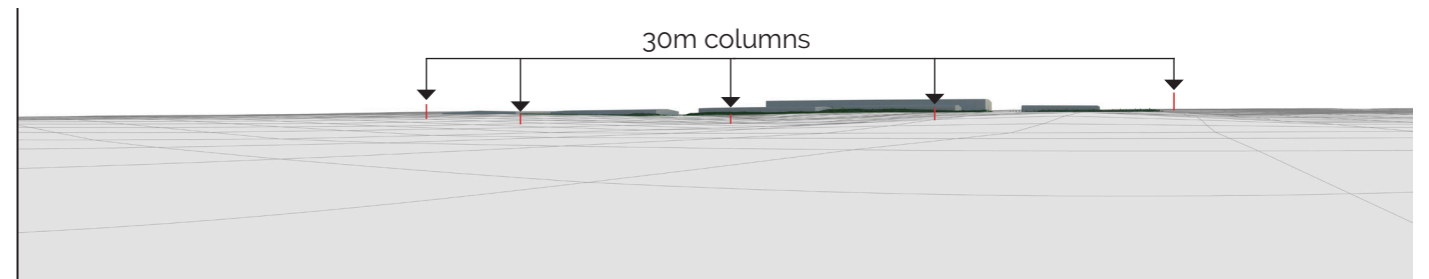
Survey Equipment:
 SP80 GNSS/RTK
 Mobilemapper 20
 DigiTerra

Photograph - 3D Model Mapping:

Existing View



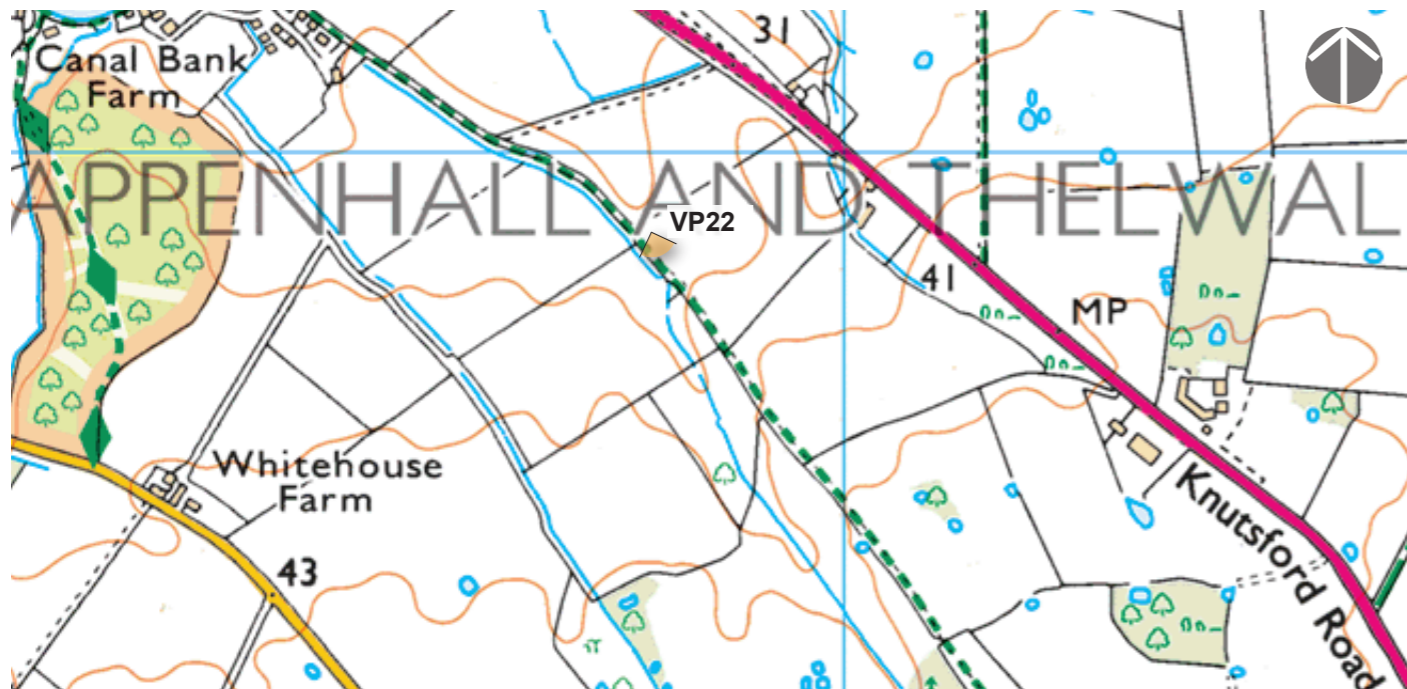
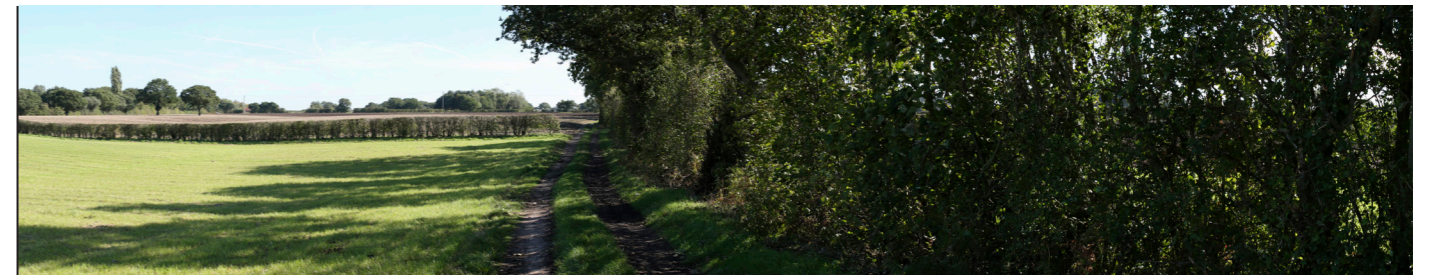
3D Model with columns



Composite View



Photomontage View



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Camera Location:



Camera Location:
366521.47 (E) 386146.22 (N)
37.00 mAOD(Sensor Height)

Date/Time of Photography:
25 September 2018/10:25

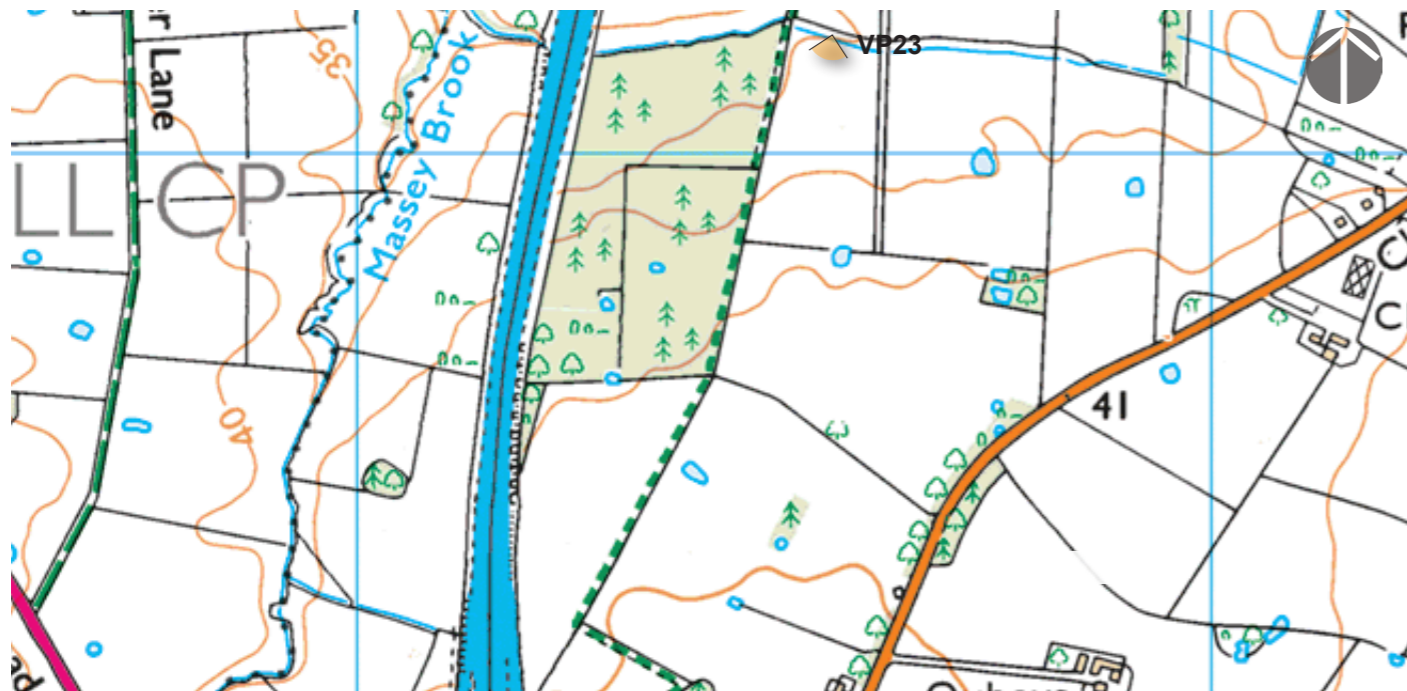
Camera Equipment:
Canon EOS 5D Mark III
50mm f1.4 Lens

Survey Equipment:
SP80 GNSS/RTK
Mobilemapper 20
DigiTerra

Panorama:



No visualisations produced



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Camera Location:



Camera Location:
 364270.95 (E) 384097.66 (N)
 72.79 mAOD(Sensor Height)

Date/Time of Photography:
 25 September 2018/12:20

Camera Equipment:
 Canon EOS 5D Mark III
 50mm f1.4 Lens

Survey Equipment:
 SP80 GNSS/RTK
 Mobilemapper 20
 DigiTerra



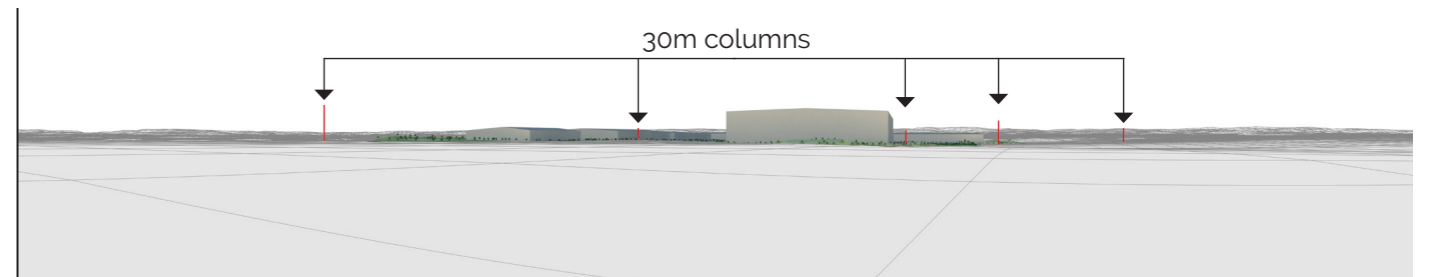
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Photograph - 3D Model Mapping:

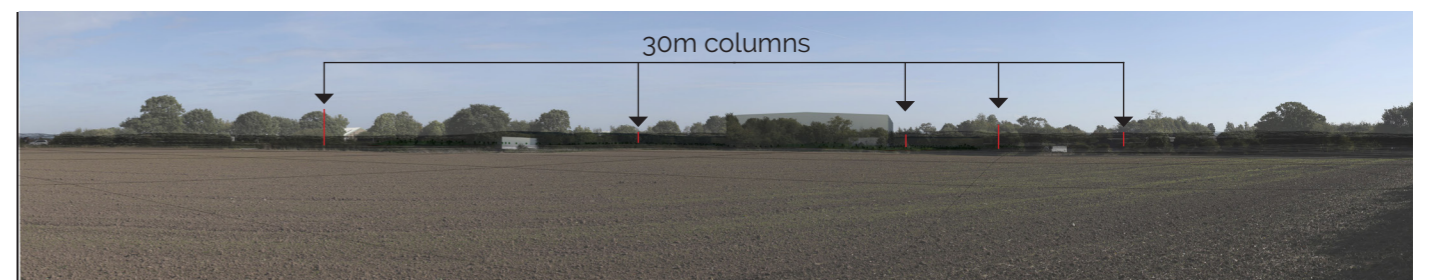
Existing View



3D Model with columns

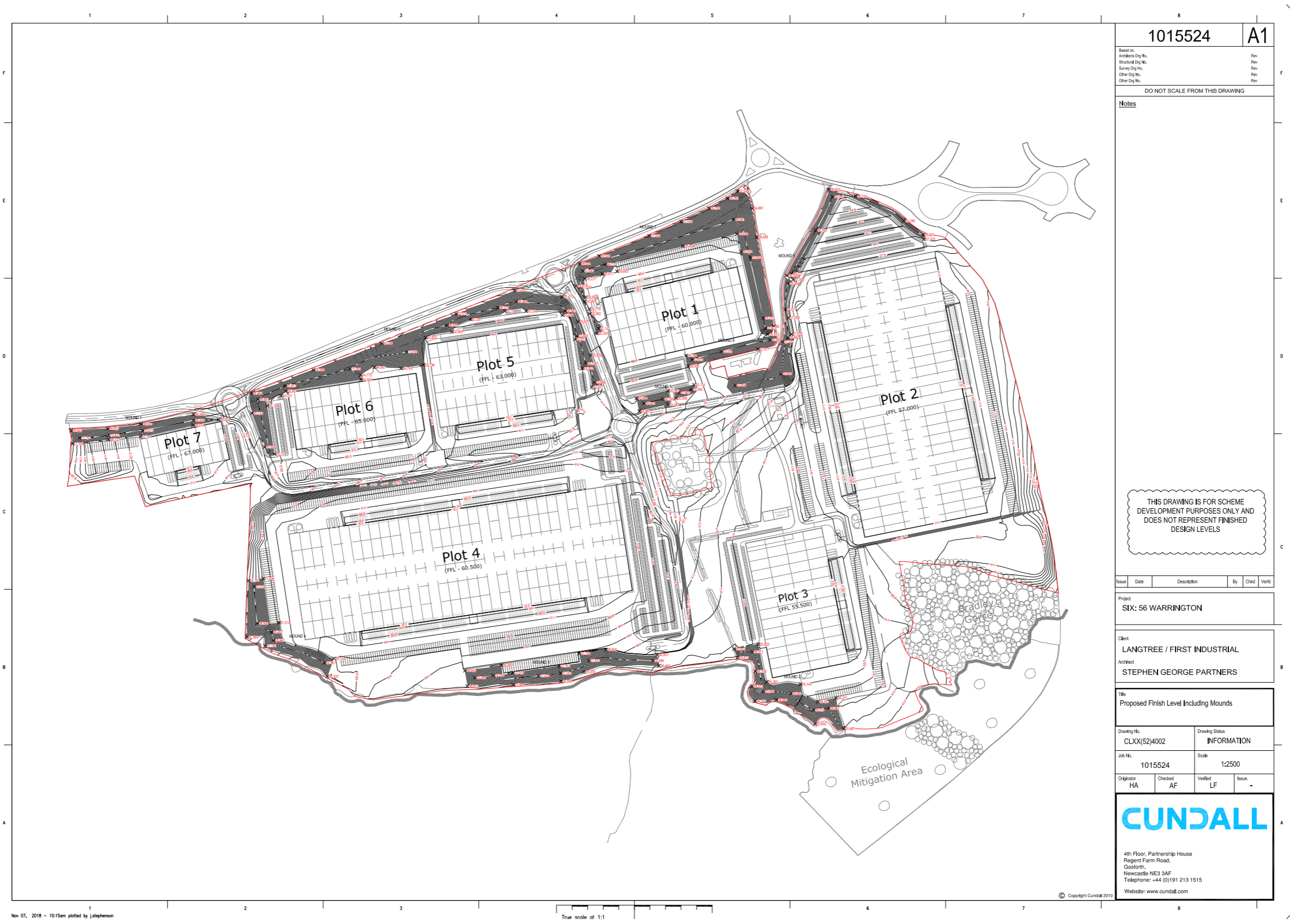


Composite View



Photomontage View







Planning Boundary
 Existing building to be retained and re-used for conversion
 Building Height: 12.5m Clear Internal
 Building Height: 15m Clear Internal
 Building Height: 21m Clear Internal
 Building Height: 40m Clear Internal

Langtree

Stephen George + Partners LLP
Architects + Masterplanners

Six 56, Warrington
Heights Parameters Plan
CAD Reference: 16-184-P115

PANATTONI

Drawn: JB
 Date: 11/2020 @ A1
 Project No: 16-184
 Dwg No: P115
 Rev: A














Drawing Status: Planning
 Date: 09/2018

APPENDIX 1.2: LAYOUT INFORMATION USED FOR 3D MODEL CONSTRUCTION





KEY

- Tree Removal**
-  Tree to be removed
 -  Tree group to be removed
 -  Hedgerow to be removed
- Tree Retention**
-  Category A Tree (High Value)
 -  Category B Tree (Moderate Value)
 -  Category C Tree (Low Value)
 -  Category U Tree (Negligible Value)
 -  Category A Group (High Value)
 -  Category B Group (Moderate Value)
 -  Category C Group (Low Value)
 -  Shrub Masses
 -  Root Protection Area (RPA)
 -  Hedgerows (from topographical data)

N.B. Minor alterations have been made to BS 5837 colours (RPAs & U Category) to illustrate clearly the proposed quanta of tree removal.
See LSC Ltd Tree Constraints Plans Fig 01a - 08a.



LANDSCAPE SCIENCE CONSULTANCY LTD
The Old Barracks, Sandon Road
Grantham, Lincolnshire
NG31 9AS
01476 569600
e: admin@landscapescienceconsultancy.co.uk
www.landscapescienceconsultancy.com

PROJECT: SIX 56 WARRINGTON

TITLE: TREE REMOVAL PLAN - SHEET 1 of 8

SCALE: Not to Scale DATE: February 2019

SOURCE: Reproduced under OS Licence AL100014007

JOB No	Figure No	Revision	Drawing Size
M88.17b	01b	B	A3



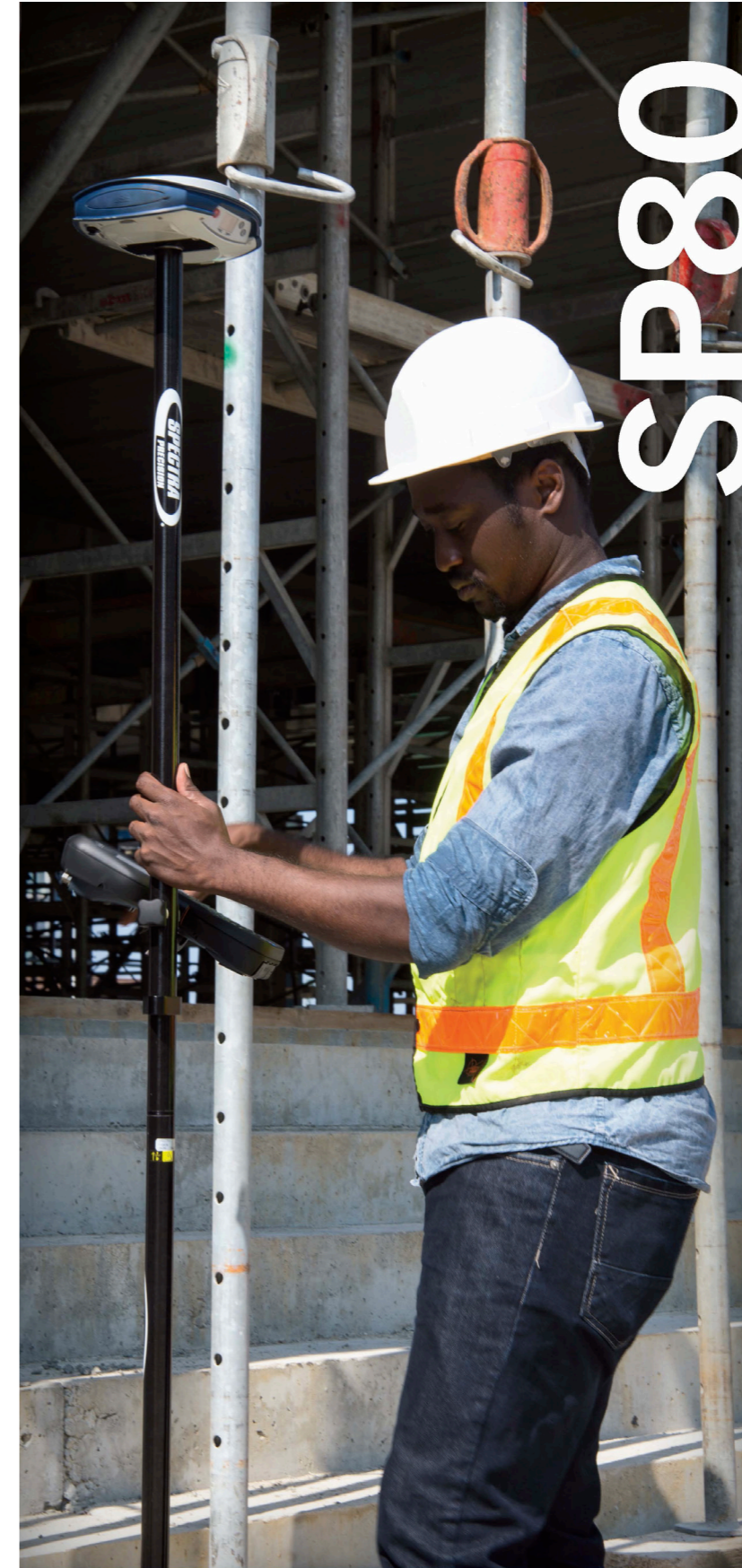
Spectra Precision SP80 GNSS Receiver



The Most Connected GNSS Receiver

CONNECTED
RELIABLE
RUGGED

INNOVATIVE



SP80 GNSS Receiver

The Spectra Precision SP80 is a next generation GNSS receiver that combines decades of GNSS RTK technology with revolutionary new GNSS processing. Featuring the new 240-channel "6G" chipset, the SP80 system is optimized for tracking and processing signals from all GNSS constellations.

In addition, SP80 is the most connected GNSS receiver in the industry. It is the first to offer a unique combination of integrated 3.5G cellular, Wi-Fi and UHF communications with SMS, email and anti-theft features.

These powerful capabilities, packaged in an ultra-rugged and cable-free housing with unlimited operation time (hot-swappable batteries), make SP80 an extremely versatile turnkey solution.

Key Features

- New 240-channel 6G ASIC
- Z-Blade GNSS-centric
- 3.5G cellular modem
- Internal TRx UHF radio
- Built-in WiFi communication
- SMS and e-mail alerts
- Anti-theft protection
- Hot-swappable batteries



Patented
inside-the-rod
mounted UHF
antenna design



Unique 6G GNSS-centric Technology

Exclusive Z-Blade processing technology running on a next-generation Spectra Precision 240-channel 6G ASIC fully utilizes all 6 GNSS systems: GPS, GLONASS, BeiDou, Galileo, QZSS and SBAS. The unique GNSS-centric capability optimally combines GNSS signals without dependency on any specific GNSS system; this allows SP80 to operate in GPS-only, GLONASS-only or BeiDou-only mode if needed. In addition, SP80 supports the recently approved RTCM 3.2 Multiple Signal Messages (MSM), a standardized definition for broadcasting all GNSS signals from space, regardless of their constellation. This protects the surveyor's investment well into the future by providing superior performance and improved productivity as new signals become available.

SMS and Email Messaging

SP80 has a unique combination of communication technologies including an integrated 3.5G GSM/UMTS modem, Bluetooth and Wi-Fi connectivity, and optional internal UHF transmit radio. The cellular modem may be used for SMS (text message) and e-mail alerts as well as regular Internet or VRS connectivity. Likewise, SP80 can use all available RTK correction sources and connect to the Internet from the field using WiFi hotspots, where available. The internal UHF transmit/receive radio allows for quick and easy setup as a local base station. This saves time and increases the surveyor's efficiency.

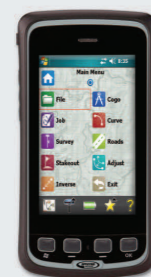
Anti-Theft Protection

A unique anti-theft technology secures SP80 when installed as a field base station in remote or public places and can detect if the product is disturbed, moved or stolen. This technology allows the surveyor to lock the device to a specific location and make it unusable if the device is moved elsewhere. In this case, SP80 will generate an audio alert and show an alert message on its display. Furthermore, an SMS or e-mail will be sent to the surveyor's mobile phone or computer and provides the receiver's current coordinates allowing tracking of its position and facilitating recovery of the receiver. SP80's anti-theft technology provides surveyors with remote security and peace of mind.



The Most Powerful Tool for Reliable Field Use

The SP80's rugged housing, created by Spectra Precision's engineering design lab in Germany, incorporates a host of practical innovations. Dual hot-swappable batteries can be easily exchanged in the field as a one hand operation for an interruption-free working day, ensuring surveyors remain productive until the job is done. The impact-resistant glass-fiber reinforced casing, designed to withstand 2m pole drops and waterproof to IP67, ensures that SP80 can handle the toughest outdoor conditions. The patented UHF antenna, set inside the rugged carbon fiber rod, extends the range of RTK radio performance at the same time as armoring protection. The sunlight-readable display offers instant access to key information like the number of satellites, RTK status, battery charge and available memory. These powerful design features combine to make SP80 the most capable, most reliable GNSS receiver, backed by a comprehensive standard 2 year warranty.



The Spectra Precision Experience

With the most advanced and rugged field data collectors from Spectra Precision, surveyors get maximum productivity and reliability every day. Spectra Precision Survey Pro or FAST Survey software is specifically tailored for the SP80 GNSS receiver providing easy-to-use, yet powerful GNSS workflows, letting the surveyor concentrate on getting the job done. Spectra

Precision Survey Office Software provides a complete office suite for post-processing GNSS data and adjusting survey data, as well as exporting the processed results directly back to the field or to engineering design software packages. Combined with Spectra Precision field and office software, SP80 is a very powerful and complete solution.



MobileMapper® 20



Expanded capabilities for any GIS application



EASY
AFFORDABLE
ACCURATE

COMPLETE



MobileMapper 20

MobileMapper 20

Geographical Information Systems and Location Based Services are now being used in a wide range of applications and organizations. The growing need for geo-localization is naturally boosting the demand for efficient and affordable data collection solutions. Spectra Precision is leading the democratization of GNSS, enabling wider access to professional mapping. With MobileMapper 20, Spectra Precision makes it possible to deploy a professional accurate GIS receiver to any field work force.

Powerful and complete, MobileMapper 20 is the ideal enabling tool for a huge range of positioning applications.

With MobileMapper 20, organizations will improve the quality of their georeferenced information and their field productivity, yielding reduced operational costs.

Secure Your Field Work

- A wide range of capabilities in a compact, lightweight design
- Several days of battery life
- Rugged and reliable

Unpack and Start Logging

- Ready-to-use complete mapping solution for field and office
- User friendly Windows® Embedded Handheld 6.5
- Easy-to-use software for short learning curve and quick logging operations

Ideal for Data Maintenance or Inspection

- Log your assets in real-time with 1 to 2 meter accuracy
- Connect field and office work force for maximum productivity
- Achieve half meter accuracy with post-processing

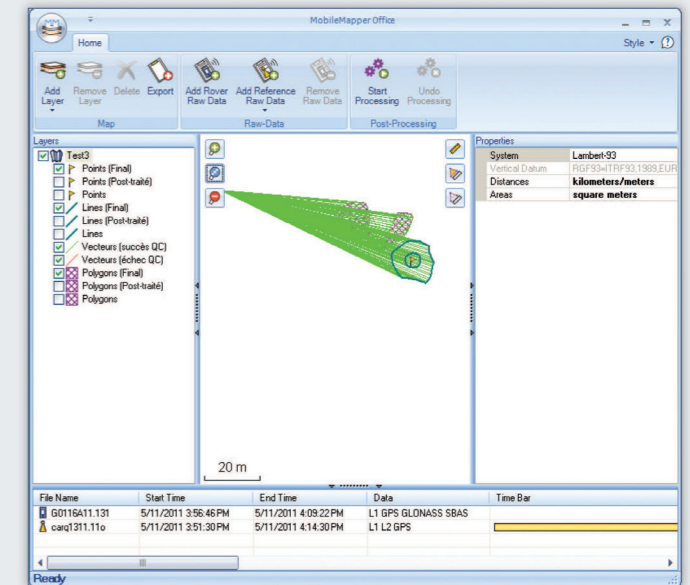
MobileMapper Field and Office Software

A complete solution

The Spectra Precision MobileMapper software suite includes all the GIS features that professionals really need, without the burden of complicated and rarely used functions.

Running on MobileMapper receivers, MobileMapper Field is the perfect solution for GIS data collection, asset management, area measurement, map creation and update. The software is very intuitive and easy-to-use, requiring minimum training. It also provides a direct interface to external sensors for a complete field solution.

The Spectra Precision MobileMapper Office tool can be used to differentially post-process raw GPS data collected with the MobileMapper Field software. Through an Internet connection, MobileMapper Office can automatically find and download the base data files that will match the collected raw data; it then computes corrected positions automatically.



Tune MobileMapper 20 To Your Applications

With Windows Embedded Handheld 6.5 you may upload necessary utilities or software on your MobileMapper 20, to suit your next job. You can collect GIS/GPS points and maps via the GIS application of your choice, either third-party software such as ESRI® ArcPad® or a purpose-built Spectra Precision application.



Power to evolve

Canon EOS 5D Mark III

EOS 5D Mark III

Setting a new standard

A unique 22.3-megapixel full-frame CMOS sensor and DIGIC 5+ image processor come together to deliver stunning images. Enjoy vibrant colors, increased clarity, and astonishing low-light performance.

The full-frame advantage

At the heart of the EOS 5D Mark III lies a sensor that delivers detail, tone and colour like never before. It's as if digital photography had been invented all over again.

Engineered for performance

The EOS 5D Mark III is the result of continuous refinement and development, over generations of EOS design. Sophisticated electronics, optics and engineering – all pioneered by Canon.

EOS Movies

The EOS 5D Mark III lets you be as creative with moving pictures as you are with still photography. Shoot high-resolution video in 1080p resolution, enjoying manual control over variables including shutter speed, aperture, ISO sensitivity, audio levels, colour and frame rate. Access to Canon's extensive EF lens range provides new and exciting creative opportunities, such as the ability to exploit shallow focus and film in low light.

Exposure control

As you compose a frame, the EOS 5D Mark III studies it and adjusts the focus with its 9-point AF system. Light and colour information is obtained from each zone and delivered via data from the camera's imaging system. The result is the Live Framing of aperture and Shutter Speed for each frame.

Excellence through design

From the moment you pick it up you'll appreciate the combination of form and function that is the EOS 5D Mark III. Intuitive controls and superior handling provide the ultimate shooting experience.

Compose, shoot, review

The EOS 5D Mark III is designed to behave like an extension of your eye. A clear, bright viewfinder helps you engage with your subject, and in-camera workflow and editing functions make life easier.

High-performance shooting

Continues high-speed shooting. The EOS 5D Mark III features a high-speed continuous shooting mode that allows you to capture fast-moving action with ease.

Exposure control

As you compose a frame, the EOS 5D Mark III studies it and adjusts the focus with its 9-point AF system. Light and colour information is obtained from each zone and delivered via data from the camera's imaging system. The result is the Live Framing of aperture and Shutter Speed for each frame.

Designed to perform, built to last

The topback and front covers of the EOS 5D Mark III are made from a tough and lightweight magnesium alloy. The camera's base plate is designed to withstand the rigors of professional use. Weather-sealed plastic sections are supported by an aluminum chassis, providing strength and rigidity that inspires confidence.

Connectivity and camera control

Extend the functionality of the EOS 5D Mark III and discover new creative avenues, with multiple options for tethered shooting and remote camera control.

Creative flash photography

Enjoy complete control over the direction, intensity and quality of flash. Creative lighting has never been this easy.

The EOS digital workflow

Canon is the only photographic manufacturer that can provide a solution for every step of a photographer's workflow – from capture through processing to print.

System chart

Specifications: EOS 5D Mark III

Body	Image sensor	Image processor	ISO speed range	Shooting modes	Shooting speed	Viewfinder	Monitor	Connectivity	Weather sealing	Weight	Dimensions
EOS 5D Mark III	22.3MP Full-Frame CMOS	DIGIC 5+	100-12800 (L)	Shooting, Live View, Video, Macro, Self-Timer, Interval, Bulb	11 fps (AF-ON), 7.4 fps (Shutter Release)	Optical Viewfinder	3.0" LCD	Wi-Fi, NFC, Bluetooth, USB, HDMI, FireWire	Weather-resistant	~850g	~149mm x 116mm x 76mm



The spherical "VR" head is designed to allow virtual scenes to be created by Computer from a various panoramic sequences of digital or digital photographs, taken at different vertical angles.

There are 4 requirements to achieve good panoramic sequence shots:

1. Accurate leveling of the panoramic axis.
2. A Panoramic head that enables you to choose the angle of rotation between one shot and the next.
3. The ability to position the camera on the "Nodal Point" of the lens (the front lens) is exactly above the panoramic axis of rotation, to eliminate any parallax problems between the near and distant objects in the scene.
4. An additional rotating axis that enables you to shoot several panoramic sequences at different vertical angles in order to achieve a complete spherical scene.

The spherical "VR" head comprises three main modules that perform the functions mentioned above in points 2, 3 and 4.

Unless your tripod has a built-in leveling device (such as the Manfrotto 816 or 818 tripod's Spherical Head), you will need to use one of the leveling accessories available from the Manfrotto range to ensure accurate leveling of the head (see point 1).

SET UP 1
Fix the leveling device (not supplied) to the tripod, then fix the "VR" head on the leveling device via knuckle attachment "X". Completely remove knob "B", rotate the bracket into the vertical position as shown in Fig. 1 and lock it in place by screwing the knob "B" into hole "C".

2

2 3 4 5

1 Remove the top assembly (Fig. 2) by releasing knob "D". To slide it completely out of the housing, push safety button "E".

2 Remove camera plate "CP" (Fig. 3) by releasing knob "G". To slide it completely out of the housing, push safety button "H".

3 You will find two screws attached to the top assembly: screw "I" (Fig. 3) is 1/4 in. "L" is 3/8 in. Depending on your camera tripod attachment, choose the correct screw and use it to fix your camera to plate "CP" (Fig. 4). Use a coin or screwdriver to lock: take care to align the lens with the centre of the plate indicated by letter "K".

4 Mount the camera on the top assembly as shown in Figure 5 by sliding the camera + plate into the housing following the direction shown by the "insert" arrow. Lock in place using knob "G": before locking, take care to align the lens with the long plate "F" - the lens axis must be perfectly above the slot of the plate as shown in Figure 5. The angle of the lever on the ratchet knob "G" can be repositioned as required without affecting the lock itself. Pull the lever outwards, rotate as required and release and it will locate in the new position.

3

6 The position of the housing "M" relative to the long plate "F" will need to be adjusted: loosen screw "O" to slide the housing. The ideal position is with the camera body as far back on the plate as it can go before the front edge "N" of the long plate "F" becomes visible in the camera's field of view "P".

7 Mount the whole top assembly + camera on the head as shown in figure 7 by sliding the long plate "F" into its housing and locking it by screwing knob "D", then unscrew knob "W" and move the camera on the vertical plane.

4

APPROXIMATE POSITIONING OF THE "NODAL POINT"
Ref. Figure 9: Align the vertical axis of the camera "R" with the panoramic axis of rotation "W" using "CONTROL" markings on plate as a guide. By turning the knob "T" and moving long plate "F" laterally. Ref. Figure 10: Align the longitudinal plane by loosening the knob "D" and adjusting the plate "F" until the front lens "L" is placed above the panoramic axis of rotation "W". At this point, the position is already able to handle VR panning of landscape or outdoor shots.

5

ACCURACY POSITIONING OF THE "NODAL POINT"
If the two objects that contain objects at varying distance from the point where the shot is being taken (near and distant objects), the "Nodal Point" needs to be more accurately positioned as follows (the greater a possible UNIT will reduce errors):

Note:
- FIRST ACCURACY POSITIONING -
- SECOND ACCURACY POSITIONING - ONLY WHEN LENGTHENING POSITIONING HAS BEEN SET

10

10A

10B

LONGITUDINAL POSITIONING 10
(Ref. Figure 10): Choose a frame that contains both a near object "1" and a distant object "2" situated along the same vertical line of vision.

1. See Figure 10A and 10B: unscrew knob "D" and move the camera on the vertical plane to bring the two objects best to the top and then to the bottom of the frame, checking whether the height gap "Y" between the two objects varies in the two frames: the more constant the distance remains, the more accurately the "Nodal Point" has been positioned.
2. For optimum results, make minor adjustments by moving plate "F".

Once the right position is achieved it is VERY USEFUL to memorise it by noting the position of the plate "F" on the index on the graduated scale.

4

LATERAL POSITIONING 11
(Ref. Figure 11): Choose a frame that contains both a near object "1" and a distant object "2" situated along the same horizontal line of vision.

1. (See Figure 11A and 11B): unscrew knob "AF" and move the camera around the panoramic axis so that the two objects are first on the left hand side of the frame, then on the right. Check whether the horizontal gap "X" between the two objects varies in the two frames: the more constant the distance remains, the more accurately the "Nodal Point" has been positioned.
2. For optimum results, make minor adjustments by moving plate "S".

Once the right position is achieved it is VERY USEFUL to memorise it by noting the position of the plate "S" on the index on the graduated scale.

7

INSTRUCTIONS FOR SPHERICAL PANORAMIC SHOOTING 12

A special panoramic scene is obtained by adding together panoramic sequences taken at different angles from the horizontal. Factors you will need to choose the number of panoramic sequences you will need to complete the sphere depending on the angle of the lens you will be using. Before starting with the panoramic sequence, choose the initial vertical angle using the round scale "Z" (Fig. 12).

Unscrew loading knob "AF" or remove it completely if you do not need it (it must be used to completely stop rotation when the head is used in non-vertical position, or to avoid any accidental movement of the head in any position).

Decide the number of shots or the angle of rotation between each shot for the first panoramic sequence (see the chart below).

Angle	90°	60°	45°	36°	30°	24°	20°	15°	10°	5°
n. shots	4	6	8	10	12	15	18	24	36	72

- Screw knob "AB" into the selected setting holes "AA".
- Release locking lever "AB" and rotate the camera on top plate "AE" to the position of the first shot.
- Hold the camera in position and rotate the central barrel "AC" until the first "click stop" is reached, then lock lever "AB".
- Take the first shot and then rotate the camera to the next "click stop" without releasing "AB" and take the next shot.

Continue this process until the start position is reached.

Once you have completed the first complete panoramic sequence, you can start on the other panoramic sequences needed to cover the sphere: change the vertical angle using knob "W" and round scale "Z", and repeat the operations described above for each full sequence.

The base of the head "AD" has graduated scale markings from 0 to 360° and a reference index "AE" on the central barrel "AC". This is to be used to set angles out on the chart. To use the head in this way, which knob "AB" is disengaged the "click stop" during rotation of central barrel "AC" and use the locking knob "W" to lock the position during shooting.

NOTE: The angle of the lever on the ratchet knob "AB" can be repositioned as required without affecting the lock itself. Pull the lever outwards, rotate as required and release and it will locate in the new position.

8

ADDITIONAL PLATES 13
If you have a very compact camera we suggest you to use the short plates "SC" (Fig. 13) and "FC" (supplied with the head) instead of the two long plates "F" and "S" in order to reduce space and weight of the system.

To replace the plate "S" unscrew screw "SD" (Fig. 13).
To replace the plate "F", please refer to Fig. 6 and unscrew screw "O".

USE OF THE KIT AS AN OBJECT PANORAMA TURNTABLE 14
The head can also be used as a turntable, useful for shooting object panoramas. For this use, loosen knob "W" and push button "AH" to slide the lower plate "S" out of the housing on the panoramic rotation base unit. In place of the long plate and top assembly, mount one of the two shorter plates supplied as a base for your object. The plate housing has a "center" mark to help you position your object accurately above the center of panoramic rotation.

9

**Appendix 4.6 – Extract from the Warrington
Borough Council Local Plan – Preferred
Development Options Regulations 18
Consultation July 2017 – Pages 40-42**



WARRINGTON
Borough Council

Warrington Borough Council Local Plan

Preferred Development Option Regulation 18 Consultation July 2017



Warrington Garden City Suburb

5.28 The south eastern extension of Warrington will create a new Garden City Suburb, providing the potential development of around 7,000 new homes to be delivered over the full 20 years of the Plan. This includes land for 950 homes which is outside of the Green Belt.

5.29 The suburb will also provide a major new employment area as an extension of the existing Appleton Thorn / Barleycastle estates at the intersection of the M6 and M56.

5.30 The initial development concept envisages this area will be focussed around three garden neighbourhoods centred around a new district centre and a new country park. Walking, cycling and public transport linkages will connect these neighbourhoods to their local and district centres, Stockton Heath, the new employment zone and the City Centre. An extensive and attractive green network would form the framework to this development area.

5.31 The Council has prepared a more detailed Development Concept which assesses the capacity of the area, identifies indicative infrastructure requirements, sets out proposed development principles and an indicative development phasing.

Infrastructure Requirements

5.32 There is a significant requirement for infrastructure to support this level of growth, including a network of new distributor roads, a new secondary school, up to 4 new primary schools, a major new park, district centre, health facilities and leisure facilities. To achieve the full development potential of the area may require a further higher level connection across the Ship Canal.

5.33 Given the scale of this development proposal, it will be necessary for the Council to work with landowners to prepare a more detailed masterplan and ensure the timely delivery of infrastructure to support individual phases of development.

Development Trajectory

	0-5	6-10	11-15	16-20	Total
Garden City Suburb	406	496	48	0	950
Garden City Suburb (Green Belt)	0	2,114	2,096	2,114	6,324
TOTAL	406	2,610	2,144	2,114	7,274

Table 19: Garden City Suburb Housing Trajectory

	0-5	6-10	11-15	16-20	Total
Garden City Suburb (Green Belt)	22	30.3	45.9	18.6	116.80

Table 20: Garden City Suburb Employment Land Trajectory

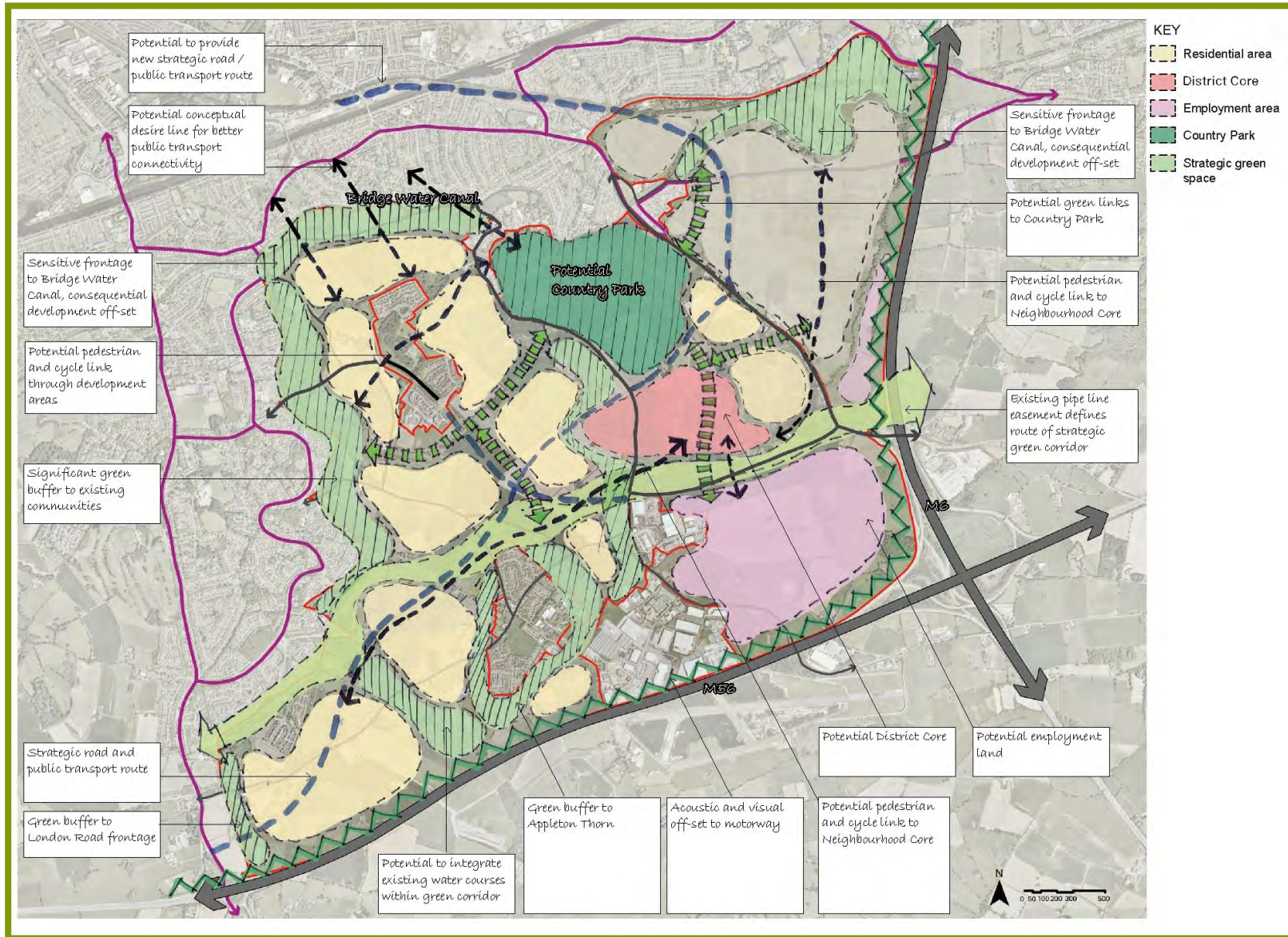


Figure 7: Warrington Garden City Suburb

5.34 The trajectory is based on the principle that no further residential development is acceptable in south east Warrington, other than non-green belt sites, until the first phase of the new strategic road link is completed. There is therefore no Green Belt Release during the first 5 years of the Plan. In addition, the new secondary school must be completed by the end of the 5 to 10 year period for any further Green Belt land to be released.

5.35 The assumptions around development capacity are set out in the Development Concept document. The trajectory is based on a gross density of 20 dwellings per hectare. This is below the standard Green Field assumption contained in the Council's SHLAA but is considered to be appropriate for the type of development envisaged in this part of Warrington. It reflects best practice examples from successful urban extensions of a similar scale and context to south east Warrington. It also provides an overall balance between built and green space which is consistent with the most recent guidance on garden city design.

5.36 The Council has however also assessed the potential capacity if the standard SHLAA density assumption is applied. This would increase the capacity of the area by around 1,000 homes. As part of the consultation on the Preferred Development Option, the Council will be seeking views on the appropriate density to be applied in this area to balance residential quality against the need to minimise Green Belt release.

Safeguarded Land

5.37 The Council is proposing to safeguard the land adjacent to the Garden City Suburb. The Council considers this represents a continuation of the preferred development option, providing the opportunity to increase the size of the suburb to meet future development need beyond the Plan period. The safeguarding area will cover the General Area 9 as set out in the Green Belt Assessment and will ensure a long term defensible boundary to the Green Belt is provided by the M6 and M56.

5.38 The balance of land to be allocated for development and safeguarded for future development will be dependent upon the density applied across the Garden City suburb. Based on a gross density of 20 dwellings per hectare, it is likely that the whole of General Area 10 will need to be allocated. This may therefore require further land to be safeguarded, beyond General Area 9 to meet the requirement set out in Table 3.

5.39 If the standard SHLAA density is applied then not all of General Area 10 will need to be allocated. Based on the illustrative masterplan contained in the Development Concept, this will mean the area comprising development parcels C1 to C3 as well as a portion of the district centre would be safeguarded as opposed to being allocated. Together with General Area 9, this may be sufficient to meet all of Warrington's safeguarding requirement. It should be noted however that the Council has only undertaken an initial assessment of development Capacity within General Area 9 and there are sensitive environmental assets to the north of the area which would need to be protected.



WARRINGTON
Borough Council

Planning Policy & Programmes
Warrington Borough Council
New Town House
Buttermarket Street
Warrington
WA1 2NH

Tel: 01925 442826
Email: ldf@warrington.gov.uk

**Appendix 4.7 – ES Addendum – Text Deleted
from Original ES Technical Paper 2 –
Landscape and Visual Impact Assessment –
Technical Paper 4**

Six 56 Warrington

ES Addendum – Text Deleted from Original ES Technical Paper 2 – Landscape and Visual Impact Assessment – Technical Paper 4

Section Number / Paragraph Number / Table number / Figure Number in Original Paper	Text Deleted from Original ES	Reason
Section 1 / Paragraph 1.7	Socio Economic	Addendum Socio Economic Technical Paper requested by Council
Section 2 / Paragraph 2.2 & 2.3	Text regarding NPPF (2018)	Replaced with text regarding the updated NPPF 2109
Section 2 / Paragraph 2.14 & 2.15	Text regarding National Planning Practice Guidance	Text updated for published guidance
Section 2 / Paragraph 2.30	(Preferred Options July 2017)	Amended to reflect updated framework
Section 5 / Paragraph 5.4	'Areas' and 'with'	Grammatical amendment
Section 5 / Paragraph 5.17	of	Grammatical amendment
Section 5 / Paragraph 5.26	: however, the Site	Restructuring of sentence for additional information
Section 5 / Paragraph 5.43	The presence of the industrial parks to the west strongly influence the character of this side of the Site, however, as the buildings become more visible	Sentence replaced to include more detail.
Section 5 / Paragraph 5.46	'V' and 'with a multitude of small lanes serving only a relatively small number of scattered properties'	Amended to include additional information on character and visual amenity
Section 5 / Paragraph 5.47	are more visually contained by the industrial parks to the west and dense vegetation around the M6 Motorway and the slip roads associated with it and the M56	Sentence replaced with more detailed information regarding character and visual amenity

	Motorway.	
Section 5 / Paragraph 5.54	And m	Words removed from previous paragraph to start new paragraph.
Section 6 / Paragraph 6.4	This new bunding will require the creation of maximum 1:3 gradient slopes, as this will be a natural self-stabilising slope. This also enables planting to be incorporated along the bund.	Replacement with text regarding 1:3 slopes and steeper reinforced slopes
Section 6 / Paragraph 6.6	Avoiding the vehicular trafficked areas	Design change
Section 6 / Paragraph 6.7	In order to bring visitors into contact with scheduled ancient monument the existing PROW Appleton FP23 will be moved to the west to bring users closer to the monument	PROW no longer relocated.
Section 6 / Paragraph 6.7	to	Restructuring of sentence
Section 7 / Paragraph 7.23	towards	Corresponding to updated Masterplan
Section 7 / Paragraph 7.25	minor	Corresponding to updated Masterplan
Section 7 / Paragraph 7.58	7.3	Amended table reference to 4.14
Section 7 / Table 4.15	The location is close to the proposed new access road and roundabout, which will include associated infrastructure such as street lighting and signage	Relocation of access road to opposite side of Unit I
Section 8 / Paragraph 8.4	Towards the end of construction the proposed landscaping	Masterplan amendments have removed this route.

	elements will seek to incorporate new hedgerow planting within the interior landscaped areas, therefore providing a safer route for animals to travel through the Site to this ecological mitigation zone.	
Section 8 / Paragraph 8.2	Immediately as construction has started along all external boundaries	Amended to clarify bunds as being introduced as part of the enabling works rather than day one of construction
Section 8 / Paragraph 8.10	The proposals will seek to incorporate new hedgerows along the perimeter of the Site to the north and within the central landscape areas surrounding the Scheduled Ancient Monument, leading around the western side of Plot 3 on the Illustrative Masterplan to the Ecological Mitigation Area to the south east.	Masterplan amendments have removed this route.
Section 10 / Table 4.17	2027/	Amended to updated timescales
Section 10 / Paragraph 10.8	'but it is understood that a new proposal is to be submitted and that the decision against the existing proposal is to be appealed. The following assessment is based on the refused scheme,' and 'is not approved'	Updated to reflect developments in new planning application
Section 10 / Paragraph 10.9	18.5m or 83.00 AOD	Unit reduced to 18m
Section 10 / Paragraph 10.17	For the	Restructuring of sentence

**Appendix 4.8 – Residential Visual Amenity
Assessment (RVAA)**

SIX56 | WARRINGTON

PLANNING

Appendix 4.8 - Residential Visual Amenity Assessment
July 2020

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Appendices

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1. INTRODUCTION

Background

- 1.0 Layer Landscape Architecture Ltd (LAYER) have been instructed by Langtree Property Partners and First Panattoni to undertake a Residential Visual Amenity Assessment (RVAA) in response to the request of the Local Planning Authority (LPA), Warrington Borough Council (WBC) to submit further information in support of the planning application. LAYER is a registered practice of the Landscape Institute and the report has been authored and checked by Chartered Members of the Landscape Institute (CMLI).
- 1.1 RVAA is an additional stage beyond what is normally considered within a Landscape and Visual Impact Assessment (LVIA) and focuses exclusively on private views and private visual amenity. An RVAA may be used by the LPA when determining the appropriate weighting of potential affects on Residential Amenity in consideration of the overall planning balance.

Purpose of the Assessment

- 1.2 Visual amenity is defined in Guidelines for Landscape and Visual Assessment, Third Edition 2013 (GLVIA3) as *'the overall pleasantness of the views they enjoy of their surroundings'*. Residential Visual Amenity is defined as the overall quality, experience and nature of views and outlook available to occupants of residential properties, including views from gardens and domestic curtilage. As such it forms a component in the consideration of Residential Amenity, other considerations may include noise and air quality.
- 1.3 Significant adverse effects on views and visual amenity may be experienced by people at their place of residence through the introduction of a new development into the landscape or townscape. Whilst this does not necessarily outweigh other planning considerations, there are situations where the effect on the outlook or visual amenity of a residential property is so great that it is not generally considered to be in the public interest to permit such conditions to occur, where they did not exist before.

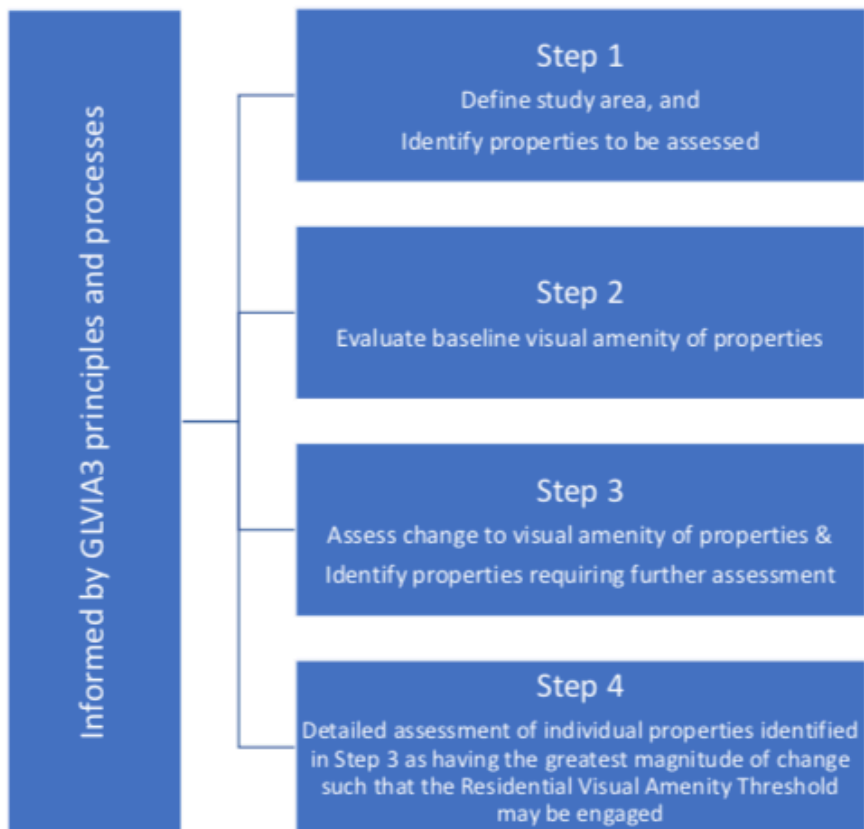
- 1.4 The purpose of the RVAA is to determine if the effect of the development on Residential **Visual** Amenity is of such a nature or magnitude that it potentially affects living conditions or Residential Amenity. This is referred to as the Residential Visual Amenity Threshold (RVA Threshold).

Methodology

- 1.5 The Landscape Institute has issued a technical guidance note with respect to the undertaking of a RVAA¹ and this has been followed for the undertaking this assessment. The RVAA follows the four stages referred to in the guidance, which is shown in Figure 1 RVAA Process. For more information regarding the guidance set out within the Landscape Institutes Technical Note please refer to **Appendix 1**.

¹ Residential Visual Amenity Assessment LI Technical Guidance Note 2/19 (March 2019)

Figure 1 RVAA Process



Residential Visual Amenity Assessment | LI Technical Guidance Note 2/19 | page 7

Figure 1 Extract from the Residential Visual Amenity Assessment LI Technical Guidance Note 2/19 page 7 – RVAA Process

1.6 The Residential Visual Amenity Assessment is undertaken via a four-step process.

- Step 1 – Definition of the study area and scope of the assessment
- Step 2 – Evaluation of the Baseline Visual Amenity
- Step 3 – Assessment of likely change to visual amenity of properties
- Step 4 – Formatting the RVAA Judgement

1.7 The changes that may occur due to the introduction of the proposed development are assessed for the RVAA using the magnitude and significance of visual effects criteria as set out within the Guidance for Landscape & Visual Impact Assessment Third Edition (GLVIA3) which also forms the basis for the methodology used throughout this Chapter.

1.8 Within Step 3 of the Landscape Institute Technical Note, the guidance sets out a framework that is to be considered when describing and evaluating the predicted magnitude of visual change and related visual amenity effects, which may lead to the property being considered to reach the threshold. These include:

- *"Distance of property from the proposed development having regard to its size / scale and location relative to the property (e.g. on higher or lower ground);*
- *Type and nature of the available views (e.g. panoramic, open, framed, enclosed, focused etc.) and how they may be affected, having regard to seasonal and diurnal variations;*
- *Direction of view / aspect of property affected, having regard to both the main / primary and peripheral / secondary views from the property;*
- *Extent to which development / landscape changes would be visible from the property (or parts of) having regard to views from principal rooms, the domestic curtilage (i.e. garden) and the private access route, taking into account seasonal and diurnal variations;*
- *Scale of change in views having regard to such factors as the loss or addition of features and compositional changes including the proportion of view occupied by the development, taking account of seasonal and diurnal variations;*

- *Degree of contrast or integration of new features or changes in the landscape compared to the existing situation in terms of form, scale and mass, line, height, colour and texture, having regard to seasonal and diurnal variations;*
- *Duration and nature of the changes, whether temporary or permanent, intermittent or continuous, reversible or irreversible etc.; and*
- *Mitigation opportunities – consider implications of both embedded and potential further mitigation."*

1.9 A judgement is formed from, using the criteria above, in combination with an informed professional judgement regarding whether the threshold has been reached. The technical note states that *"the factors which might contribute to the threshold being reached, or the way in which these are expressed, may be different for different types of development (for example, one might use terms such as 'overwhelming/overbearing' for tall structures, or 'overly intrusive' for a development overlooking a garden or principal room)."* Due to the varying outcomes possible for reaching the threshold, the professional judgment requires an explanatory narrative setting out why the effects are considered to reach the Residential Visual Amenity Threshold.

1.10 For the purpose of recording and presenting this assessment, a standard form has been used for each property or group of properties. Night time effects have been considered more generally in the Lighting Assessment (Doc ref: 1015524-RPT-LG-002)

2. ASSESSMENT

Stage 1 Definition of Study Area and Scope of Assessment

- 2.0 The RVAA uses data collected from the LVIA. The study area for the LVIA was initially established as 2.0 kilometres measured from the centre of the site. A Zone of Theoretical Visibility was also confirmed through digital and field surveys with representative viewpoints agreed with the LPA.
- 2.1 Viewpoints assessed for the LVIA have been reviewed to define where the highest magnitude of change would occur and further desktop and field surveys have been undertaken to determine which residential properties should be considered within this RVAA. Following this process the study area for this RVAA was determined as being broadly 500 metres from the boundary of the site, which is shown on **Appendix 2 - Figure 1**.
- 2.2 The properties assessed are listed and their location are also shown in **Appendix 2 - Figure 2**. In the majority of cases, properties have been assessed individually but in some instances properties have been grouped where it was felt that their general outlook was similar and they were in close association with each other.
- 2.3 The assessment was undertaken only from publicly accessible locations and permission to enter private land has not been requested for the purpose of this assessment. Where assumptions have been made this is made clear in the assessment.

Stage 2 Evaluation of Baseline Visual Amenity

- 2.4 The baseline visual conditions are described for each property or group of properties covering the type, nature, extent and quality of views that are likely to be experienced from the dwelling itself and its domestic curtilage (gardens and drives).
- 2.5 In accordance with GLVIA3 and the LVIA that has been undertaken for this development, residents at home are considered to be visual receptors with a **high** sensitivity to change.

Stage 3 Assessment of likely change to visual amenity of properties

- 2.6 Similar to the process undertaken for the LVIA, the assessment considers the magnitude and significance of the likely visual effects of the development from each property using the same criteria and definition of terms applied. For the purpose of this assessment, the predicted change in view is firstly described and the assessment of the effect is recorded below. Where a viewpoint is located close to the property in question, this is referred to for cross-referencing.

Stage 4 Forming the RVAA judgement

- 2.7 Based on the assessment undertaken in the preceding stage 3, a concluding judgement is made to determine whether the predicted visual effects have reached the RVA Threshold and therefore potentially a matter for considering Residential Amenity. Each judgement is explained to ensure transparency of the process. A summary of the effects of residential amenity can be found in the next section of this report.

3. SUMMARY

3.0 The RVAA has assessed that there are a number of properties, which are predicted will experience substantial adverse visual effects as a result of the development. In determining whether the RVA Threshold has been reached, the focus has been on whether the visual intrusion is of such a magnitude as to render the property an unattractive place to live as distinct from whether the development can be seen and results in significant adverse visual effects.

3.1 Planning precedent is established through a number of planning inquiry and appeal decisions and with respect to RVAA, the LI Technical Guidance Note 2/19 provides a useful reference point to a number of previous decisions. There is no 'right to a view' but the judgement regarding the RVA Threshold is based on whether the proposal would affect the outlook of the resident to such an extent that it was unpleasant and overwhelming rendering the property an unattractive place to live.

3.2 Based on the above criteria the assessment concludes that none of the properties assessed would reach the RVA Threshold. Summaries of the result for each property have been collated below.

No.	Name	Distance	Magnitude	Significance of Effect	RVA Threshold Judgement
1	Tan House Farm Cattery	350m	Moderate	Moderate High Adverse	Not Reached
2	The Barn, Tan House Farm Cattery	310m	High	High Adverse	Not Reached
3	Birchels Gorse	290m	High	High Adverse	Not Reached
4	Barley Castle Farm	270m	High	High Adverse	Not Reached
5	Reddish Hall Farm	210m	Minor	Moderate Adverse	Not Reached
6	Grappenhall Ridge	250m	Negligible	Minor Adverse	Not Reached
7	Broomfield Cottage	310m	Negligible	Minor Adverse	Not Reached
8	2,3 & 4 Broad Lane	380m	Minor	Moderate Adverse	Not Reached
9	Grappenhall Lodge	45m	Moderate	Moderate High Adverse	Not Reached
10	1 & 2 Ivy Cottage	65m	Substantial	Substantial Adverse	Not Reached
11	Southcott	60m	Substantial	Substantial Adverse	Not Reached
12	Hunters Lodge and Hunters Croft	50m	Substantial	Substantial Adverse	Not Reached
13	Manor Farm	35m	Substantial	Substantial Adverse	Not Reached
14	Croftside	30m	Substantial	Substantial Adverse	Not Reached
15	The Bungalow	20m	Substantial	Substantial Adverse	Not Reached
16	5 & 7 Cartridge Lane	15m	Substantial	Substantial Adverse	Not Reached
17	Cliffane Farm House	20m	Substantial	Substantial Adverse	Not Reached
18	Howshoot Farm	25m	Substantial	Substantial Adverse	Not Reached
19	Bradley View	7m	Substantial	Substantial Adverse	Not Reached
20	Bradley Hall Cottages	6m	Substantial	Substantial Adverse	Not Reached

Appendix 1 – Landscape Institute Technical Note 2/19 Residential Visual Amenity Assessment

Residential Visual Amenity Assessment (RVAA)

Technical Guidance Note 2/19

15 March 2019

Foreword

1. Introduction
2. Purpose of RVAA
3. Undertaking a RVAA
4. Methodology
5. Summary and Conclusions

Glossary

Appendix 1 – Planning Precedent

This Technical Guidance Note has been prepared in support of landscape and other appropriately qualified professionals who are engaged in RVAA. It is not prescriptive but aims to improve standards and it promotes a logical approach which should contribute to well informed decision making.

Foreword

The third edition of the Guidelines for Landscape and Visual Impact Assessment, GLVIA3, published in 2013, is well established as providing ‘best practice guidance’ when undertaking landscape and visual impact assessment (LVIA). With respect to visual impact the focus of GLVIA3 and LVIA is on public views and public visual amenity.

Residential Visual Amenity Assessment (RVAA) is a stage beyond LVIA and focusses exclusively on private views and private visual amenity. RVAA has become more common particularly when development proposals are the subject of a planning appeal. A RVAA may be used by the decision maker when weighing potential effects on Residential Amenity in the planning balance.

This Technical Guidance Note is prepared in support of landscape and other appropriately qualified professionals who are engaged in RVAA. It is not prescriptive but aims to improve standards. It promotes a logical approach which should contribute to well informed decision making.

I wish to express my thanks to all those who responded to the consultation draft, contributed by offering suggestions and submitted examples of RVAA*.

Marc van Grieken FLI

* Examples of RVAAs and their presentation tools may be added to the LI website or included in a revised edition of this note.

1. Introduction

Context

- 1.1 This Technical Guidance Note has been prepared to assist landscape professionals when undertaking Residential Visual Amenity Assessments (RVAA). People’s visual amenity is defined in Guidelines for Landscape and Visual Impact Assessment – Third Edition, 2013 (GLVIA3)¹ as:

“the overall pleasantness of the views they enjoy of their surroundings”

- 1.2 In this document, Residential Visual Amenity means: ‘the overall quality, experience and nature of views and outlook available to occupants of residential properties, including views from gardens and domestic curtilage’. Residential Visual Amenity is one component of ‘Residential Amenity’.

Views and visual amenity in the planning process

- 1.3 The planning system is designed to act in the public interest when making planning decisions. Nevertheless, effects on private interests are considered by planners in the ‘planning balance’. This includes weighing effects on Residential Amenity.
- 1.4 Residential Amenity comprises a range of visual, aural, olfactory and other sensory components. Development can cause effects on one or more components of Residential Amenity, for example effects of noise, dust, access to daylight, vibration, shadow flicker, outlook and visual amenity. Sometimes this is referred to as ‘living conditions’.
- 1.5 Changes in views and visual amenity are considered in the planning process. In respect of private views and visual amenity, it is widely known that, no one has ‘a right to a view.’ This includes situations where a residential property’s outlook / visual amenity is judged to be ‘significantly’ affected by a proposed development, a matter which has been confirmed in a number of appeal / public inquiry decisions. (see also **Appendix 1 Planning Precedent**).
- 1.6 It is not uncommon for significant adverse effects on views and visual amenity to be experienced by people at their place of residence as a result of introducing a new development into the landscape. In itself this does not necessarily cause particular planning concern. However, there are situations where the effect on the outlook / visual amenity of a residential property is so great that it is not generally considered to be in the public interest to permit such conditions to occur where they did not exist before.
- 1.7 Appeals / public inquiries often consider the visual amenity component of Residential Amenity. Notably there have been many decisions relating to wind energy developments, perhaps not

¹ Guidelines for Landscape and Visual Impact Assessment, Third edition, Landscape Institute and Institute of Environmental Management and Assessment, 2013

surprising given the height and size of modern wind turbines. A selection of decision extracts is included as background information in **Appendix 1**.

- 1.8 Judgements formed in respect of Residential Visual Amenity should not be confused with the judgement regarding Residential Amenity because the latter is a planning matter. Nor should the judgement therefore be seen as a 'test' with a simple 'pass' or 'fail'.
- 1.9 Landscape professionals should confine their judgement to Residential **Visual** Amenity. The final judgement regarding effect on Residential Amenity (which to greater or lesser extent may be informed by the judgement formed by the landscape professional in respect of Residential **Visual** Amenity) is a planning matter and requires weighing all factors and likely effects (positive as well as negative) in the 'planning balance'. This is a matter for qualified planners and not for landscape professionals.

2. Purpose of RVAA

- 2.1 The purpose of RVAA is to provide an informed, well-reasoned answer to the question: ‘is the effect of the development on Residential Visual Amenity of such nature and / or magnitude that it potentially affects ‘living conditions’ or Residential Amenity’? In this guidance this is referred to as the Residential Visual Amenity Threshold.
- 2.2 The Residential Visual Amenity Threshold remains a constant irrespective of the type and nature of the development being assessed in the RVAA. However, the factors which might contribute to the threshold being reached, or the way in which these are expressed, may be different for different types of development (for example, one might use terms such as ‘overwhelming/overbearing’ for tall structures, or ‘overly intrusive’ for a development overlooking a garden or principal room). Determining whether the threshold has been reached requires informed professional judgement. It is the process by which informed professional judgement is engaged to reach a conclusion regarding the Residential Visual Amenity Threshold that is the subject of this Technical Guidance Note. It is important that assessors communicate their conclusions in a measured, rational manner. In keeping with recommendations in GLVIA3 this should be done using succinct narrative as opposed to a numerical tabular assessment format. Tables summarising narrative can, however, be very helpful.
- 2.3 It should be noted that RVAA does not consider, or provide information on, the other components of Residential Amenity referred to above such as noise and air quality. Decision makers, practitioners and others should consider RVAA alongside other relevant documents relating to Residential Amenity that may be provided in support of an application.

RVAA and EIA

- 2.4 A LVIA prepared in accordance with GLVIA3 provides an appropriate starting point for a RVAA. LVIA usually forms part of Environmental Impact Assessment (EIA).
- 2.5 LVIA findings of significant (adverse) effects on outlook and /or on visual amenity at a residential property do not automatically imply the need for a RVAA. However, for properties in (relatively) close proximity to a development proposal, and which experience a high magnitude of visual change, a RVAA may be appropriate, and may be required by the determining / competent authority. The scope of a RVAA is normally agreed with the determining / competent authority.

3. Undertaking a RVAA

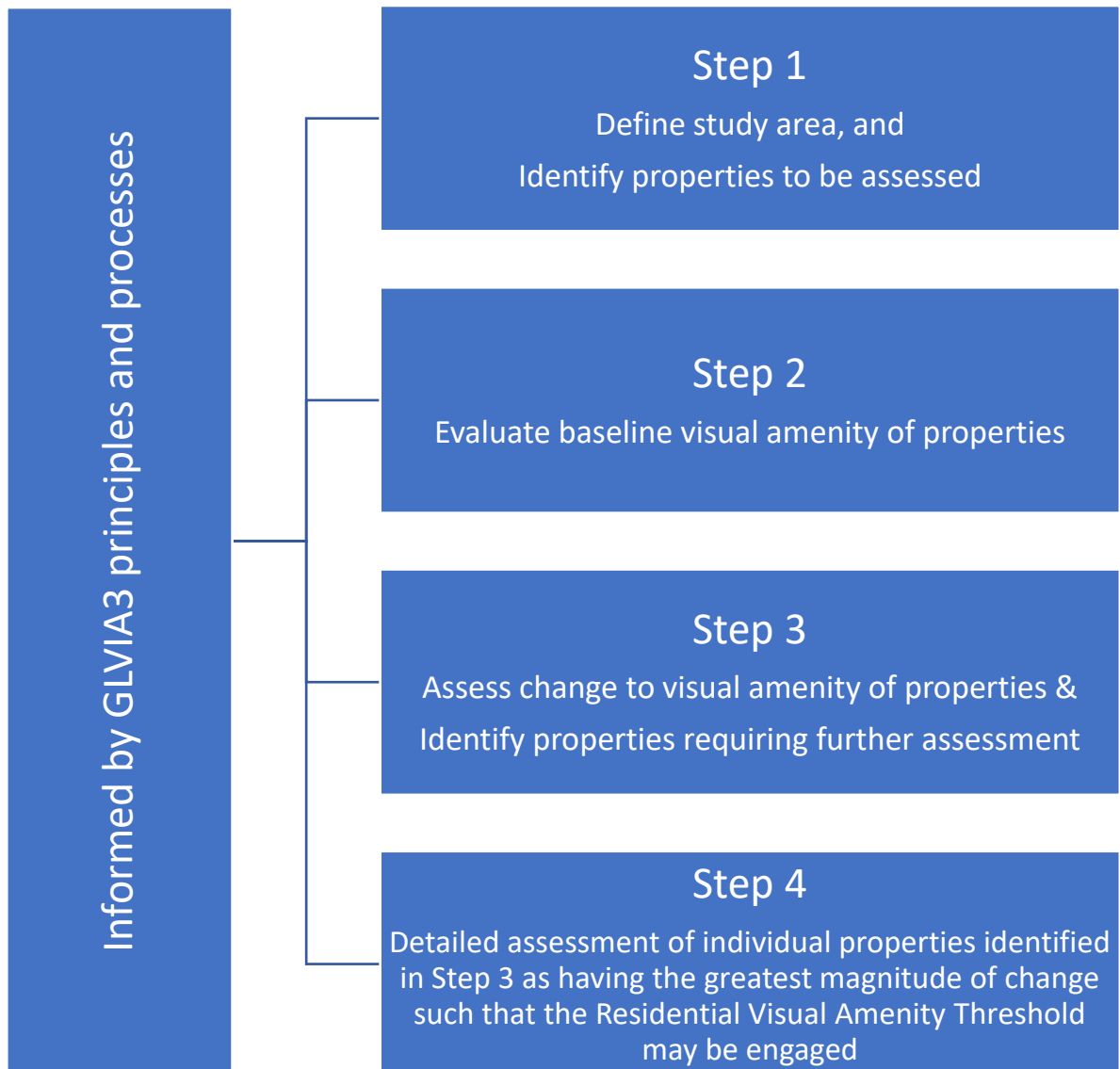
Approach

- 3.1 In terms of general approach RVAA should provide a transparent, objective assessment, grounded in GLVIA3 principles and processes, evaluating and assessing the likely change to the visual amenity of a dwelling resulting from a development. RVAA requires assessors to draw a conclusion whether the effect of the development on visual amenity and / or views from the property reaches the Residential Visual Amenity Threshold. Forming such a judgement requires experience in addition to thorough and logical evaluation and reasoning. Experience may be gained, for example, through peer review of the assessment by another landscape architect, or by visiting completed developments and checking if the changes in views and visual amenity were as predicted. Another form of reviewing one's judgement may be through analysing the information and reasoning used by planning Inspectors (England, Wales and Northern Ireland) and Reporters (Scotland) in reaching their findings and conclusions when they ascertain if the Residential Visual Amenity Threshold has been reached. However, assessors should not stray into the realms of planning balance.

Process

- 3.2 This guidance recommends that a full RVAA comprises four 'steps' and in situations where all four are engaged this will typically involve some iteration of the third and fourth steps. The first three steps fall broadly within the normal scope of LVIA consisting of an assessment of the magnitude and significance of visual effect (in the EIA context) and change to visual amenity likely to be experienced by occupants at those individual residential properties which were identified while scoping the RVAA.
- 3.3 The fourth and final step of RVAA requires a further assessment of change to visual amenity examining whether the Residential Visual Amenity Threshold is likely to be, or has been, reached. Whether or not this final step is engaged depends on the circumstances specific to the case. It will generally be clarified either during pre-application consultations relating to the accompanying LVIA, or subsequent to it during the RVAA. In any event RVAA should be considered supplementary to LVIA following on from, and informed by, the latter's findings and conclusions.
- 3.4 Consultation with the determining / competent authority is recommended to ensure that the scope of a RVAA accompanying an application is agreed in advance. In practice, a RVAA is generally only justified when the effect on Residential Visual Amenity could reach the Residential Visual Amenity Threshold.
- 3.5 The RVAA process is summarised below in **Figure 1 RVAA Process** and described in more detail in the following Methodology section.

Figure 1 RVAA Process



The relationship between GLVIA3 and this RVAA guidance

- 3.6 The RVAA approach and methodology set out in this document accords with GLVIA3 principles and processes. Paragraph 6.1 (page 98) of GLVIA3 states:

“An assessment of visual effects deals with the effects of change on views available to people and their visual amenity. The concern here is with assessing how the surroundings of individuals or groups of people may be specifically affected by changes in the content and character of views as a result of the change or loss of existing elements of the landscape and/or introduction of new elements.”

- 3.7 However, it should be stressed that, RVAA is distinct from LVIA as noted in GLVIA3 at paragraph 6.17 (pages 107 and 109), which states:

“Effects of development on private property are frequently dealt with mainly through ‘residential amenity assessments’. These are separate from LVIA although visual effects assessment may sometimes be carried out as part of a residential amenity assessment, in which case this will supplement and form part of the normal LVIA for a project. Some of the principles set out here for dealing with visual effects may help in such assessments but there are specific requirements in residential amenity assessment.”

- 3.8 RVAA is concerned specifically with the effects of change to the views and visual amenity available to people at their place of residence. As explained above the key difference between RVAA and LVIA is that RVAA focuses on private visual amenity at individual properties whilst LVIA focusses on public amenity and views. In relation to private property and residential receptors GLVIA3 states at paragraph 6.36 (page 114):

“The issue of whether residents should be included as visual receptors and residential properties as private viewpoints has been discussed in Paragraph 6.17. If discussion with the competent authority suggests that they should be covered in the assessment of visual effects it will be important to recognise that residents may be particularly susceptible to changes in their visual amenity - residents at home, especially using rooms normally occupied in waking or daylight hours, are likely to experience views for longer than those briefly passing through an area. The combined effects on a number of residents in an area may also be considered, by aggregating properties within a settlement, as a way of assessing the effect on the community as a whole. Care must, however, be taken first to ensure that this really does represent the whole community and second to avoid double counting of the effects”.

- 3.9 It should be noted that ‘combined effects on a number of residents’ referred to above, by means of ‘aggregating properties within a settlement’ is a matter of LVIA and not of RVAA.

4. Methodology

- 4.1 The recommended four RVAA steps should provide a transparent, robust framework and reporting structure for the assessment, one which is grounded in established GLVIA3 principles and processes, as summarised below.

RVAA Steps

1. Definition of study area and scope of the assessment – informed by the description of the proposed development², defining the study area extent and scope of the assessment with respect to the properties to be included.
 2. Evaluation of baseline visual amenity at properties to be included having regard to the landscape and visual context and the development proposed.
 3. Assessment of likely change to visual amenity of included properties in accordance with GLVIA3 principles and processes.
 4. Further assessment of predicted change to visual amenity of properties to be included forming a judgement with respect to the Residential Visual Amenity Threshold.
- 4.2 The RVAA steps are described in more detail as follows.

Step 1 – Definition of study area and scope of the assessment

- 4.3 The type and nature of development proposal and its likely effects informs the determination of both the need for, and the scope of, a RVAA. The description of the development should provide a robust, transparent basis for defining the extent of the study area and the scope, including which properties to include in the assessment. Mapping techniques such as Zone of Theoretical Visibility (ZTV) analysis are useful in this regard. The description of the development will be substantially the same as that used in the LVIA, but may be more focussed on a more limited geographic area.
- 4.4 There are no standard criteria for defining the RVAA study area nor for the scope of the RVAA, which should be determined on a case-by-case basis taking both the type and scale of proposed development, as well as the landscape and visual context, into account.
- 4.5 As a starting point the study area will typically be established using the general approach recommended in GLVIA3 (see Chapter 6, paragraph 6.2, page 98) and using such aids as ZTV mapping³. This should focus on identifying the properties to be included for assessment and should be proportionate to the proposed development in question having regard to the

² Type and nature of the development having regard to scale, form, massing etc and existing landscape context.

³ GLVIA3, paragraph 5.2, page 70, and paragraphs 6.2, page 98, and 6.7-6.12, pages 101-103 etc.

landscape and visual context. Simply being able to see a proposed development from a property is no reason to include it in the RVAA.

- 4.6 Over the last few years a large number of RVAAs have been prepared, especially relating to wind energy proposals. Local Planning Authorities (LPA) have frequently requested 'study areas' of up to 3 or even 5 km. The logic for these (exceptionally) large study areas was based on certain findings of LVIA's which identified significant visual effects from 'settlements' or from clusters of residential properties within this range. This fails to recognise that RVAA is a stage beyond LVIA. Consequently, many RVAAs, including those of windfarms with large turbines (150m and taller), have included disproportionately extensive study areas incorporating too many properties. This appears to largely be based on the misconception that if a significant effect has been identified in the LVIA adjacent to a property at 2.5km it will also potentially lead to reaching the Residential Visual Amenity Threshold.
- 4.7 When assessing relatively conspicuous structures such as wind turbines, and depending on local landscape characteristics, a preliminary study area of approximately 1.5 - 2 km radius may initially be appropriate in order to begin identifying properties to include in a RVAA. However, other development types including potentially very large but lower profile structures and developments such as road schemes and housing are unlikely to require RVAA, except potentially of properties in very close proximity (50-250m) to the development. For example, when assessing effects of overhead transmissions lines, generally only those properties within 100 – 150 metres of the finalised route are potentially considered for inclusion in a RVAA.
- 4.8 Properties are normally assessed individually, but if their outlook and / or views are in all aspects the same (for example if a development is visible from the rear gardens only of a small row of houses) they could be assessed as one (group). This will be at the discretion of the assessor and will require a clear explanation of the reason for the grouping or clustering.

Step 2 – Evaluation of Baseline Visual Amenity

- 4.9 The next step involves describing and evaluating the baseline visual conditions at the properties to be included, informed as appropriate by desk study and fieldwork. Fieldwork is briefly discussed at the end of this section.
- 4.10 The existing (or baseline) visual amenity of a residential property should be described in terms of the type, nature, extent, and quality of views that may be experienced 'in the round' (see glossary) from the dwelling itself, including its 'domestic curtilage' (domestic gardens and access drives).
- 4.11 When evaluating the baseline, it is recommended that the following aspects are considered:
- the nature and extent of all potentially available existing views from the property and its garden / domestic curtilage, including the proximity and relationship of the property to surrounding landform, landcover and visual foci. This may include primary / main views from the property or domestic curtilage, as well as secondary / peripheral views; and

- views as experienced when arriving at or leaving the property, for example from private driveways / access tracks.

4.12 In accordance with GLVIA3 residents at home are considered, amongst ‘visual receptors’, to be the most ‘susceptible’ to change⁴ and to attach most value to their private, views and visual amenity. They are therefore considered to be most sensitive⁵.

Step 3 – Assessment of likely change to visual amenity of properties

4.13 The third step in the process assesses the magnitude and significance of likely visual effect at the included properties. Effects are examined in accordance with GLVIA3 principles and processes⁶, considering the ‘nature of the receptor’ (‘sensitivity’ comprising ‘value’ and ‘susceptibility’) with the ‘nature of effect’. The assessment findings may be recorded in both narrative and tabular form as appropriate, but the conclusion should be fully explained. The aim of Step 3 is to identify those properties requiring further assessment in Step 4 in relation to the Residential Visual Amenity Threshold judgement.

4.14 Considerations which provide a framework for describing and evaluating the predicted magnitude of visual change and related visual amenity effects which may lead to the property being considered in Step 4 include:

- Distance of property from the proposed development having regard to its size / scale and location relative to the property (e.g. on higher or lower ground);
- Type and nature of the available views (e.g. panoramic, open, framed, enclosed, focused etc.) and how they may be affected, having regard to seasonal and diurnal variations;
- Direction of view / aspect of property affected, having regard to both the main / primary and peripheral / secondary views from the property;
- Extent to which development / landscape changes would be visible from the property (or parts of) having regard to views from principal rooms, the domestic curtilage (i.e. garden) and the private access route, taking into account seasonal and diurnal variations;
- Scale of change in views having regard to such factors as the loss or addition of features and compositional changes including the proportion of view occupied by the development, taking account of seasonal and diurnal variations;
- Degree of contrast or integration of new features or changes in the landscape compared to the existing situation in terms of form, scale and mass, line, height, colour and texture, having regard to seasonal and diurnal variations;
- Duration and nature of the changes, whether temporary or permanent, intermittent or continuous, reversible or irreversible etc.; and

⁴ GLVIA3, paragraph 6.33

⁵ Ibid, paragraphs 6.31-6.36

⁶ Footnote ‘13’ (first instance) missing in consultation draft?

- Mitigation opportunities – consider implications of both embedded and potential further mitigation.
- 4.15 This step will typically involve both desk study and detailed fieldwork but is unlikely to require visits to individual properties which, for the purposes of this step, can generally be assessed from the nearest publicly available vantage / access point. Where this is not feasible then visits to certain individual properties (or clusters of) may be appropriate.
- 4.16 Step 3 should conclude by identifying which properties should be assessed further in the final step in order to reach a judgement regarding the Residential Visual Amenity Threshold.

Step 4 – Forming the RVAA judgement

- 4.17 The final step of RVAA involves a more detailed examination of the predicted effects on the visual amenity at those properties identified for further assessment in the previous step.
- 4.18 There is an important distinction between this concluding step of RVAA and the preceding one. In Step 3 the assessor has reached a conclusion with respect to magnitude and (EIA) significance of visual effect, and the change in visual amenity at the property. In this final step, and only for those properties where the largest⁷ magnitude of effect has been identified, a further judgement is required. This concluding judgement should advise the decision maker whether the predicted effects on visual amenity and views at the property are such that it has reached the Residential Visual Amenity Threshold, therefore potentially becoming a matter of Residential Amenity. This judgement should be explained in narrative setting out why the effects are considered to reach the Residential Visual Amenity Threshold. Equally, judgements should explain why the threshold has not been reached.
- 4.19 The Residential Visual Amenity Threshold judgement should be communicated in a coherent manner, using text with clear descriptions, employing terminology which is commonly understood and descriptors which may have previously been used. Assessors should ensure that their judgements are unambiguous and have a clear, rational conclusion. Some examples of descriptions and descriptors that might be used include: ‘blocking the only available view from a property’, or ‘overwhelming views in all directions’; and ‘unpleasantly encroaching’ or being ‘inescapably dominant from the property’. It may also be useful to employ bespoke graphics such as annotated aerial photographs and wireframe visualisations to aid this further assessment in Step 4.
- 4.20 The key point regarding Step 4 is that the judgement required in this final, concluding step goes beyond the assessment undertaken in Step 3 which is restricted to judging the magnitude and significance of visual effect, typically as a supplement to the accompanying LVIA.

⁷ In line with GLVIA3 best practice (page 38, paragraph 3.27, point 2), visual impact magnitude is expressed on a sliding scale from minimum to maximum, typically using descriptors such as negligible, small, medium and large. Being a continuum, each of these has its upper and lower limits. It is important for assessors to keep in mind that RVAA is only concerned with those properties in the highest magnitude category.

Fieldwork and Associated Activities

4.21 In keeping with advice on LVIA set out in GLVIA3 it is standard practice to carry out fieldwork and use various tools when undertaking a RVAA. Fieldwork will be focussed on those properties identified for inclusion in the RVAA in Step 1; for those properties included in Step 4 it may also include visiting those properties subject to occupier consent. It requires prior preparation (desk study) and appropriate tools and materials such as drawings, maps and visualisations etc. Dependent on assessment scope and consultation feedback more than one visit may be required. Fieldwork will typically include the following:

- **Fieldwork** – Initial fieldwork may be used during Steps 1-3 to evaluate and assess the general visual amenity of the included properties, based on assessment scope and consultation feedback. The scoping of properties from publicly accessible locations is usually appropriate. The initial fieldwork would typically form the basis for identifying those dwellings to be assessed in more detail in Step 4, namely those which may require detailed inspection of views and visual amenity, both from inside the property as well as from its garden and general curtilage;
- **Visualisation** – Preparation of suitable graphic and / or visual material such as ZTVs and wirelines may be appropriate for use during fieldwork and as an aid to assessment, in addition to aiding presentation of RVAA findings. Depending on the circumstances and consultation responses, and feedback from determining / competent authorities, the type and nature of visualisations may vary. In any event visualisations should be proportionate to the development proposal in question and appropriate to the project phase / assessment stage, and considered in the context of relevant best practice guidance including LI Technical Guidance Note 02/17⁸ Such visualisations may be shared with residents at the appropriate stage when documents become publicly available, or as agreed between the parties and their clients; and
- **Property Inspection** – the purpose of the property inspection is to gather information pertinent to the assessment of Residential Visual Amenity. There are no standard protocols for property inspections but best practice dictates that they should be arranged between the parties on a case by case basis with the involvement of the determining / competent authority as and when appropriate. In the event that access to private property cannot be obtained, and having employed best endeavours to do so, assessment can and should be undertaken from appropriate publicly accessible locations.

4.22 Communication with local residents needs to be carefully planned and executed with sensitivity, demonstrating respect for residents' privacy. It is recommended that site visits and property inspections be conducted in pairs. Assessors should make it clear to residents that, although he/she is unable to comment on the findings during the site visit, the RVAA report will be made publicly available at the appropriate stage in the planning process.

4.23 Residents of private property are likely to be concerned regarding potential visual effects and change to the visual amenity of their homes. This concern is reflected in RVAA best practice which, as with LVIA and in line with advice in GLVIA3, considers residential receptors to be of

⁸ 'Visual representation of development proposals', Landscape Institute Technical Guidance note 02/17 (31 March 2017)

the highest visual sensitivity (high susceptibility and high value)⁹. It is important that residents are made aware of this and how to make representations to the decision maker / competent authority regarding the proposed development in order to express any concerns felt.

Seasonal and Diurnal Considerations

- 4.24 Seasonal and diurnal variation (including lighting impacts) are factors that need consideration when assessing the visual amenity baseline and the likely visual effects resulting from a development proposal. Both these aspects form part of the evaluation factors / objective considerations set out in Step 3 of the RVAA process and should be dealt with in line with advice contained in GLVIA3 (refer paragraph 6.12, page 103 and paragraph 6.28, page 112).

Cumulative Considerations

- 4.25 Cumulative impacts on the landscape and visual resource are matters to be addressed in the LVIA of a proposed development in accordance with recommendations in GLVIA3 (refer Chapter 7). As a rule, future cumulative visual effects are not assessed in RVAA, the focus of which concerns effects on existing visual amenity. Existing cumulative development will form part of the baseline visual amenity considered in Step 2 of RVAA; future cumulative development is generally not a RVAA consideration. However, in certain circumstances, it may be appropriate to consider a particular cumulative proposal which is effectively already part of the existing landscape baseline. For example: where an extension to an existing development is consented, or under construction, but not yet built; or where two developments are proposed simultaneously. Such circumstances should be dealt with on a case by case basis in consultation with the competent / determining authority.

RVAA Presentation Techniques

- 4.26 Examples of RVAA graphics and presentation techniques generally can be found on the Directorate for Planning and Environmental Appeals (DPEA) website¹⁰ (for Scotland) and the Planning Inspectorate¹¹ and Department for Communities and Local Government websites¹² (for England & Wales). Going forward practitioners may add examples of RVAAs and presentation tools to the LI website subject to client approvals and anonymising of individual properties. Meanwhile the aforementioned websites contain examples of RVAAs in the public domain made available by planning and other decision-making authorities.

⁹ However, it is important to note that, RVAA is distinct from LVIA in that its ultimate purpose is to provide a further assessment of residential visual amenity concluding with a judgement in relation to the Residential Visual Amenity Threshold taking any previous LVIA as the starting point, as explained in Section 3 Undertaking a RVAA above.

¹⁰ <http://www.dpea.scotland.gov.uk/>

¹¹ <https://acp.planninginspectorate.gov.uk/>

¹² <https://www.planningportal.co.uk/>

5. Summary and Conclusions

- 5.1 The purpose of carrying out a Residential Visual Amenity Assessment (RVAA) is to form a judgement, to assist decision makers, on whether a proposed development is likely to change the visual amenity of a residential property to such an extent that it becomes a matter of 'Residential Amenity'. Potential effects on Residential Amenity are a planning matter and should not be judged by landscape architects.
- 5.2 The threshold at which a residential property's visual amenity becomes an issue of Residential Amenity has sometimes been described as the point when 'the effect(s) of the development on the 'private interest' is so great that it becomes a matter of 'public interest''. The planning system is only concerned with public interest. In certain circumstances, however, the effect of the development is so great that it is not in the public interest to create or allow 'such conditions' where they did not exist before. This is sometimes referred to as the 'public interest test'. However, this is a legal / planning term and not recommended for use by landscape practitioners. This guidance uses the term Residential Visual Amenity Threshold.
- 5.3 The recommended approach to undertaking a RVAA is grounded in principles and process set out in GLVIA3. The recommended method for undertaking a RVAA involves four steps. It follows a structured assessment process employing a range of objective criteria to underpin the ultimate professional judgement regarding the Residential Visual Amenity Threshold. The aim is to identify those residential properties whose visual amenity has the potential to be affected to the largest magnitude of impact. Properties with the highest magnitude of effect are assessed further culminating in a professional judgement as to whether the Residential Visual Amenity Threshold is likely to be reached at this property or not.
- 5.4 There are no hard and fast rules or criteria for making this judgement, but it does require objective, logical evaluation and reasoning, and must be explained in clear and common language. A RVAA judgement so executed will contribute to well informed decision making.

Glossary

The following glossary of terms commonly used in relation to RVAA is intended to supplement that provided in GLVIA3.

Planning balance

When forming a judgement if a development is acceptable or not, all relevant planning matters pertaining to the proposed development (both planning benefits and disbenefits) will be given, greater or lesser, weight in forming the judgement. This is often referred to as the 'planning balance'.

'In the round'

'In the round' means the combined or all-round visual amenity experience at, or from a property. Visual amenity is *"the overall pleasantness of the views they enjoy of their surroundings"* (paragraph 2.20, page 21; GLVIA)

Judgement

Judgement in RVAA (as in LVIA) means: the considered, well-reasoned, informed and dispassionate opinion of the qualified professional (refer GLVIA3 paragraphs 2.21-2.26, pages 21-22).

Outlook

The outlook of a property incorporates the views from, and visual amenity of, all aspects of the building and its domestic curtilage. Different 'aspects' of a property's outlook may be identified and assessed, namely its 'main' or 'front' aspect, as opposed to its 'side' or 'rear' aspects.

Overbearing

The Department for Communities and Local Government online planning portal defines 'overbearing' as *"the impact of a development or building on its surroundings, particularly a neighbouring property, in terms of its scale, massing and general dominating effect"*¹³.

Principal room

The principal room(s) of a residential property is a living room, or one fulfilling the same primary use role. In some properties this room may not be located on the ground floor, but on an upper storey. A conservatory may also fulfil a living room / primary use role depending on the circumstances and the internal arrangement of the residence.

¹³ https://www.planningportal.co.uk/directory_record/412/overbearing

Domestic curtilage

The domestic gardens and access drives / roads immediately surrounding a residential property including patios, terraces, courtyards and forecourts. The domestic curtilage does not extend to surrounding paddocks and other peripheral land / outbuildings within the property ownership, or to public or private approach roads.

Public interest

The 'public interest' is a legal term which the Merriam Webster online law dictionary defines as "the general welfare and rights of the public that are to be recognized, protected, and advanced"¹⁴. The Law Society online legal glossary defines it as "the overall welfare of the general public."¹⁵

Residential Amenity

The Merriam Webster online law dictionary defines 'amenity' as "the quality of being pleasant or agreeable", and further in relation to property as "the attractiveness and value of real estate or of a residential structure."¹⁶

Residential Visual Amenity

The overall quality, experience and nature of views and outlook available to occupants of residential properties, including views from gardens and domestic curtilage. It represents the visual component of Residential Amenity.

Residential Visual Amenity Threshold

The threshold at which the visual amenity of a residential property is changed and adversely affected to the extent that it may become a matter of Residential Amenity and which, if such is the case, competent, appropriately experienced planners will weigh this effect in their planning balance.

Scenic quality

The quality of a view in terms of 'scenery'; the scenic attributes of a view.

Significant effect / Significantly affected

When undertaking an LVIA as part of an EIA the assessor is required to report on all effects and to identify 'significant' effects. A LVIA should explain which of the range of effects reported are 'significant' in the context of EIA and why.

¹⁴ <https://www.merriam-webster.com/dictionary/interest#legalDictionary>

¹⁵ <https://www.lawsociety.org.uk/for-the-public/legal-glossary/#P>

¹⁶ <https://www.merriam-webster.com/dictionary/amenity>

Visual amenity

The overall pleasantness of the views available to people of their surroundings which provide an attractive visual setting or backdrop for the enjoyment of activities of those living, working and recreating, visiting or travelling through an area (GLVIA3 Glossary, page 158).

Visual effects

Effects on specific views and on the general visual amenity experienced by people (GLVIA3 Glossary, page 158).

Visual impacts

The action which results in / causes the effect. For example, introducing a built structure into an undeveloped landscape will have an impact on the landscape and views which will be experienced by people as effects on local landscape character and visual amenity. It is the purpose of LVIA to judge the magnitude and significance of the resulting landscape and visual effects (see next entry)

Visual impacts versus effects

GLVIA3 distinguishes between landscape and visual impacts and effects. Paragraph 1.15 (page 9) *“This guidance generally distinguishes between the ‘impact’, defined as the action being taken, and the ‘effect’, defined as the change resulting from that action, and recommends that the terms should be used consistently in this way.”*

Appendix 1 – Planning Precedent

Introduction

- A1.1 This Appendix is intended to provide some background to the RVAA guidance with reference to inquiry / appeal decisions that illustrate how Inspectors and Reporters have reached conclusions in respect of Residential Visual Amenity.

Judgement

- A1.2 In the Baillie decision Reporter David Russell concluded that assessing effects on private visual amenity is ultimately a matter of judgement¹⁷:

“Any assessment of acceptability in these circumstances relies on judgement rather than measurement.”

- A1.3 And:

“Given that I have found that this wind farm, because of its visual prominence and proximity, would have a significant detrimental impact on the visual amenity of some of the people living nearby, and as the impact would be long term, that interpretation would appear to preclude the granting of consent for this application. However, the guidance also confirms that proposals are to be considered on a case by case basis, and I consider that this inevitably requires a judgement to be reached on the acceptability of the impacts identified.”

Reasoning

Clocaenog Forest Windfarm

- A1.4 In the Clocaenog Forest windfarm Report of Findings in para 4.237¹⁸, the inspector concludes:

However, for three properties there is a risk that residential amenity would be affected to such a degree that the PPW standard of "good neighbourliness" would not be achieved and there would be conflict with Policy NTE/7 of the CLDP, and VOE 9 of the DLDP. This level of impact, which could make a property an unattractive place in which to live, has been found to be against the public interest and therefore unacceptable in Inspectors' appeal decisions²⁶⁶, and permission has been refused. I therefore consider that the adverse impact on the residential amenity of the three dwellings is important and relevant matter to be weighed against the benefits of the project under s104(7) of the PA2008.

- A1.5 The subsequent decision letter by the Secretary of State¹⁹ concludes:

“The Secretary of State agrees that the arguments in this case and in respect of this particular issue are finely balanced. He agrees with the ExA's view that it is not possible

¹⁷ Erection of wind farm at Bardnaheigh Farm, Westfield, by Thurso (Baillie). Case reference IEC/3/105/3, 17th August 2009

¹⁸ Clocaenog Forest Wind Farm, Examining Authority's Report of Findings and Conclusions and Recommendation to the Secretary of State for Energy and Climate Change, Wendy J Burden BA(Hons) DipTP MRTPI Examining Authority Clocaenog Forest Windfarm DCO

¹⁹ Decision letter 12 September 2014, 12.04.09.04/217C, paragraph 4.14

to mitigate the impacts of the wind farm on the three properties in question. He considers the matter has been considered appropriately during the examination of the application and that residential amenity is not an issue of sufficient magnitude to justify the withholding of consent given the benefits of the Development. In these circumstances, he considers that the interference with the human rights of the occupants of the three properties would be proportionate and justified in the public interest.”

Burnthouse Farm Windfarm

A1.6 At the Burnthouse Farm windfarm inquiry²⁰ Inspector Jill Kingaby stated at paragraph 119 of her report that:

“No individual has the right to a particular view but there comes a point when, by virtue of the proximity, size and scale of a given development, a residential property would be rendered so unattractive a place to live that planning permission should be refused. The test of what would be unacceptably unattractive should be an objective test.”

A1.7 At paragraph 120 of the Burnthouse Farm report the Inspector comments further on the threshold for determining unacceptable effects on visual amenity:

“There needs to be a degree of harm over and above an identified substantial adverse effect to take a case into the category of refusal in the public interest. Changing the outlook from a property is not sufficient.”

A1.8 In the conclusions on her report Inspector Kingaby addressed the living conditions of neighbouring occupiers and stated that:

“The methodology for assessing the visual impact on residential occupiers was considered fully at the Inquiry. I accept that the approach used by Inspectors in the Enifer Downs, Poplar Lane and Carland Cross Appeals and elsewhere should not be regarded as a mechanistic ‘test’ and has no status in terms of being part of statutory documentation or planning policy or guidance. However, it seems to me that a logical, transparent and objective approach to assessing visual impact should be adopted”.

A1.9 The Inspector also observed that judging serious harm to living conditions which might lead to a recommendation for planning permission to be refused in the public interest is a more stringent requirement than identifying of a significant adverse effect in EIA, stating:

“I consider that when assessing the effect on visual outlook, it is helpful to pose the question ‘would the proposal affect the outlook of these residents to such an extent i.e. be so unpleasant, overwhelming and oppressive that this would become an unattractive place to live?’”

A1.10 Inspector Kingaby’s recommendations were endorsed by the Secretary of State (SoS) and summarised in the SoS decision letter dated 6 July 2011 at paragraphs 10 and 11.

²⁰ Burnthouse Farm Windfarm, SoS Decision (APP/D0515/A/10/2123739) 6th July 2011

Langham Windfarm

A1.11 In the Langham Windfarm appeal decision²¹ the Inspector stated that

“The planning system controls development in the public interest, and not in the private interest. The preservation of open views is a private interest, which the planning regime is not intended to protect. But public and private interests may overlap. The issue is whether the number, size, layout and proximity of wind turbines would have such an overwhelming and oppressive visual impact on a dwelling and its amenity space that they would result in unsatisfactory Living Conditions, and so unacceptably affect amenities and the use of land and buildings which ought to be protected in the public interest.”

Enifer Downs Windfarm

A1.12 The issue of Residential Visual Amenity was first addressed by Inspector Lavender in the Enifer Downs appeal decision²² in which he observed that:

“when turbines are present in such number, size and proximity that they represent an unpleasantly overwhelming and unavoidable presence in main views from a house or garden, there is every likelihood that the property concerned would come to be widely regarded as an unattractive and thus unsatisfactory (but not necessarily uninhabitable) place in which to live.”

A1.13 In coming to his decision Inspector Lavender considered the extent to which:

- the visual experience from the dwelling and garden may be comparable to “actually living within the turbine cluster” rather than a turbine cluster being present close by; or
- the experience of the turbines is “unpleasantly overwhelming and unavoidable”.

Carland Cross Windfarm

A1.14 In the subsequent Carland Cross decision²³ Inspector Lavender elaborated and qualified his position stating:

“The planning system is designed to protect the public rather than private interests, but both interests may coincide where, for example, visual intrusion is of such magnitude as to render a property an unattractive place in which to live. This is because it is not in the public interest to create such living conditions where they did not exist before. Thus I do not consider that simply being able to see a turbine or turbines from a particular window or part of the garden of a house is sufficient reason to find the visual impact unacceptable (even though a particular occupier might find it objectionable).”

²¹ Langham Windfarm, Appeal Decision APP/D2510/A/10/2130539. 29th September 2011

²² Enifer Downs Windfarm, Appeal Decision APP/X2220/A/08/2071880. 28th April 2009

²³ Carland Cross Windfarm, Appeal Decision APP/D0840/A/09/2103026 19th Jan 2010

Preston New Road Exploration Works (Appeal A)

A1.15 In the Preston New Road (Appeal A) fracking development appeal case²⁴ the Secretary of State agreed with the Inspector stating in the decision letter:

“For the reasons given at IR12.117-12.120, the Secretary of State agrees with the Inspector that the proposal would not affect the outlook of any residential property to such an extent that it would be so unpleasant, overwhelming and oppressive that it would become an unattractive place to live (IR12.118).”

²⁴ Preston New Road Exploration Works Secretary of State Decision (Appeal A) (APP/Q2371/W/15/3134386), 6th October 2016

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Landscape Institute
107 Grays Inn Road
London WC1X 8TZ

www.landscapeinstitute.org

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Appendix 2 – Residential Amenity Figures

SIX56 | WARRINGTON


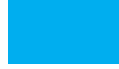
Stage 02
Appendix 2 - Residential Amenity Figures
July 2020

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1.0 WIDER CONTEXT
500m Offset
Residential Viewpoint Locations

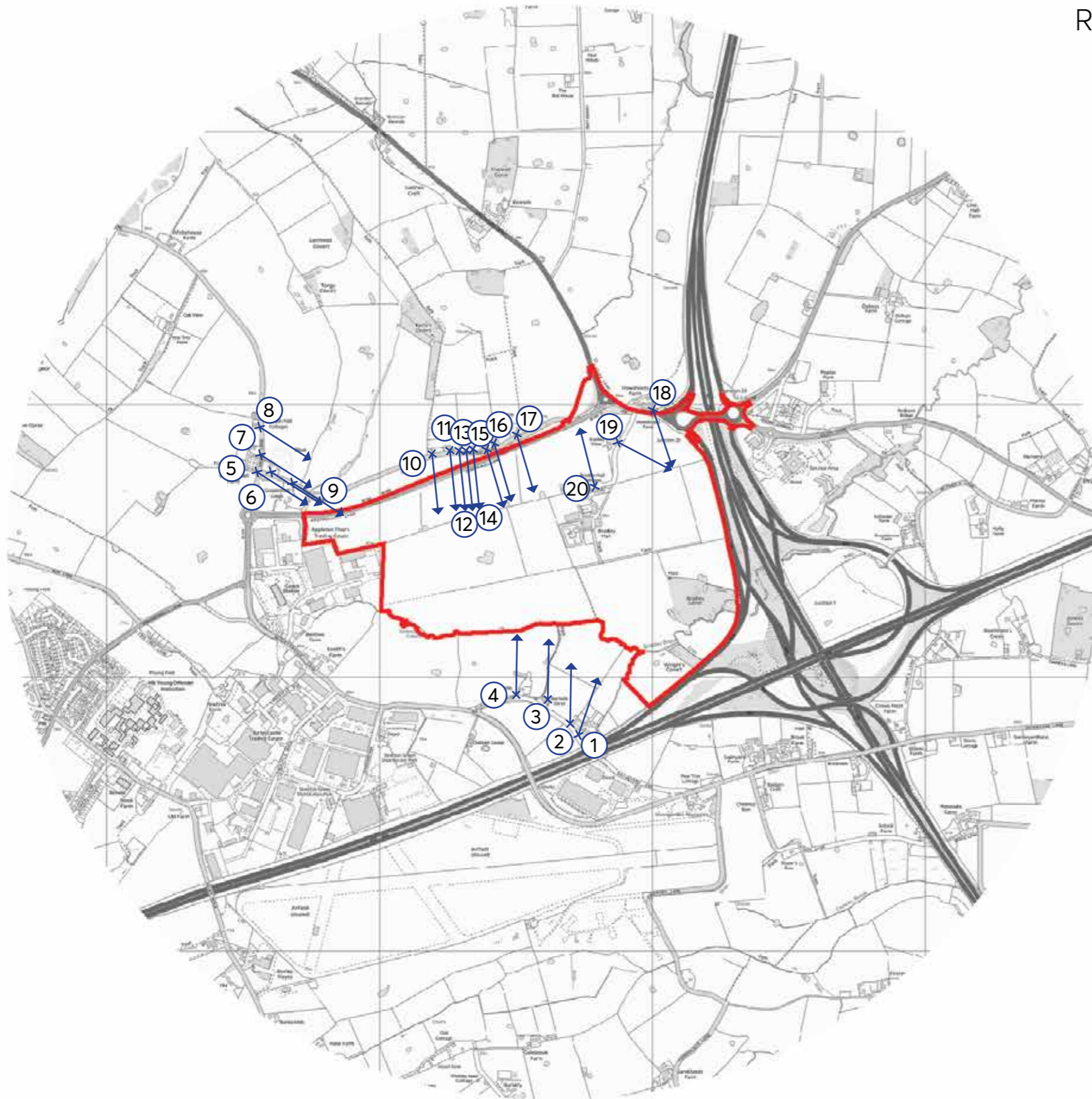


KEY


-  Six56, Warrington site boundary
-  <500m Offset

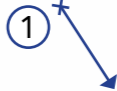
LANDSCAPE FIGURES

RESIDENTIAL VIEWPOINT LOCATIONS



KEY

 Six56, Warrington site boundary

 Residential viewpoint location

Viewpoint	Description
Viewpoint 1	Tan House Farm, Cattery
Viewpoint 2	The Barn, Tan House Farm, Cattery
Viewpoint 3	Birchels Gorse
Viewpoint 4	Barley Castle Farm
Viewpoint 5	Reddish Hall Farm
Viewpoint 6	Grappenhall Ridge
Viewpoint 7	Buttyfold
Viewpoint 8	1 - 4 Reddish Hall Cottages
Viewpoint 9	Grappenhall Lodge Travellers Site
Viewpoint 10	1 & 2 Ivy Cottage
Viewpoint 11	Southcott
Viewpoint 12	Hunters Lodge and Hunters Croft Lane
Viewpoint 13	Manor Farm
Viewpoint 14	Croftside
Viewpoint 15	The Bungalow
Viewpoint 16	No. 5 & 7 Cartridge Lane
Viewpoint 17	Cliffane Farm
Viewpoint 18	Howshoot Farm
Viewpoint 19	Bradley View
Viewpoint 20	Bradley Hall Cottages

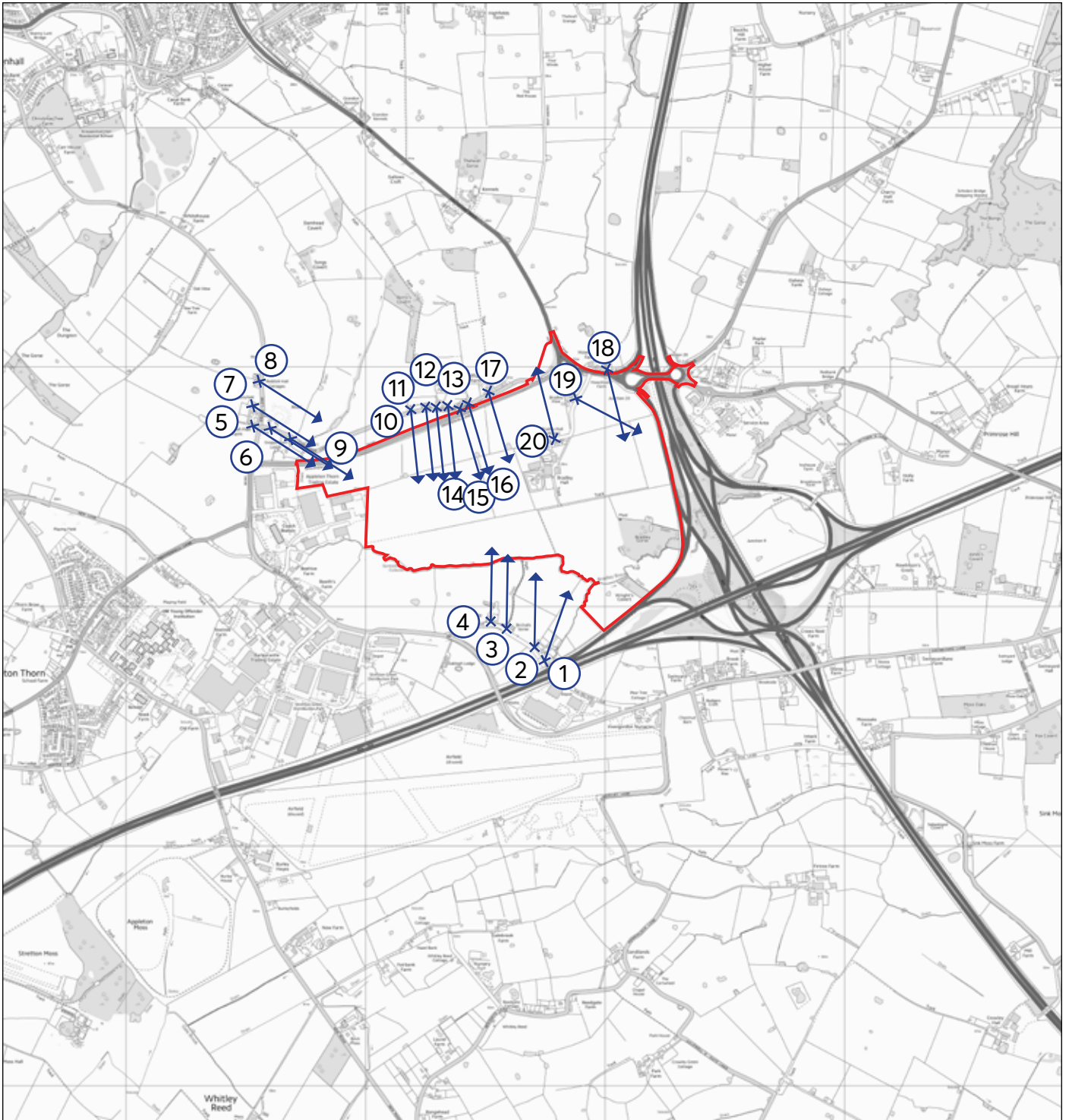
Appendix 3 – Residential Assessment Survey

SIX56 | WARRINGTON

Appendix 3 - Residential Assessment Survey
STAGE 02
July 2020

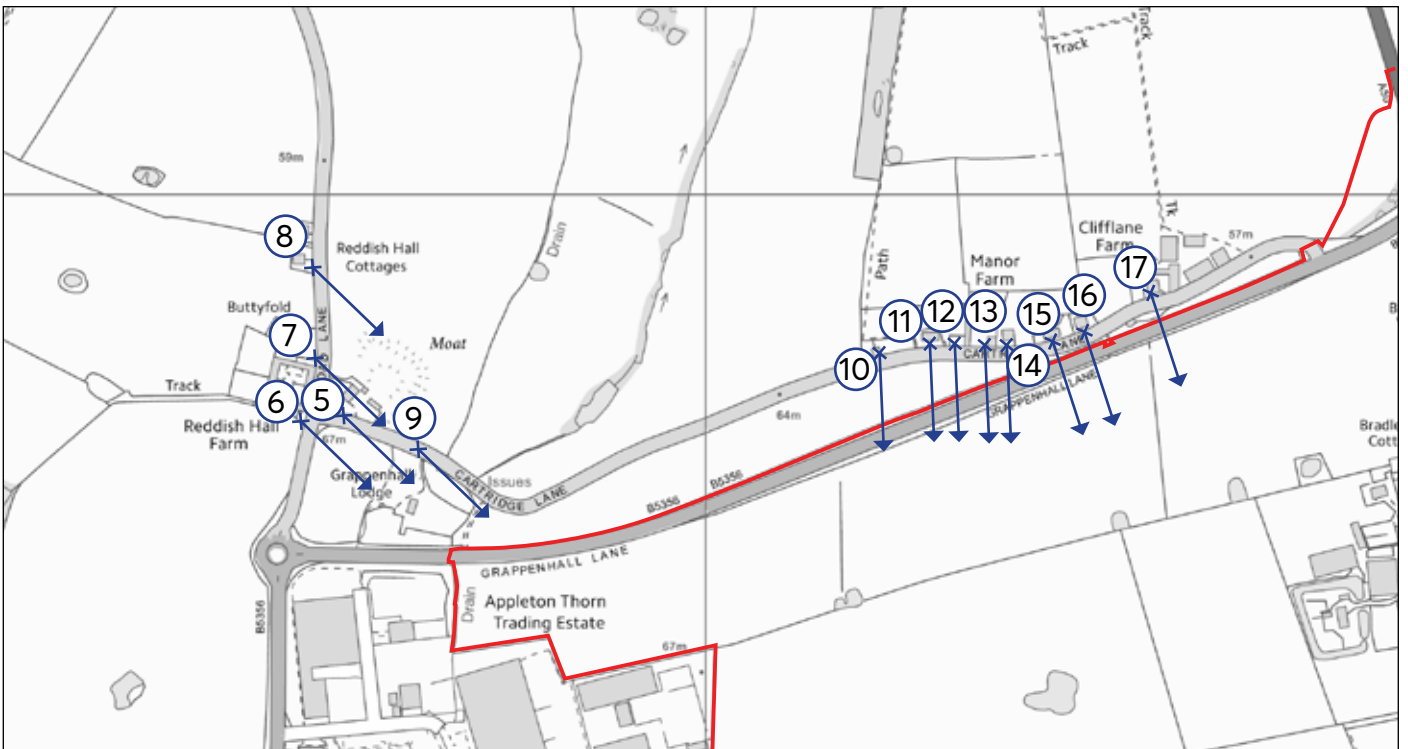
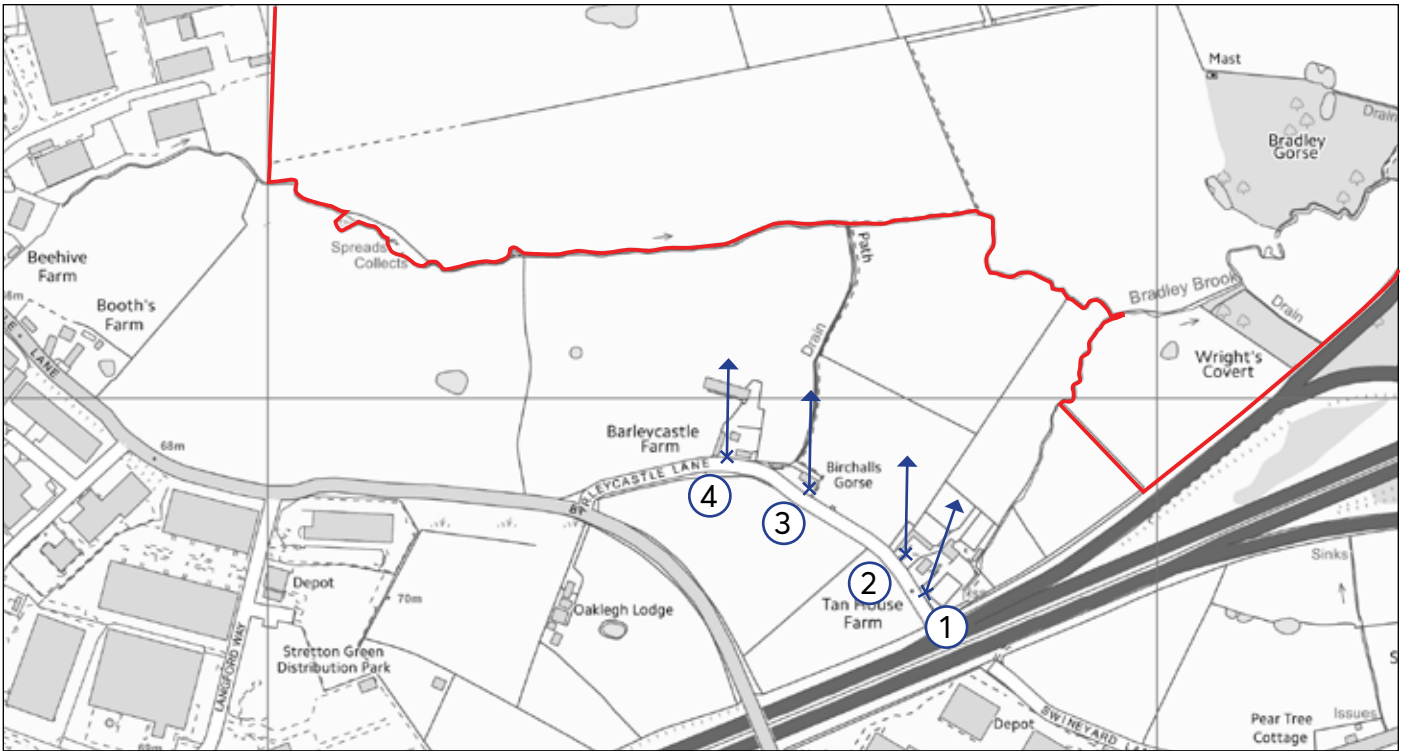
RESIDENTIAL ASSESSMENT SURVEY FORM 1.0

PROPERTY LOCATIONS



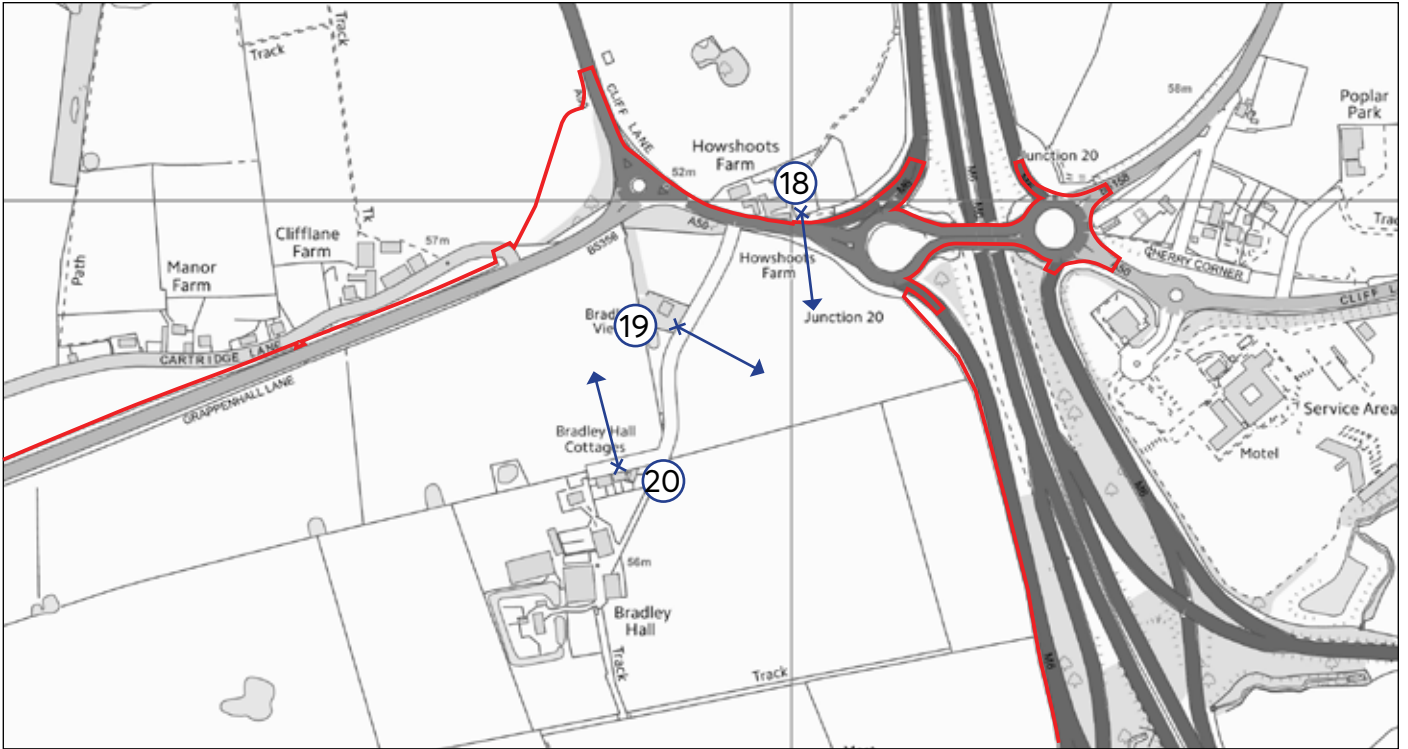
RESIDENTIAL ASSESSMENT SURVEY FORM 1.1

PROPERTY LOCATIONS



RESIDENTIAL ASSESSMENT SURVEY FORM 1.2

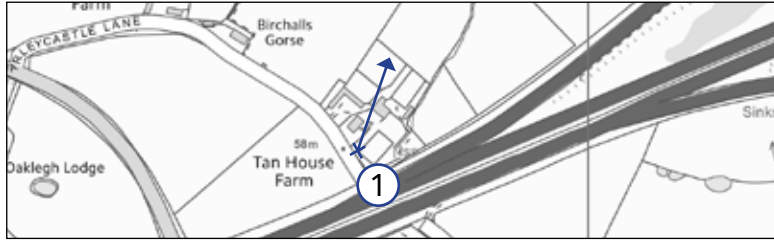
PROPERTY LOCATIONS



RESIDENTIAL ASSESSMENT SURVEY FORM 2.0

VIEWPOINT 1

LOCATION
(Plan)



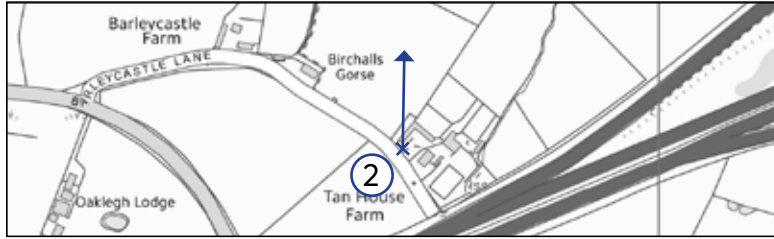
View taken from publicly accessible area in front of the property. Site boundary to the rear of property.

VIEWPOINT 1	Tan House Farm Cattery, Barleycastle Lane		
No. of Properties	1	Orientation of Properties	southwest-northeast
Distance From Site	350m	Direction of View towards site	northwest-northeast
Description of Existing Views	Located close to the M6 northbound carriageway and Lymm interchange slip road, although partially filtered with boundary vegetation when in leaf. Views northward are across fields towards Bradley Brook, although largely screened by outbuildings and the adjacent property (2). Views southwards are partially screened by garden vegetation and are less panoramic due to M6 boundary vegetation and the elevated crossing of the M6 of the redirected Barleycastle Lane/Swineyard Lane.		
Predicted Change in View	Plot 3 is located approximately 350m to the north with Plots 2 and 4 slightly further away. The brook will provide some filtering to the lower levels and perimeter screen planting is proposed. On completion, the new units will be clearly visible although from ground storey windows on the northern elevation of the property the effect is likely to be variable due to existing outbuildings. Boundary vegetation will establish and grow to provide greater screening and filtering to views but this will several years.		
Effect on Residential Amenity	<p>Magnitude: Moderate Significance of Effects: Moderate High Adverse</p> <p>Views southwards remain unchanged by the development. Views northwards will be affected but are in part screened by large outbuildings and are also heavily influenced and framed by the close proximity of the M6 and Lymm interchange slip road boundary vegetation. The distance to the development, combined with the existing and proposed visual buffer provided by fields and existing vegetation results in the assessment concluding that the RVA threshold is not reached.</p>		

RESIDENTIAL ASSESSMENT SURVEY FORM 2.1

VIEWPOINT 2

LOCATION
(Plan)



View taken to the side of the property from publicly accessible area.

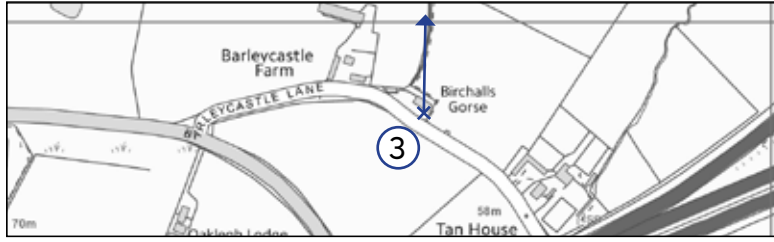


VIEWPOINT 2	The Barn, Tan House Farm Cattery		
No. of Properties	2	Orientation of Properties	southwest-northeast and northwest -southeast
Distance From Site	310m	Direction of View towards site	northwest - northeast
Description of Existing Views	The properties are arranged in an 'L' shaped configuration around a central courtyard. Views east and south are largely focused on the courtyard with the neighbouring property (1) dominating the near ground to the east. Views northwards are across a rear garden and fields towards Bradley Brook with vegetation running north-south from the brook providing additional filtering of views towards the Lymm Interchange slip road. Views westerly are along across fields with vegetation hedgerow to Barleycastle Lane framing the view towards the nearby property of Birchalls Gorse (3) with roofs associated with buildings within the Appleton Thorn trading estate visible on the horizon but heavily filtered by field boundary vegetation.		
Predicted Change in View	Plot 3 is located approximately 310m to the north with Plots 2 and 4 slightly further away. The brook will provide some filtering to the lower levels and perimeter screen planting is proposed. On completion, however, the new units will be clearly visible from the northward facing property. Similarly for the west facing property, views will be open but more towards Plot 4 located approximately 400m away. South facing, gable end windows, overlook Barleycastle Lane and the fields beyond. Existing boundary vegetation will establish and grow to provide greater screening and filtering to views but this will take several years to mature sufficiently.		
Effect on Residential Amenity	Magnitude: High Significance of Effects: High Adverse Views southwards remain unchanged by the development. Views northwards will be affected as Plots 3 and 4 in particular will be clearly visible above existing vegetation across a wide panorama. Views in a westerly/northwesterly direction will be similarly affected with Plot 4 visible across a large part of the view. The distance to the development, combined with the existing and proposed visual buffer provided by fields and existing vegetation results in the assessment concluding that the RVA threshold is not reached .		

RESIDENTIAL ASSESSMENT SURVEY FORM 2.2

VIEWPOINT 3

LOCATION
(Plan)



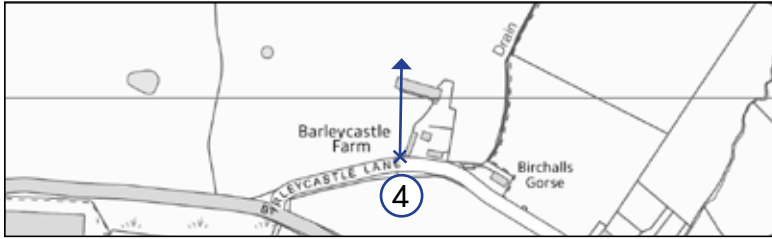
View taken to the rear of the property along the PROW Buxton FP23.

VIEWPOINT 3	Birchels Gorse		
No. of Properties	1	Orientation of Properties	northeast - southwest
Distance From Site	290m	Direction of View to Proposed Development	northerly
Description of Existing Views	Views facing northwards are across open fields towards Bradley Brook and beyond with Bradley Copse visible on the horizon. Gantries associated with the Lymm interchange slip road are visible further to the east. Views south, are across the lane to open fields and vegetation on the embankment to the redirected Barley Castle Lane, which crosses the M6 to the southwest. High sided vehicles using the M56 and Lymm Interchange slip road may be glimpse when vegetation is out of leaf.		
Predicted Change in View	Views to the south and southwest will be unaffected by the development. Similar to the nearby properties along the lane (Viewpoints 1 and 2). Plot 3 is located approximately 290m to the north with Plots 2 and 4 slightly further away. The brook will provide some filtering to the lower levels and perimeter screen planting is proposed. On completion, however, the new units will be clearly visible. Existing boundary vegetation will establish and grow to provide greater screening and filtering to views but this will take several years to mature sufficiently.		
Effect on Residential Amenity	<p>Magnitude: High Significance of Effects: High Adverse</p> <p>Views northwards will be affected as Plots 3 and 4 in particular, will be clearly visible above existing vegetation across a wide panorama. Views in a westerly/northwesterly direction will be similarly affected with Plot 4 visible across a large part of the view. The distance to the development, combined with the existing and proposed visual buffer provided by fields and existing vegetation results in the assessment concluding that the RVA threshold is not reached.</p>		

RESIDENTIAL ASSESSMENT SURVEY FORM 2.3

VIEWPOINT 4

LOCATION
(Plan)



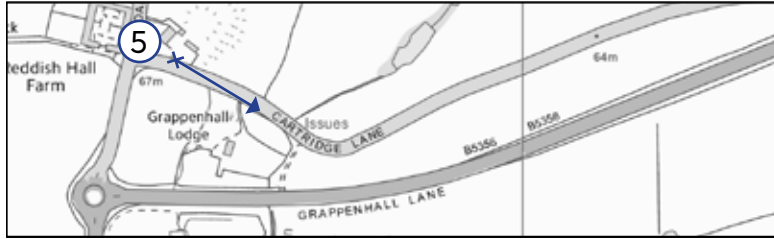
View taken to the side of the property along Barleycastle Lane.

VIEWPOINT 4	Barley Castle Farm		
No. of Properties	1	Orientation of Properties	north-south
Distance From Site	270m	Direction of View to Proposed Development	northwards
Description of Existing Views	<p>A two storey property, views southwards are largely screened at ground level by a boundary hedgerow to Barleycastle Lane, with upper storey windows likely to have views across the lane and onto a field with boundary planting to the re-directed lane which passes over the M56 as well as boundary planting to the M56 with both forming a middle ground backdrop. High sided vehicles are visible on the M56 when vegetation is out of leaf. Views northwards are across a rear garden with managed boundary hedging to open fields towards Bradley Brook and beyond with Bradley Copse and Barry's Covert visible on the horizon. A low shed and outbuildings to the west and northwest corner of the property screen views channelling them north and north eastwards. Views eastwards are more limited with fewer and smaller windows with boundary hedging screening ground floor windows, but a gable end window provides views east towards property 3 with oblique views south easterly across open fields to the M56 and north easterly across open fields and woodland blocks in the distance.</p>		
Predicted Change in View	<p>Views to the south and west will be unaffected by the development. Plot 4 is located approximately 250m to the north with Plot 3 slightly further away to the northeast. The brook will provide some filtering to the lower levels and perimeter screen planting is proposed. On completion, however, the new units will be clearly visible. Existing boundary vegetation will establish and grow to provide greater screening and filtering to views, but this will take several years to mature sufficiently.</p>		
Effect on Residential Amenity	<p>Magnitude: High Significance of Effects: High Adverse Only views northwards will be affected as Plots 4 and 3 in particular, will be clearly visible above existing vegetation and across a wide panorama with Plot 4 visible across a large part of the view. The distance to the development, combined with the existing and proposed visual buffer provided by fields and existing vegetation results in the assessment concluding that the RVA threshold is not reached.</p>		

RESIDENTIAL ASSESSMENT SURVEY FORM 2.4

VIEWPOINT 5

LOCATION
(Plan)



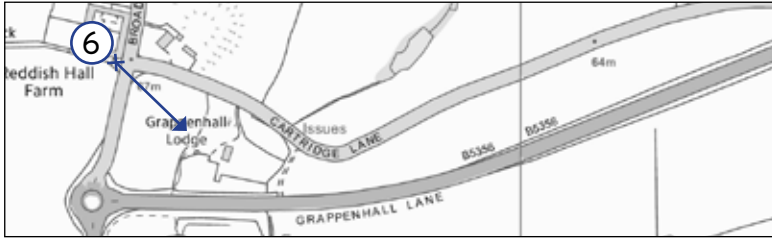
View taken to the front of the property at the junction of Broad Lane and Cartridge Lane facing towards the site boundary.

VIEWPOINT 5	Reddish Hall Farm		
No. of Properties	1	Orientation of Properties	northeast-southwest
Distance From Site	210m	Direction of View to Proposed Development	south-eastwards
Description of Existing Views	A two storey property, south-westerly views are across a lawn and mature boundary trees to Cartridge Lane and Broad Lane with open agricultural fields. To the south large units on the edge of Appleton Thorn Industrial Park are visible. To the southeast, boundary vegetation to Grappenhall Lodge and field vegetation including northwards to Barry's Covert screens views. Views to the west are screened by the property of Grappenhall Ridge. Views northwards are across agricultural land with extensive boundary vegetation and small woodlands with distant hills on the horizon. Small gable end windows and wider windows on the south-western elevation exist although the latter is partially screened by outbuildings.		
Predicted Change in View	Due to the presence of existing vegetation to the west of the property it is likely that only heavily filtered views of the upper portions of proposed units in particular plots 6, 7, will be visible. Views in all other directions will remain unaffected by the proposed development.		
Effect on Residential Amenity	<p>Magnitude: Minor Significance of Effects: Moderate Adverse</p> <p>Due to the distance to the development, the presence of existing vegetation and the main orientation of views from the property the assessment concludes that the RVA threshold is not reached.</p>		

RESIDENTIAL ASSESSMENT SURVEY FORM 2.5

VIEWPOINT 6

LOCATION
(Plan)



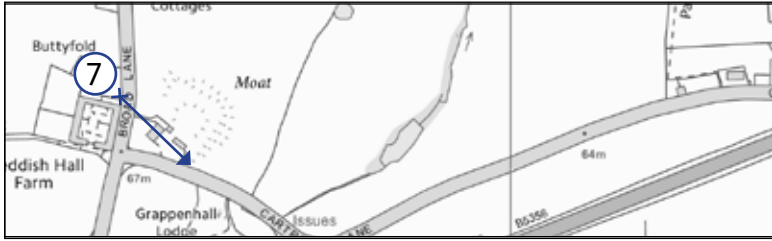
View taken to the front of the property across the junction of Broad Lane and Cartridge Lane

VIEWPOINT 6	Grappenhall Ridge		
No. of Properties	4	Orientation of Properties	Square arranged around internal courtyard. Access through southern elevation
Distance From Site	250m	Direction of View to Proposed Development	East in a part single storey development.
Description of Existing Views	A single storey barn style conversion and two storey building abutting Broad Lane, small windows face to the east and onto Broad Lane with property 6 across the road. There are similarly small windows on the southern elevation but there are fewer where views are across open fields with woodland further south forming the backdrop framed by the boundary hedge along Broad Lane. Views west are across private gardens and onto open fields and woodland. Views to the north are limited due to the presence of the adjacent property (7) which also has mature boundary vegetation.		
Predicted Change in View	Only the eastern elevation has the potential to view the development but similar to property 7 this is likely to be heavily filtered. It is assumed that as they face onto the road that visibility from them is controlled or limited for privacy.		
Effect on Residential Amenity	<p>Magnitude: Negligible Significance of Effects: Minor Adverse</p> <p>Due to the distance to the development, the presence of existing vegetation and the relatively small windows orientated towards the development, the assessment concludes that the RVA threshold is not reached.</p>		

RESIDENTIAL ASSESSMENT SURVEY FORM 2.6

VIEWPOINT 7

LOCATION
(Plan)



View taken to the front of the property along Broad Lane

VIEWPOINT 7	Buttyfold		
No. of Properties	1	Orientation of Properties	east - west
Distance From Site	310m	Direction of View to Proposed Development	eastwards
Description of Existing Views	A two storey house with the front elevation to Broad Lane set back across lawns and garden with mature trees and shrubs bordering the lane. The middle ground is formed by agricultural fields with vegetation running north-south along field boundaries and a water course filtering views to the east. To the south property 6 contains views with west across private garden backing on to fields with woodland visible beyond. Views to the north east potential from upper storey windows across wooded agricultural land with urban development associated with the Greater Manchester conurbation and the Pennine mountain range.		
Predicted Change in View	Only the eastern elevation has the potential to view the development but similar to property 6 this is likely to be heavily filtered by near and middle ground vegetation with only a small portion of upper rooflines of the proposed development potentially visible.		
Effect on Residential Amenity	<p>Magnitude: Negligible Significance of Effects: Minor Adverse</p> <p>Due to the distance to the development and the presence of existing vegetation providing screening the assessment concludes that the RVA threshold is not reached.</p>		

RESIDENTIAL ASSESSMENT SURVEY FORM 2.7

VIEWPOINT 8

LOCATION
(Plan)



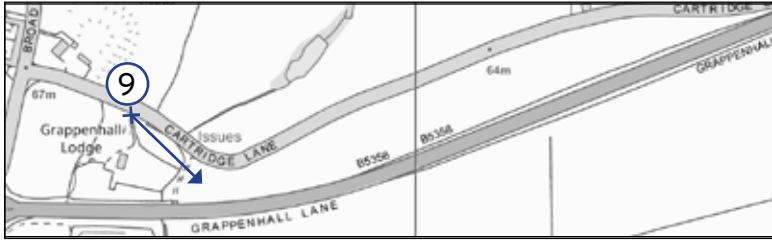
View taken to the front of N° 1 Broad Lane

VIEWPOINT 8	1-4 Reddish Hall Cottages		
No. of Properties	4	Orientation of Properties	east-west
Distance From Site	380m	Direction of View to Proposed Development	eastwards
Description of Existing Views	A group of a detached and semi-detached two storey house set back from Broad Lane by shallow gardens and managed hedges, views eastwards are across the front gardens and Broad Lane onto large, open agricultural fields with dense boundary and woodland providing a middle ground horizon. The most easterly unit within Appleton Thorn Trading Estate is just visible. North and north easterly the topography drops opening up views towards the western side of the Greater Manchester conurbation and Pennine range in the far distance. Northwards is similarly open across fields with the settlement of Grappenhall in part visible through breaks in mature woodland and boundary vegetation with scattered properties in closer proximity. Tall buildings within Warrington may be glimpsed to the north west. Views west are across rear gardens towards fields with a backdrop of mature hedgerow and woodland. Views south are towards adjacent properties. The relatively high location of these properties provides a wide panorama.		
Predicted Change in View	Only views from the eastern/front elevation of the properties which have small panelled or sash style windows have the potential to view the proposed development. It is likely that views of the development will be heavily filtered by existing vegetation but that the upper portions and rooflines of the parts of the proposed development will be visible particularly, when vegetation is out of leaf and where existing vegetation is thinnest.		
Effect on Residential Amenity	<p>Magnitude: Minor Significance of Effects: Moderate Adverse</p> <p>Due to the distance to the development and the presence of existing vegetation providing screening the assessment concludes that the RVA threshold is not reached.</p>		

RESIDENTIAL ASSESSMENT SURVEY FORM 2.8

VIEWPOINT 9

LOCATION
(Plan)



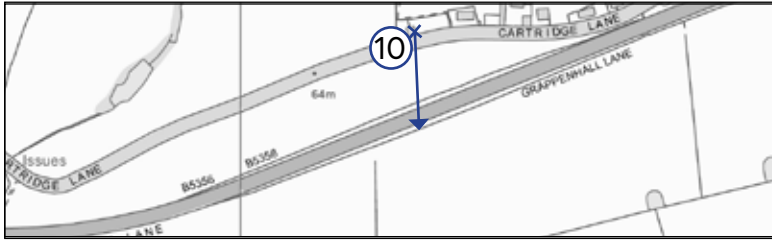
View taken to the front of the property along Cartridge Lane

VIEWPOINT 9	Grappenhall Lodge Travellers Site		
No. of Properties	Approximately 5	Orientation of Properties	Variable
Distance From Site	45m	Direction of View to Proposed Development	Southwest
Description of Existing Views	Believed to be a collection of static units, views are likely to be heavily contained to within the site due to the dense perimeter vegetation although this is weaker on the western boundary where views are feasible across the existing fields.		
Predicted Change in View	Due to the close proximity of the site the development will be clearly visible, in particular Plots 4, 6 and 7, where the introduction of large buildings will be a noticeable change in the view although this is offset to some degree with the close proximity of the Trading Estate to the south. Due to the variable orientation of lodges within the site, it is likely that not all be affected to the same degree and maybe limited unless outlooks are orientated towards the development.		
Effect on Residential Amenity	Magnitude: Moderate Significance of Effects: Moderate High Adverse Due to the variable nature of building orientation and the existing close proximity of a similar land use, the assessment concludes that the RVA threshold is not reached .		

RESIDENTIAL ASSESSMENT SURVEY FORM 2.9

VIEWPOINT 10

LOCATION
(Plan)



View taken to the front of the property along Cartridge Lane

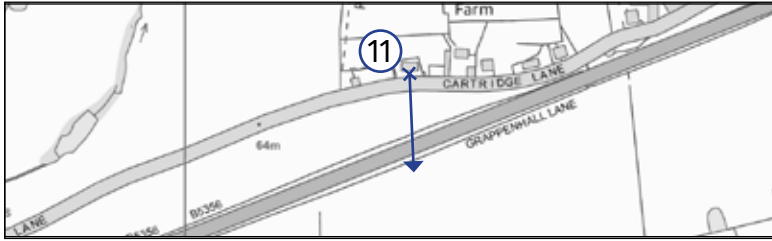


VIEWPOINT 10	1 & 2 Ivy Cottage		
No. of Properties	2	Orientation of Properties	north-south
Distance From Site	65m	Direction of View to Proposed Development	south
Description of Existing Views	Two storey semi-detached property which has minimal frontage with direct views south across Cartridge Lane and across a narrow field separating the properties from the busy B5356 Grappenhall Lane, beyond which are existing open fields although the latter will generally only be visible from upper storey windows due to hedgerow vegetation and the gently rolling nature of the topography. Tree cover is relatively sparse. Views west are across open fields with mature field vegetation and trees forming a backdrop to the middle ground. Wide panoramic views are available to the north due to the higher elevation across rear gardens across open fields sloping down towards abundant woodland visible in the middle and far ground. Distant views are available to the north east towards high ground north of Bolton believed to be Rivington Pike. Views north are contained by dense garden vegetation and the adjacent property.		
Predicted Change in View	Views from small panelled windows on the southern elevations of the properties will experience significant change. Large units will extend across virtually the entire panorama and will be skylined as well as in close proximity. Proposed boundary vegetation will mature eventually to soften views of the buildings but the it will also be skylined foreshortening the current view.		
Effect on Residential Amenity	<p>Magnitude: Substantial Significance of Effects: Substantial Adverse</p> <p>Whilst views to the south are significantly and adversely affected, the wide panoramic views to the north remain unaffected and a degree of separation exists with the existing field between. In view of this the assessment concludes that the RVA threshold is not reached.</p>		

RESIDENTIAL ASSESSMENT SURVEY FORM 2.10

VIEWPOINT 11

LOCATION
(Plan)



View taken to the front of the property along Cartridge Lane

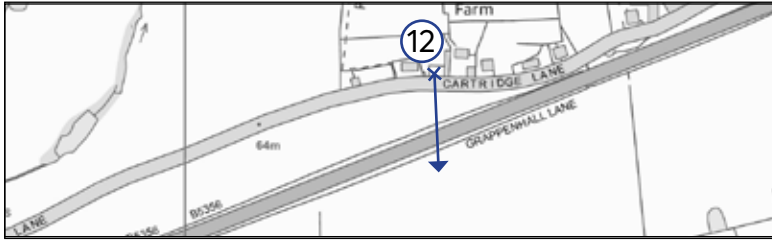


VIEWPOINT 11	Southcott		
No. of Properties	1	Orientation of Properties	north-south
Distance From Site	60m	Direction of View to Proposed Development	south
Description of Existing Views	Similar to property 10 with views south across Cartridge Lane and Grappenhall Lane with fields beyond. The property is single storey and is set back from Cartridge Lane with a front garden and mature hedge to the majority of the boundary filtering views southwards. Views east and west are contained by mature garden vegetation but views north are, in part, contained by boundary hedging but also potentially wide and panoramic.		
Predicted Change in View	Only views from the southern elevation will be affected although the western portion of the property is heavily screened by the existing boundary hedgerow. Nevertheless, from some windows similar to the preceding properties along Cartridge Lane, viewers will experience significant change. Large units will extend across virtually the entire panorama and will be skylined as well as in close proximity. Proposed boundary vegetation will mature eventually to soften views of the buildings but the it will also be skylined foreshortening the current view.		
Effect on Residential Amenity	<p>Magnitude: Substantial Significance of Effects: Substantial Adverse</p> <p>Whilst some views to the south from the property are likely to be significantly and adversely affected, the wide panoramic views to the north remain unaffected. In view of this the assessment concludes that the RVA threshold is not reached.</p>		

RESIDENTIAL ASSESSMENT SURVEY FORM 2.11

VIEWPOINT 12

LOCATION
(Plan)



View taken on the driveway of both properties along Cartridge Lane

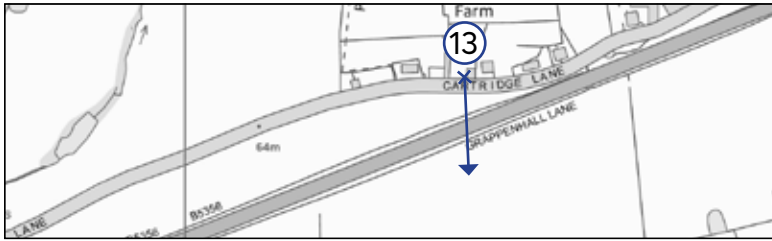


VIEWPOINT 12	Hunters Lodge and Hunters Croft Lane		
No. of Properties	2	Orientation of Properties	east west and north south
Distance From Site	50m	Direction of View to Proposed Development	south
Description of Existing Views	Hunters Croft is a two storey barn style conversion and is aligned north-south with the main elevations to the west across garden and towards the adjacent property 11 with more limited windows looking east over an internal courtyard shared with Manor Farm. The south facing gable along Cartridge Lane is windowless. The separate lodge is two storey with roof windows located further to the north and is oriented east-west with views south across the garden of Hunters Croft and Southcott with boundary hedging to the lane filtering views further south. Views north are across open fields with the panoramic views afforded from this elevated location.		
Predicted Change in View	Views west and east from Hunters Croft will experience change due to the close location of large units within the development but these will be viewed obliquely and are more likely to affect views from within the garden and courtyard areas. Views south from Hunters Lodge will be more direct from the northern elevation but framed and contained by the adjacent residencies. Views north will remain unaffected.		
Effect on Residential Amenity	<p>Croft: Magnitude: Substantial Significance of Effects: Substantial Adverse</p> <p>Lodge: Magnitude: Moderate Significance of Effects: Moderate High Adverse</p> <p>Due to the orientation of the Croft and the distance separation and restricted views from the Lodge, the assessment concludes that the RVA threshold is not reached.</p>		

RESIDENTIAL ASSESSMENT SURVEY FORM 2.12

VIEWPOINT 13

LOCATION
(Plan)



View taken to the front of the properties along Cartridge Lane

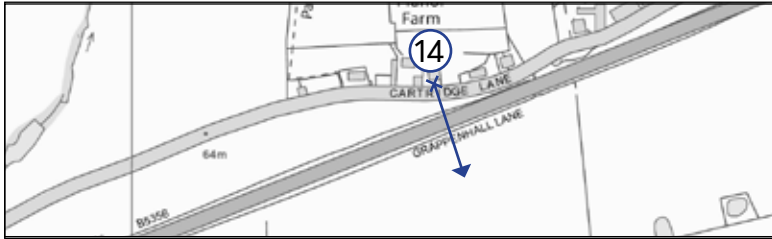


VIEWPOINT 13	Manor Farm		
No. of Properties	2	Orientation of Properties	north-south and east-west
Distance From Site	35m	Direction of View to Proposed Development	south
Description of Existing Views	The larger central unit which is orientated east west has windows on all floors which overlook a shared courtyard with the adjacent property 12 and the adjacent north south orientated building. The latter has gable end windows facing Cartridge Lane as well as windows in the western elevation which overlook the courtyard between it and the adjacent property 12. The eastern elevation has considerably less windows facing a small courtyard garden. Views north from the larger unit are across a garden and across open fields with a panoramic view offered at this elevation.		
Predicted Change in View	The southern elevation of the main unit will experience direct views onto the development, but these will be framed and contained by the adjacent properties. The gable end windows to the adjacent building will also experience direct views of the development as will users of the central courtyard. Large units will extend across the view and will be skylined as well as in close proximity. Proposed boundary vegetation will mature eventually to soften views of the buildings but it will also be skylined, foreshortening the current view. Views from the smaller unit will also experience oblique views of the development primarily from the western elevation. Views north will remain unaffected.		
Effect on Residential Amenity	<p><u>Main building:</u> Magnitude: Substantial Significance of Effects: Substantial Adverse</p> <p><u>Secondary:</u> Magnitude: High Significance of Effects: High Adverse</p> <p>Due to the distance separation and restricted views from the larger building where views north are not affected together with the limited effect upon the majority of what would be oblique views from the adjacent building, the assessment concludes that the RVA threshold is not reached.</p>		

RESIDENTIAL ASSESSMENT SURVEY FORM 2.13

VIEWPOINT 14

LOCATION
(Plan)



View taken to the front of the properties along Cartridge Lane

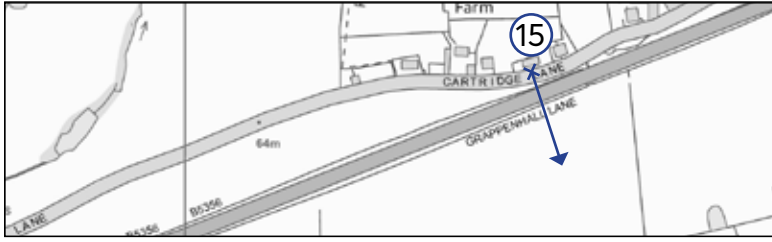


VIEWPOINT 14	Croftside		
No. of Properties	1	Orientation of Properties	east-west
Distance From Site	30m	Direction of View to Proposed Development	south
Description of Existing Views	The property is a single storey but with roof windows on the southern elevation. Views south are across a shallow lawn and boundary hedge over Cartridge Lane, a narrow field and the busy B5356 Grappenhall Lane, beyond which, are existing open fields, although the latter will generally only be visible from upper roof windows. Views east are generally limited by garden and boundary vegetation with views north across a large garden and the fields and woodland beyond. Views west are contained by the adjacent and close proximity of property 13.		
Predicted Change in View	Views from windows on the southern elevations of the property will experience significant change. Large units will extend across virtually the entire panorama to the south and south west and will be skylined as well as in close proximity. Proposed boundary vegetation will mature eventually to soften views of the buildings but the it will also be skylined, foreshortening the current view. Views south east and east are likely to be heavily screened, particularly by vegetation in leaf. Views north remain unaffected.		
Effect on Residential Amenity	<p>Magnitude: Substantial Significance of Effects: Substantial Adverse</p> <p>Whilst views to the south are significantly and adversely affected, the wide panoramic views across a large garden to the north remain unaffected. In view of this the assessment concludes that the RVA threshold is not reached.</p>		

RESIDENTIAL ASSESSMENT SURVEY FORM 2.14

VIEWPOINT 15

LOCATION
(Plan)



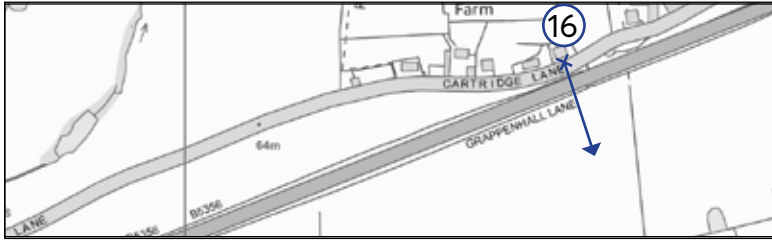
View taken to the front of the properties along Cartridge Lane

VIEWPOINT 15	The Bungalow		
No. of Properties	1	Orientation of Properties	south-west
Distance From Site	20m	Direction of View to Proposed Development	south
Description of Existing Views	A single storey building with extensive panelled windows on the southern elevation. Views south are over a shallow garden and boundary hedge, over Cartridge Lane are an increasingly narrow field and the busy B5356 Grappenhall Lane, beyond which are existing open fields with woodland visible on the horizon believed to be Bradley Copse to the south east and boundary vegetation to the M56 due south. A low voltage overhead transmission line is also visible. View east and west are constrained by the adjacent properties and mature trees along the lane. Views north are across garden but are contained by a dense copse.		
Predicted Change in View	Views from small panelled windows on the southern elevations of the properties will experience significant change. Large units will extend across virtually the entire panorama and will be skylined as well as in close proximity. Proposed boundary vegetation will mature eventually to soften views of the buildings but this will also be skylined, foreshortening the current view.		
Effect on Residential Amenity	Magnitude: Substantial Significance of Effects: Substantial Adverse Whilst views to the south are significantly and adversely affected, the wide panoramic views to the north remain unaffected. In view of this the assessment concludes that the RVA threshold is not reached.		

RESIDENTIAL ASSESSMENT SURVEY FORM 2.15

VIEWPOINT 16

LOCATION
(Plan)



View taken to the front of the properties along Cartridge Lane

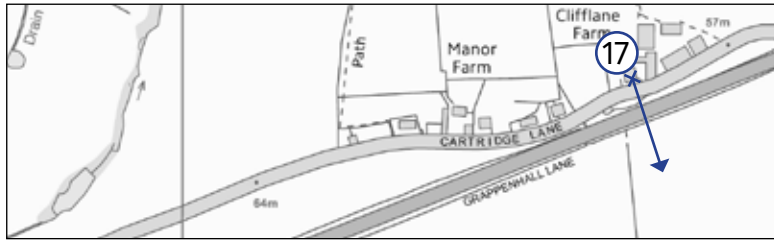


VIEWPOINT 16	No. 5 & 7 Cartridge Lane		
No. of Properties	2	Orientation of Properties	south-west
Distance from Site	15m	Direction of View to Proposed Development	south
Description of Existing Views	A two storey terrace with parking areas to the south and ground floor and first storey windows to the southern elevation. Views south are over Cartridge Lane, towards narrow copse and the busy B5356 Grappenhall Lane, beyond which are existing open fields with woodland visible on the horizon believed to be Bradley Copse to the south east and boundary vegetation to the M56 due south. A low voltage overhead transmission line is also visible. Views west are in part contained by the adjacent property 15 and mature boundary and garden vegetation, views east are towards the next property 17 and a dense copse separating the Cartridge Lane from Grappenhall Lane but views open out towards the north east. Views north are contained by a small but dense copse.		
Predicted Change in View	Views from windows on the southern elevation of the properties will experience significant change. Large units will extend across virtually the entire panorama and will be skylined as well as in close proximity. Existing vegetation will provide a degree of filtering and proposed boundary vegetation will mature eventually to soften views of the buildings but it will also be skylined, foreshortening the current view.		
Effect on Residential Amenity	<p>Magnitude: Substantial Significance of Effects: Substantial Adverse</p> <p>Views to the south are significantly and adversely affected whilst views to the west and east are oblique and will benefit from a degree of filtering from existing vegetation. Views to the north remain unaffected. There is an, albeit limited, degree of separation provided by the narrow copse and the existing and busy Grappenhall Lane but overall this assessment concludes that the RVA threshold is not reached.</p>		

RESIDENTIAL ASSESSMENT SURVEY FORM 2.16

VIEWPOINT 17

LOCATION
(Plan)



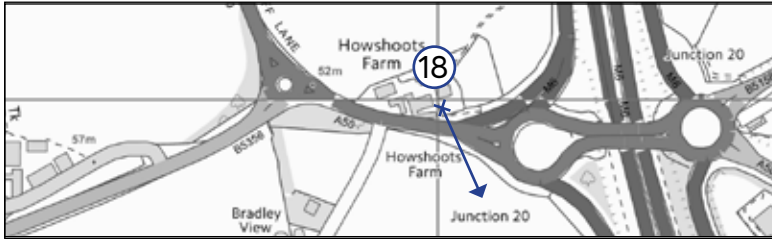
View taken to the front of the properties along Cartridge Lane

VIEWPOINT 17	Clifflane Farm		
No. of Properties	1	Orientation of Properties	east-west
Distance from Site	20m	Direction of View to Proposed Development	south
Description of Existing Views	The property is a two storey building with windows on the south elevation. Views are across a shallow garden and boundary wall with Cartridge Lane across a narrow copse separating it with Grappenhall Lane. Due to the slight elevation in topography to the south and overlapping boundary hedges, the fields further to the south are likely only visible from first storey windows. Views south east are partially screened by large barns and the copse by the roundabout with Grappenhall Lane and Cliff Lane. Views north are contained by adjacent buildings and views north-west and west are more open across a large garden onto open fields and towards woodland including Barry's Covert in the middle distance and the adjacent property 16.		
Predicted Change in View	Views from windows on the southern elevation of the property will experience significant change. Large units will extend across virtually the entire panorama and will be skylined as well in close proximity. Existing vegetation will provide a degree of filtering and proposed boundary vegetation will mature eventually to soften views of the buildings but the it will also be skylined, foreshortening the current view.		
Effect on Residential Amenity	<p>Magnitude: Substantial Significance of Effects: Substantial Adverse</p> <p>Views to the south are significantly and adversely affected whilst views to the west and east are oblique and will benefit from a degree of filtering from existing vegetation. Views to the north and north west remain unaffected. There is an, albeit limited, degree of separation provided by the existing copse and the existing and busy Grappenhall Lane and overall this assessment concludes that the RVA threshold is not reached.</p>		

RESIDENTIAL ASSESSMENT SURVEY FORM 2.15

VIEWPOINT 18

LOCATION
(Plan)



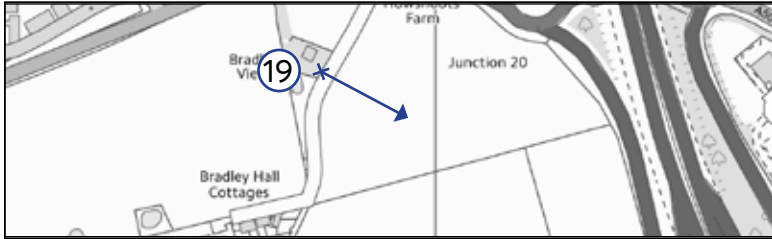
View taken to the front of the properties along the A50 Cliffe Lane

VIEWPOINT 18	Howshoots Farm		
No. of Properties	1	Orientation of Properties	east-west
Distance from Site	25m	Direction of View to Proposed Development	south and west
Description of Existing Views	The two storey residence is close to the busy Lymm Interchange roundabout grade separated above the M6. Views south are across Cliff Lane containing road signage and street lighting and towards a tall boundary hedgerow filtering views to open fields beyond. Views north are contained by large outbuildings, views east towards the interchange are largely screened by dense maturing vegetation. Views north are partially screened by nearby mature trees and a field group but otherwise open up, offering views across wooded agricultural land and towards the M6 with traffic and infrastructure including gantries and lighting likely visible.		
Predicted Change in View	Only the view south and west will be affected by the proposed development. The large units of Plots 1 and 2 will dominate the fore and middle ground, although perimeter planting will over time establish to increase the visual buffer offered by the existing hedgerow.		
Effect on Residential Amenity	<p>Magnitude: Substantial Significance of Effects: Substantial Adverse</p> <p>Whilst the proposed development is relatively close, the existing and busy road provides a degree of separation with the development. Existing views to the east, west and north remain unchanged and overall this assessment concludes that the RVA threshold is not reached.</p>		

RESIDENTIAL ASSESSMENT SURVEY FORM 2.17

VIEWPOINT 19

LOCATION
(Plan)



View taken to the front of the property from unnamed track

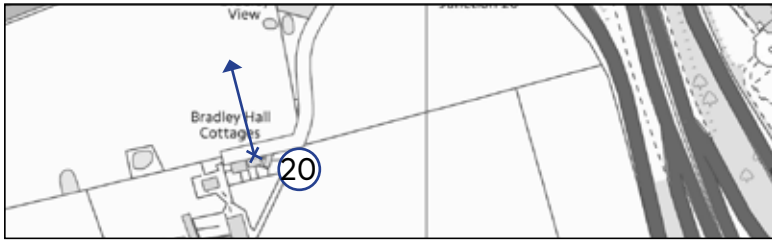


VIEWPOINT 19	Bradley View		
No. of Properties	1	Orientation of Properties	north-east south west
Distance from Site	7m	Direction of View to Proposed Development	360°
Description of Existing Views	<p>A two storey development within a large walled and fenced compound in the middle of fields within the north eastern corner of the site. Views south are towards Bradley Hall Cottages and Bradley Hall with mature trees along the middle ground. Bradley Copse and boundary planting along the M56 and Lymm Interchange slip road form the backdrop. To the east the Lymm Interchange slip road forms a vegetated backdrop with the existing copse close to Howshoots Farm and Cliff Lane providing a shortened vista to the north. Westerly views are towards the Appleton Thorn Trading Estate, across open fields and north easterly across the hedged boundary to the Site and Grappenhall Lane, with the tops of some residences along Cartridge Lane likely visible from first storey windows.</p>		
Predicted Change in View	<p>The predicted change to the view is anticipated to be considerable due to the property being located within an area that will be surrounded by development. New and large scale development is proposed in close proximity on its northern and eastern boundaries, (Plots 1 and 2). Western and southern views will also be dominated by new large scale buildings although at a greater distance. Due south will retain a degree of the existing vegetation cover surrounding the retained Bradley Hall Cottages and Bradley Hall.</p>		
Effect on Residential Amenity	<p>Magnitude: Substantial Significance of Effects: Substantial Adverse</p> <p>The proposed development surrounds the property, with the result that no view will be unchanged. Buffer planting is proposed around the property to provide some separation from the adjacent development. In view of this, whilst it is recognised that the change is significantly adverse, the assessment concludes that the RVA threshold is not reached.</p>		

RESIDENTIAL ASSESSMENT SURVEY FORM 2.18

VIEWPOINT 20

LOCATION
(Plan)



View taken to the front of the property from unnamed track

VIEWPOINT 20	Bradley Hall Cottages		
No. of Properties	7	Orientation of Properties	east-west and north-south
Distance from Site	6m	Direction of View to Proposed Development	Predominantly north and south also easterly
Description of Existing Views	The majority of properties are two stories and have views from their north and south elevations. Northwards, views are across fields towards Grapenhall Lane and will be open to the skyline as the topography drops to the north. The property at the eastern end of the group has views predominantly to the east, across open fields towards the Lymm Interchange slip road and boundary vegetation. Oblique views in a north westerly direction are also likely from upper storey windows. Views south and south westerly are across gardens but are largely contained by the farm buildings of Bradley Hall in close proximity.		
Predicted Change in View	The predicted change in view will be considerable with development surrounding the group. Whilst views to the south west will largely be retained to some extent, with the retention of Bradley Hall in the near ground, views south east, east, north and westerly will be radically changed by large scale development.		
Effect on Residential Amenity	<p>Magnitude: Substantial Significance of Effects: Substantial Adverse</p> <p>The proposed development retains a buffer zone around the properties and car parking areas, allowing the large buildings to be set a short distance from the properties, especially to the north and east (Plots 1 and 2, 30m and 110m respectively). Proposed wetland provides a buffer to plot 3. Views to the west are less direct but views will be available from gardens and front curtilage. In view of this, whilst it is recognised that the change is significantly adverse, the assessment concludes that the RVA threshold is not reached.</p>		

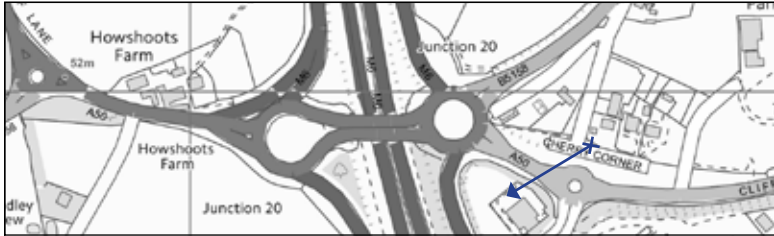
RESIDENTIAL ASSESSMENT SURVEY FORM 2.20

CHERRY CORNER AND SWINEYARD LANE

A number of properties within the 500m boundary have been discounted from this assessment due to the a number of elements including: the residential receptors facing away from the site boundary, distance between the site boundary and residential receptors; and heavy filtering of the development by existing built form and vegetation as well as both the M56 and M6 Motorways. In all cases it can concluded that the **RVA threshold would not be reached.**

CHERRY CORNER

LOCATION
(Plan)



SWINEYARD LANE

LOCATION
(Plan)



**Appendix 4.9 – Night Time Photography,
Six56, Warrington (July 2020)**

Night Time Photography

Six56

Warrington

July 2020

LAYER

Landscape
Institute
Registered
Practice

Introduction

Mike Spence BA (Hons), MLD, CMLI, REIA, FRGS is a one of the UK's leading independent exponents of technical photography, verified photomontages and visualisations. Since 2013 Mike has been a technical advisor to the Landscape Institute on 'photography and photomontage in landscape and visual impact assessment', and has been undertaking this work for over 25 years. He is one of the main technical authors of TGN 06/19 and provided technical support to Scottish Natural Heritage on their windfarm visualisation guidance. He has delivered workshops on night time photography through IEMA. His background as a Chartered Landscape Architect, Registered EIA Practitioner and Fellow of the Royal Geographic Society working on strategic infrastructure projects has meant that the accuracy of the visualisation work is paramount, and technical photography, together with extensive surveying experience and detailed 3D modelling using real world co-ordinates ensures that the visualisations produced follow a clear and transparent methodology to ensure they are as accurate as possible.

Recent projects include the UNESCO World Heritage Sites at Kew Royal Botanic Gardens, Fountains Abbey for The National Trust, and Derwent Valley Mills for Amber Valley Borough Council. Mike has also been working closely with Bath City Council on proposed development in the UNESCO World Heritage City of Bath. Mike's work and objective technical checks have been used at numerous Public Inquiries and Planning Hearings, on behalf of both local authorities and developers.

In June 2020 Layer contacted MSEnvironmental to request Night Time Technical Photography and GNSS/RTK Surveying for the proposed Six56 development.

Verified Photography

The photographs were taken with a full frame camera (Canon EOS 5D Mark IV) and 24mm lens combination consistent with the emerging understanding of the requirement for night-time technical photography.

As part of the work 4 viewpoints were identified providing views of the site and visited on 22, 23 & 24 June and 2 July 2020. The weather was good with clear visibility.



Technical Photography

The camera was mounted on a Manfrotto 303 SPH panoramic tripod head, levelled using a Manfrotto Leveller, supported on a Manfrotto Tripod. The tripod head was levelled using a spirit level, to avoid pitch and roll. The camera was set with the centre of the lens 1.60m above ground level. Photographs were taken in Manual mode with an aperture of f/6,3 or wider and a fixed focal length throughout. The panoramic tripod head was set with increments to give approximately 50% overlap

between frames. Photographs were taken in landscape format. From each photograph location a full field of view was taken centred around a nodal point. The nodal point was set to avoid any problems of foreground parallax. A Sigma 24mm f/1.4 lens was used for all viewpoint photographs.

Technical information for the camera locations is provided.

Surveying

The position of each camera location was surveyed using Spectra Precision GNSS equipment with Real Time Kinematic Correction (RTK) which achieves an accuracy down to 1cm in eastings, northings and height (metres Above Ordnance Datum). The equipment included Spectra Precision SP80 GNSS smart antennae with Mobile Mapper 20 data recorder. Points were saved using DigiTerra software. A photograph of the camera location was taken, and shown in Appendix 1.1.



Summary

This work has been undertaken in accordance with TGN 06/19 and the developing understanding of night-time photography work.

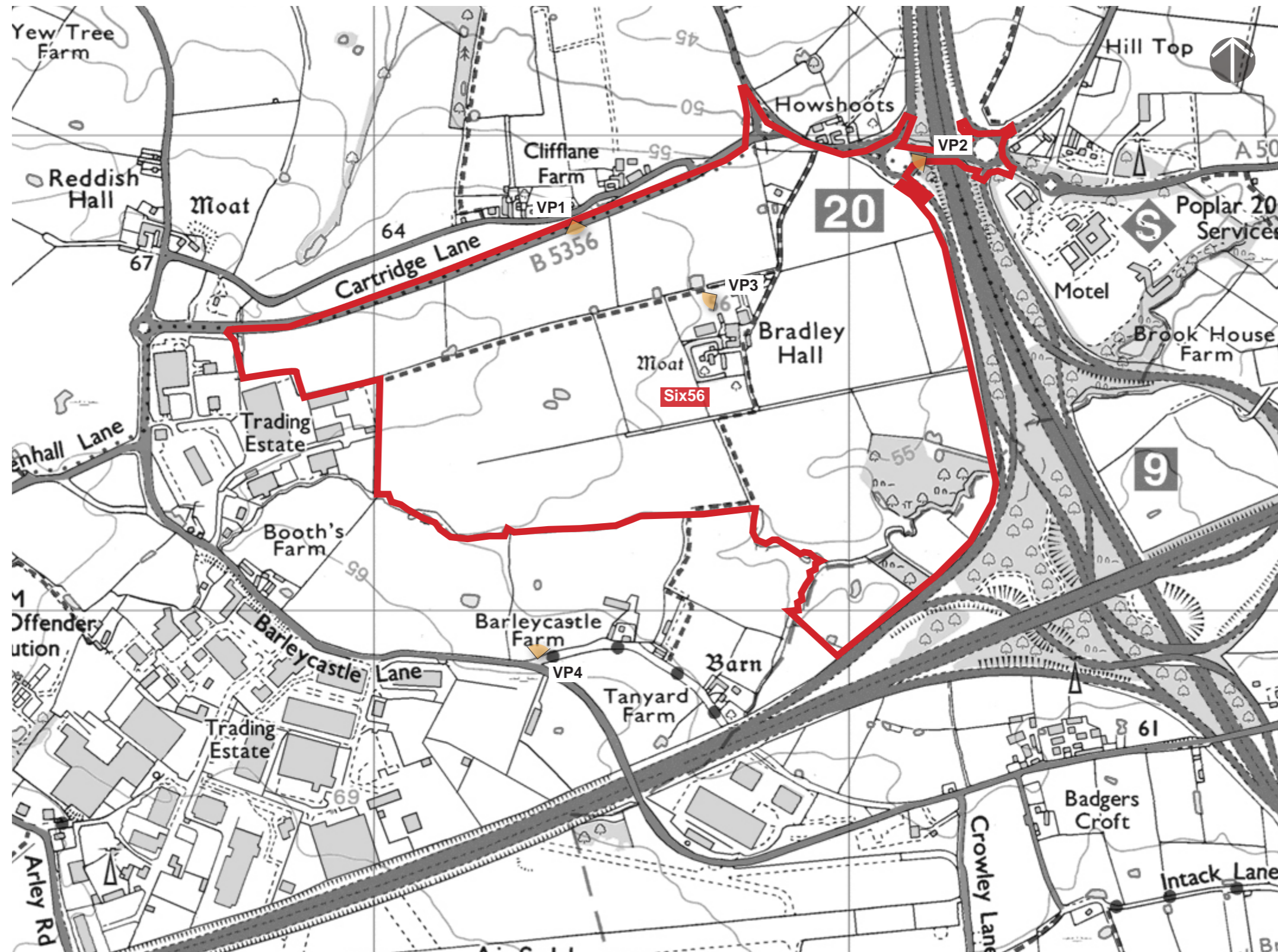
The photography has been undertaken in a robust manner, using professional full frame sensor DSLR and 24mm lens with panoramic head and tripod. The camera position has been surveyed using highly accurate GNSS equipment, giving high levels of accuracy of camera location.

The photography and surveying have followed a transparent methodology, and the resultant photographs are considered robust and fit for purpose to illustrate the night-time summer context of the proposed development site.

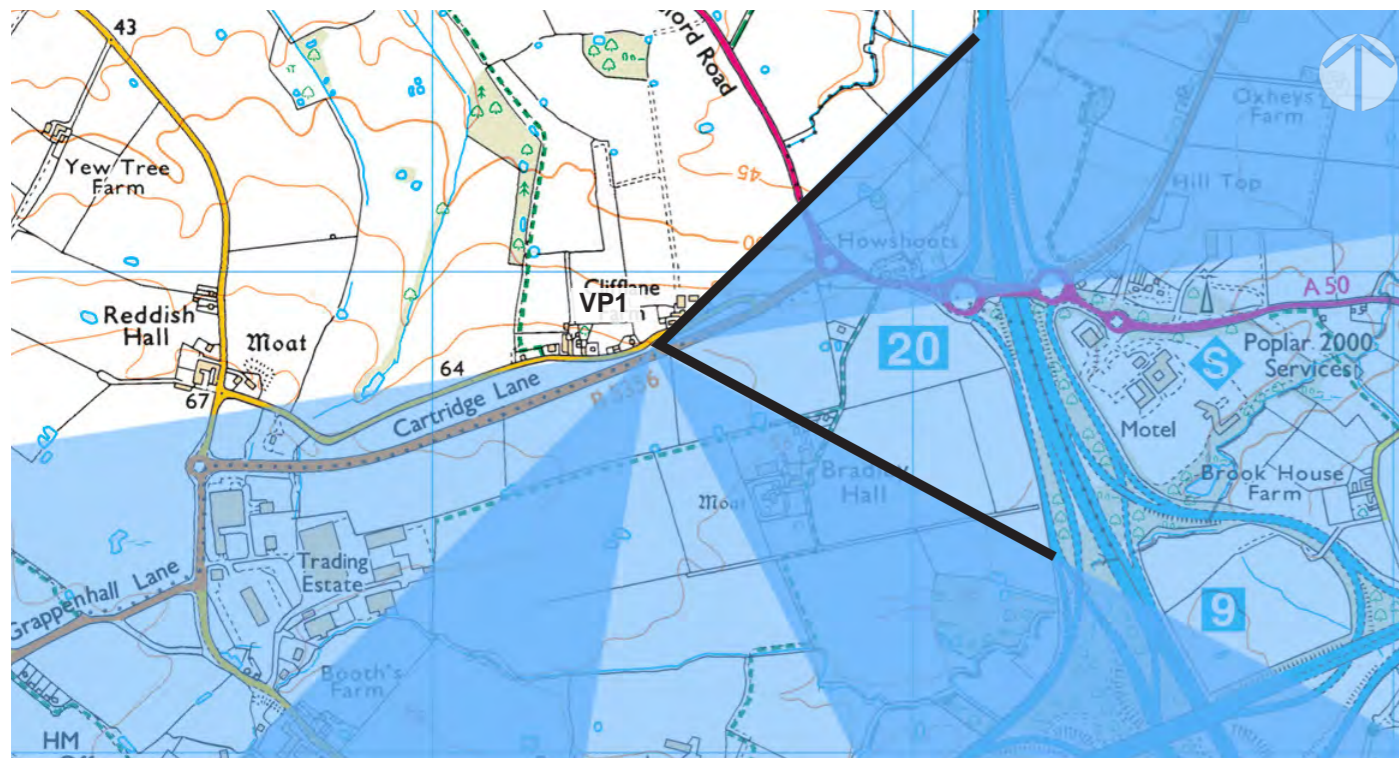
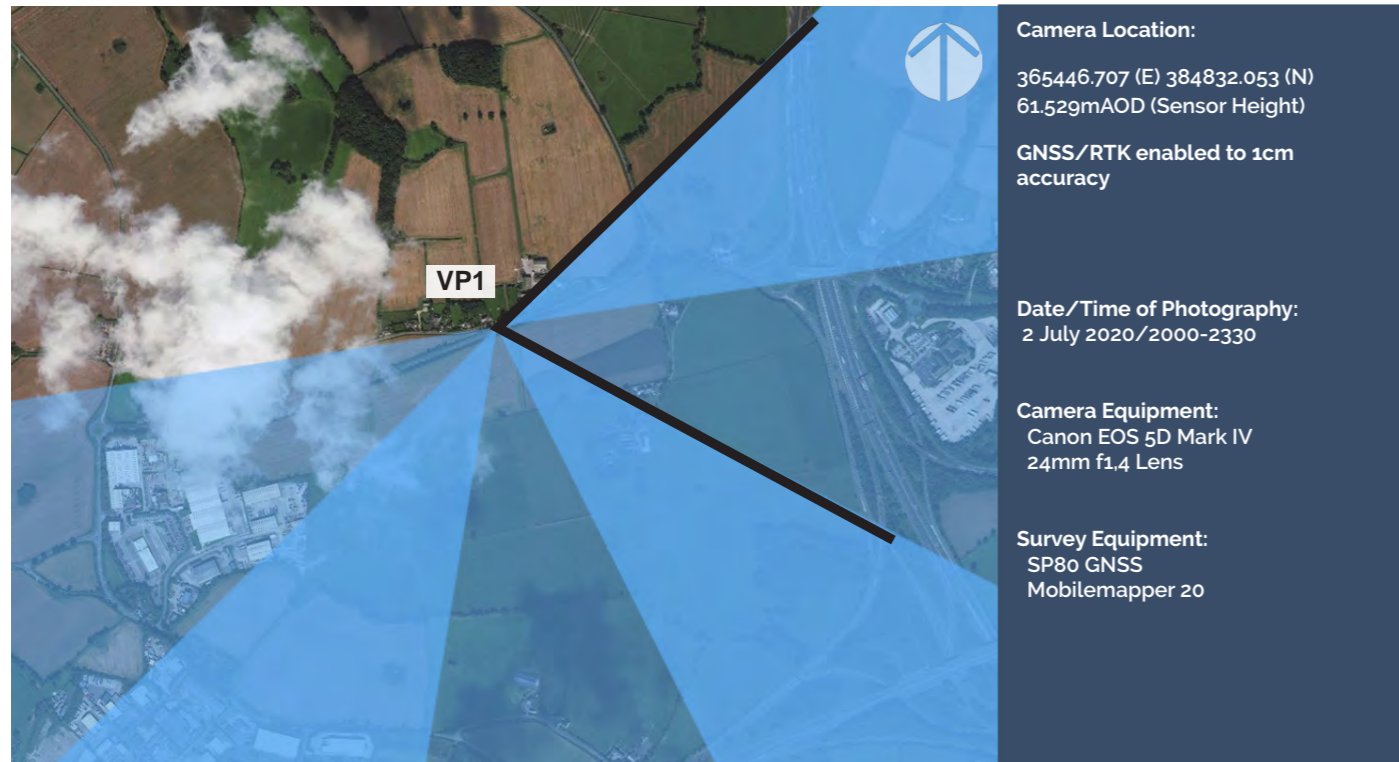
Mike Spence

M.A.Spence BA(Hons), MLD, CMLI, REIA, FRGS 3 July 2020
Principal, MSEnvironmental

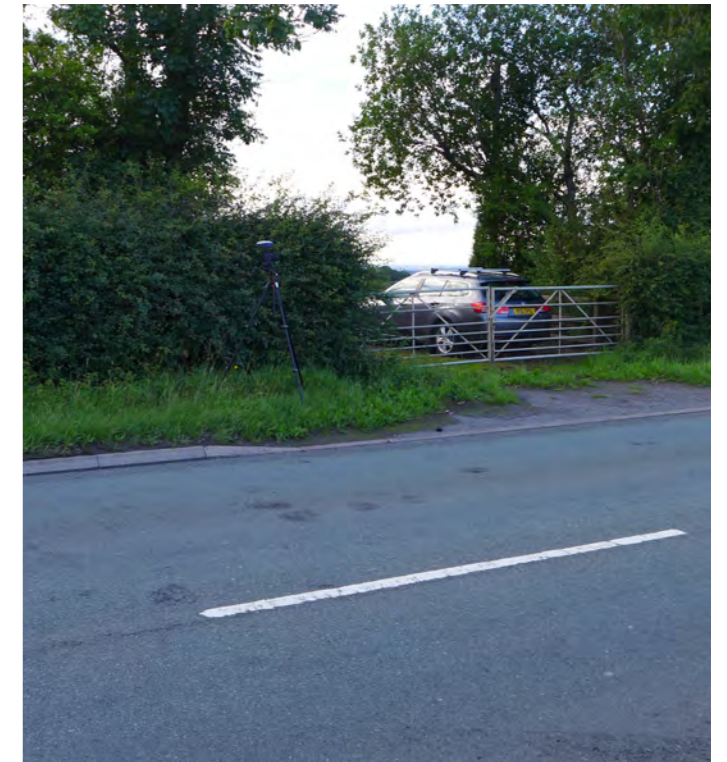
The following photographs with accompanying maps and grid co-ordinates illustrate precisely where the photographs were taken from. This would allow anyone to visit the camera location and gain the same view as that taken:



Camera Location:



Tripod:



Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



Point of Perspective

Point of Perspective

Point of Perspective



Existing View Summer 20:04

Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



Point of Perspective

Point of Perspective

Point of Perspective



Existing View Summer 20:39

Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



Point of Perspective

Point of Perspective

Point of Perspective



Existing View Summer 20:55

Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective

Point of Perspective

Existing View Summer 21:10



Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective

Point of Perspective

Existing View Summer 21:21



Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective

Point of Perspective

Existing View Summer 21:41



24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective



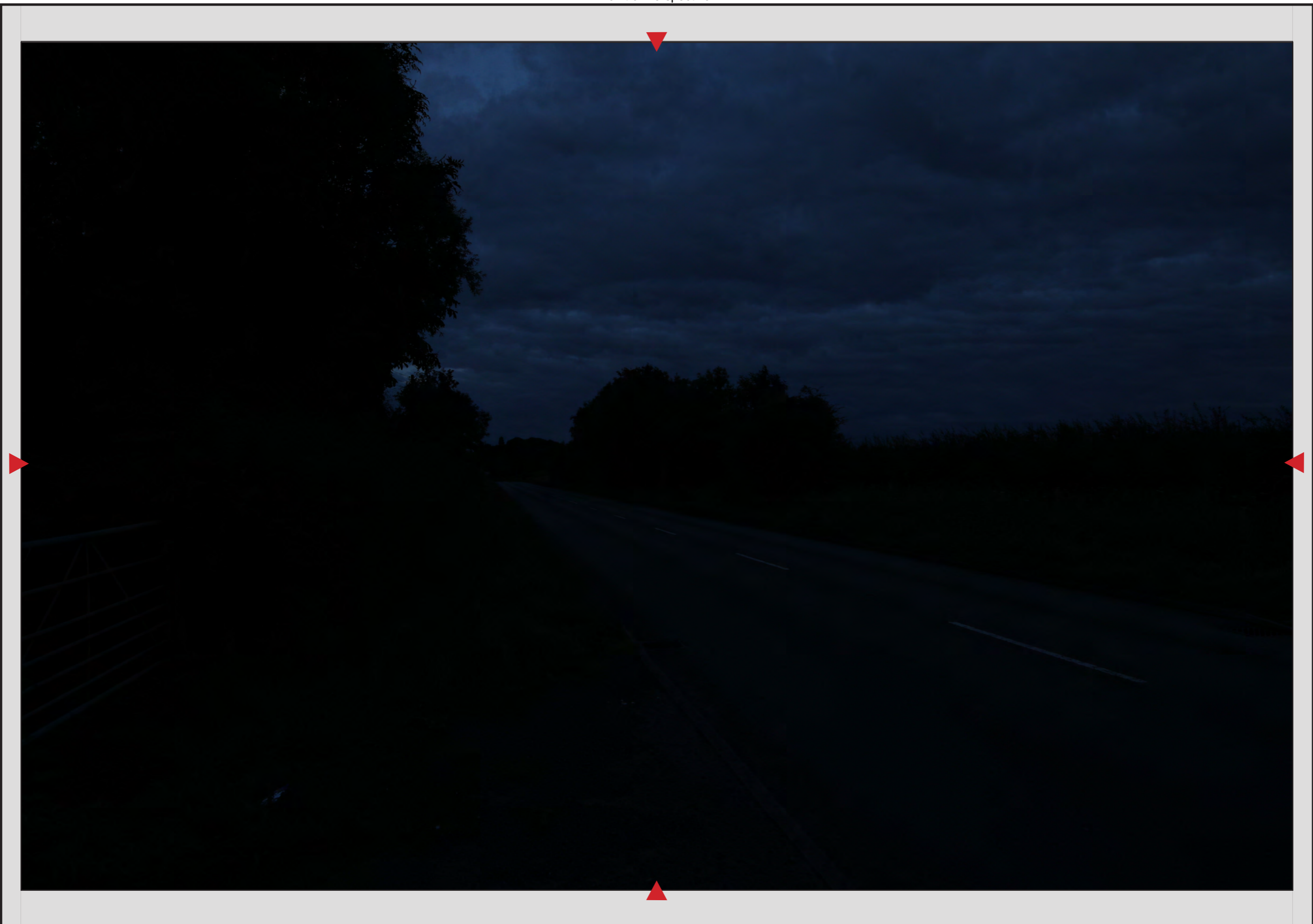
Point of Perspective



Point of Perspective

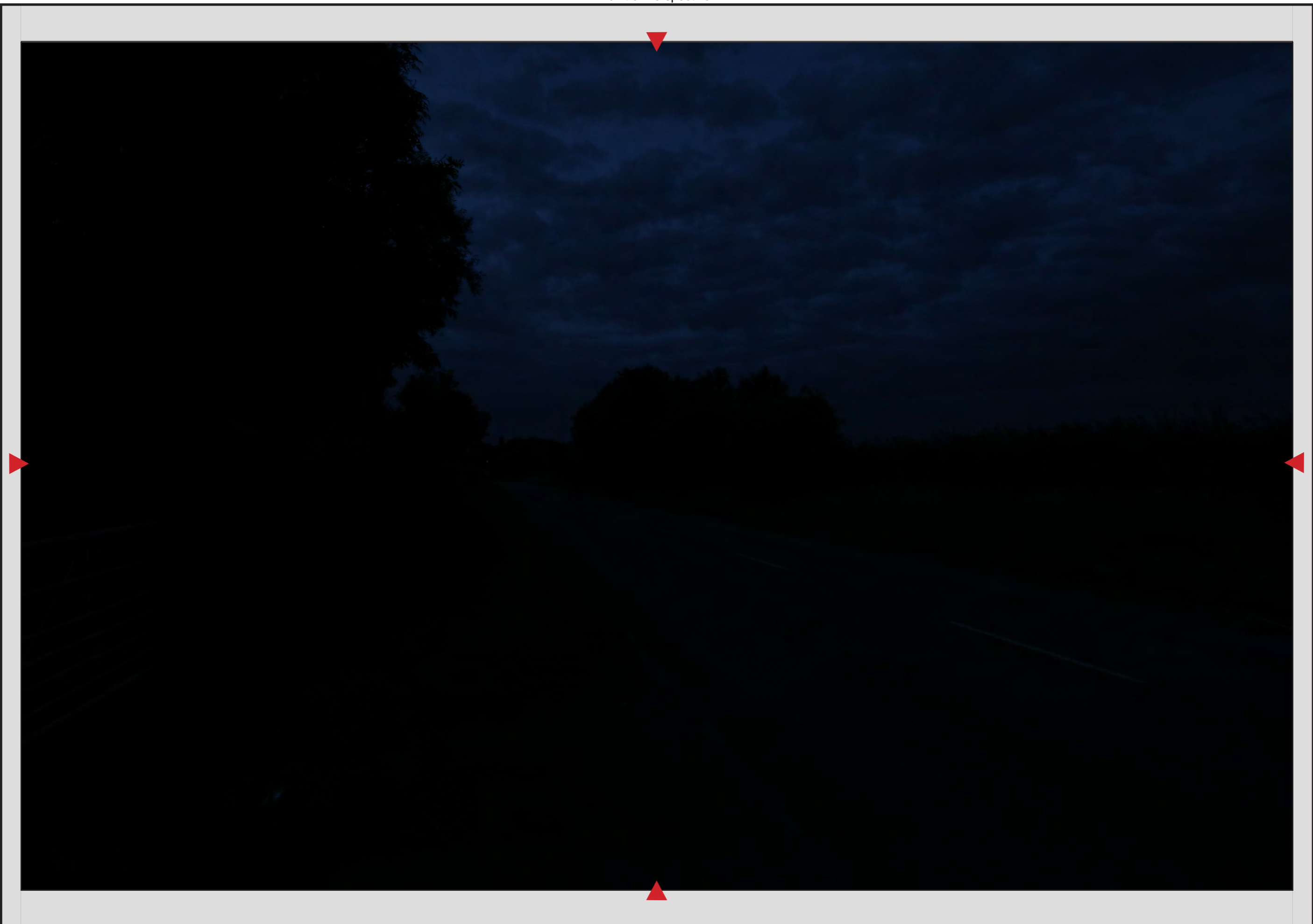


Point of Perspective



Existing View Summer 21:56

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



Point of Perspective

Point of Perspective

Point of Perspective

Point of Perspective



Existing View Summer 22:22

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

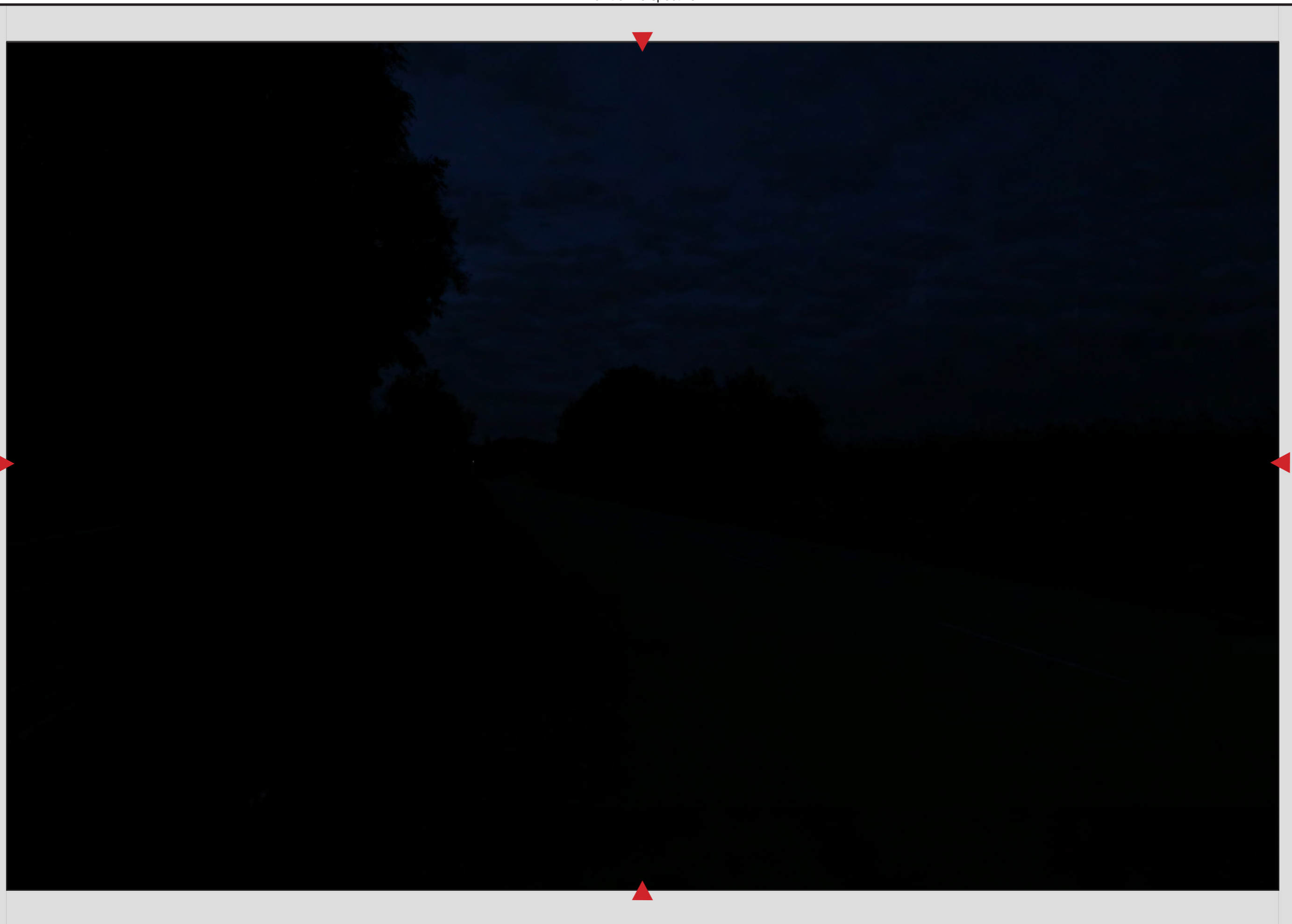
Point of Perspective



Point of Perspective



Point of Perspective



Point of Perspective



Existing View Summer 22:38

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective



Point of Perspective



Point of Perspective



Point of Perspective



Existing View Summer 23:10

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective



Point of Perspective



Point of Perspective

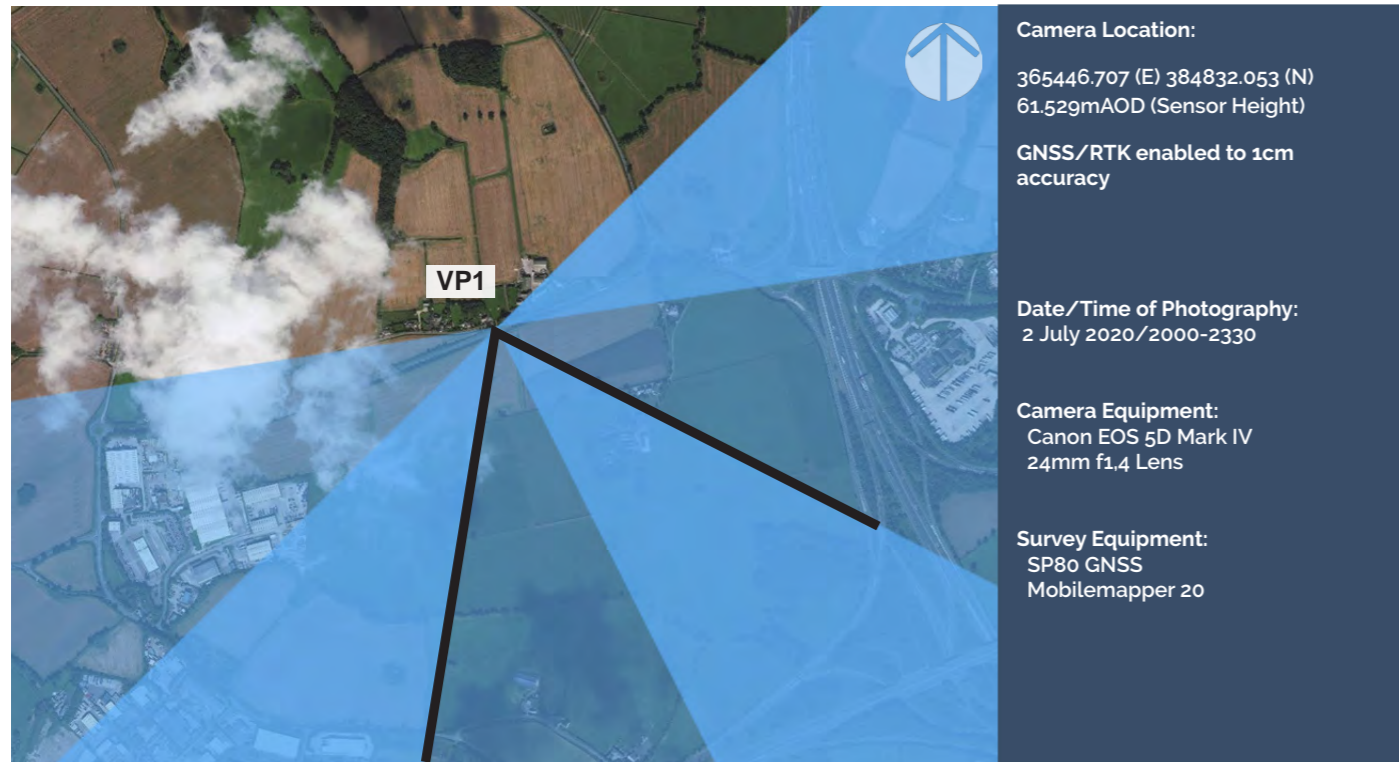


Point of Perspective

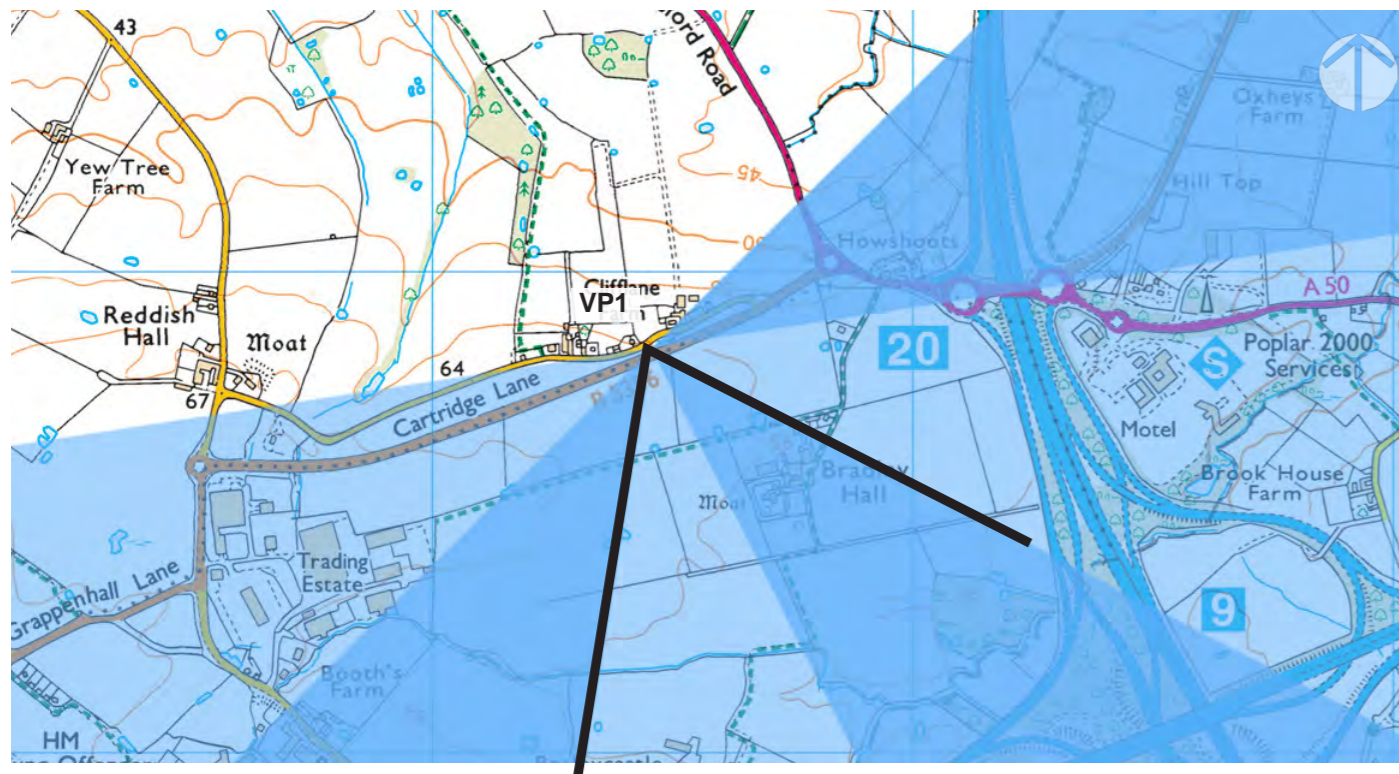


Existing View Summer 23:38

Camera Location:



Tripod:



Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective



Point of Perspective



Existing View Summer 20:04

Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective

Point of Perspective

Existing View Summer 20:39



Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective



Point of Perspective



Existing View Summer 20:55

Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective

Point of Perspective

Existing View Summer 21:10



Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective

Point of Perspective



Existing View Summer 21:21

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective



Point of Perspective



Point of Perspective



Point of Perspective



Existing View Summer 21:41

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective



Point of Perspective



Point of Perspective



Point of Perspective



Existing View Summer 21:56

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



Point of Perspective

Point of Perspective

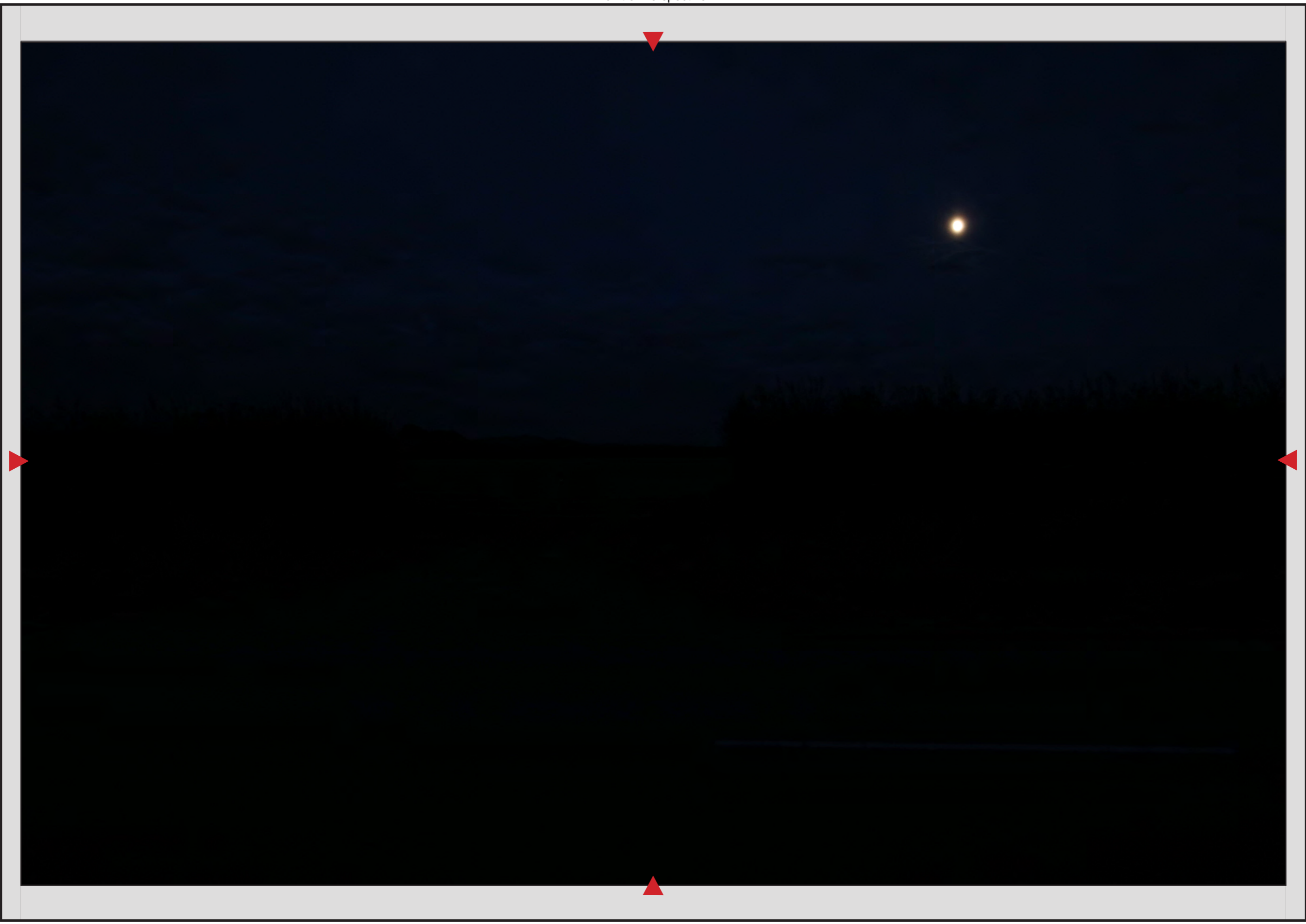
Point of Perspective

Point of Perspective



Existing View Summer 22:22

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



Point of Perspective

Point of Perspective

Point of Perspective

Point of Perspective



Existing View Summer 22:38

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



Point of Perspective

Point of Perspective

Point of Perspective

Point of Perspective



Existing View Summer 23:10

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



Point of Perspective

Point of Perspective

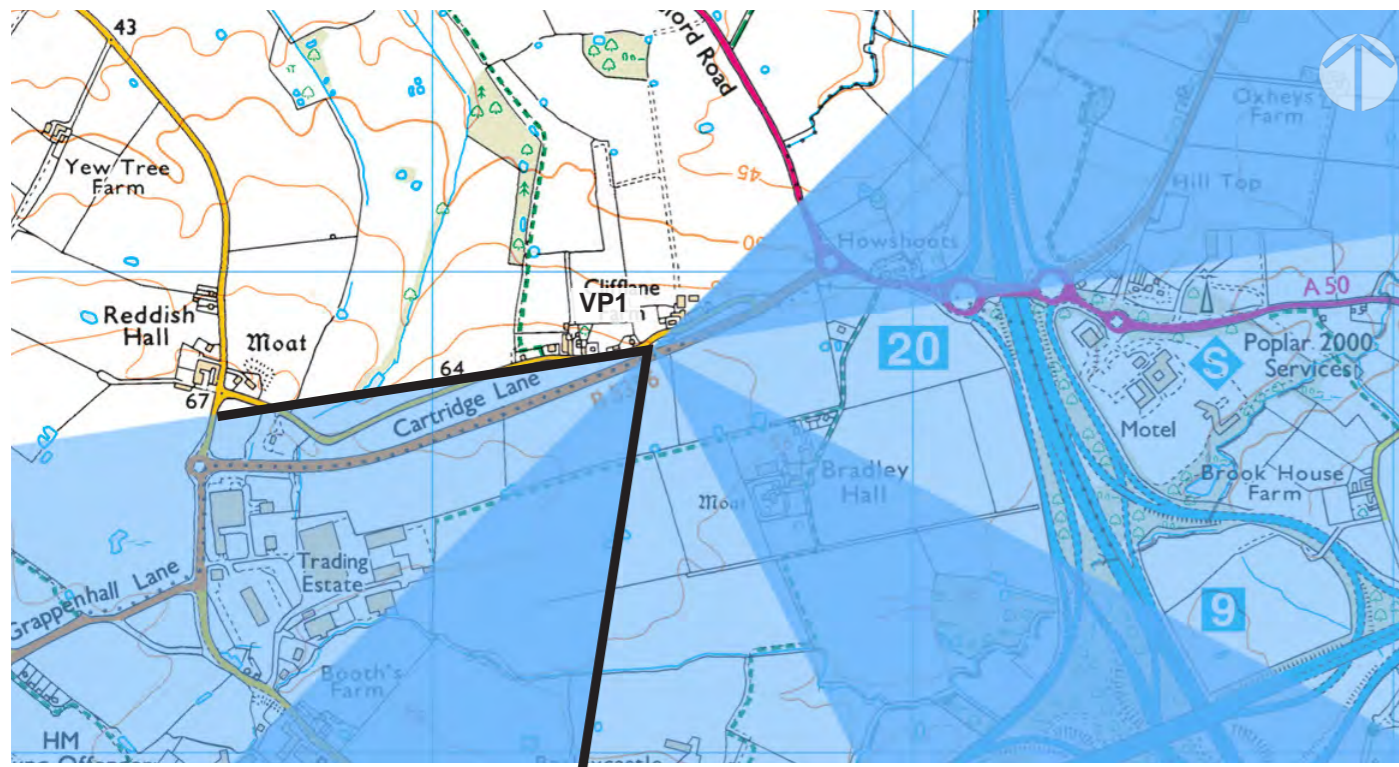
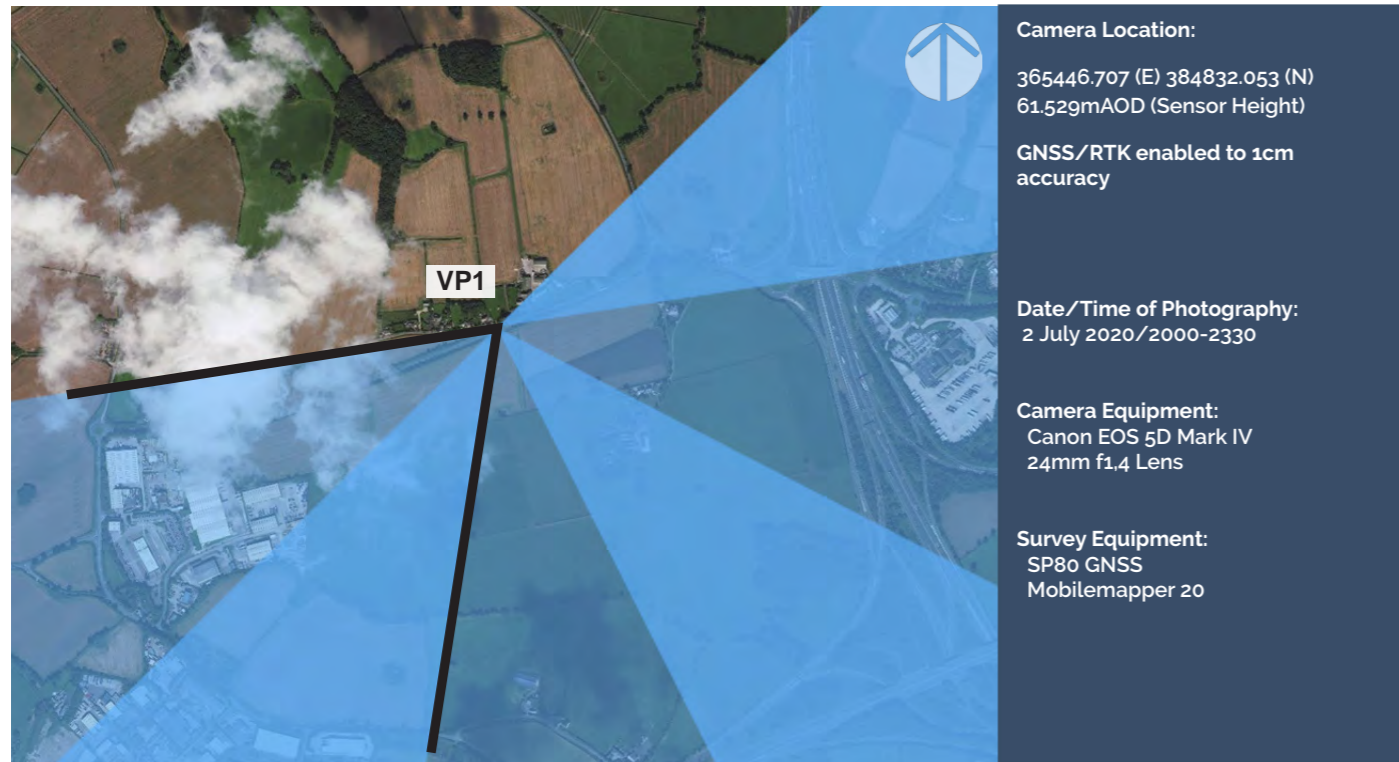
Point of Perspective

Point of Perspective

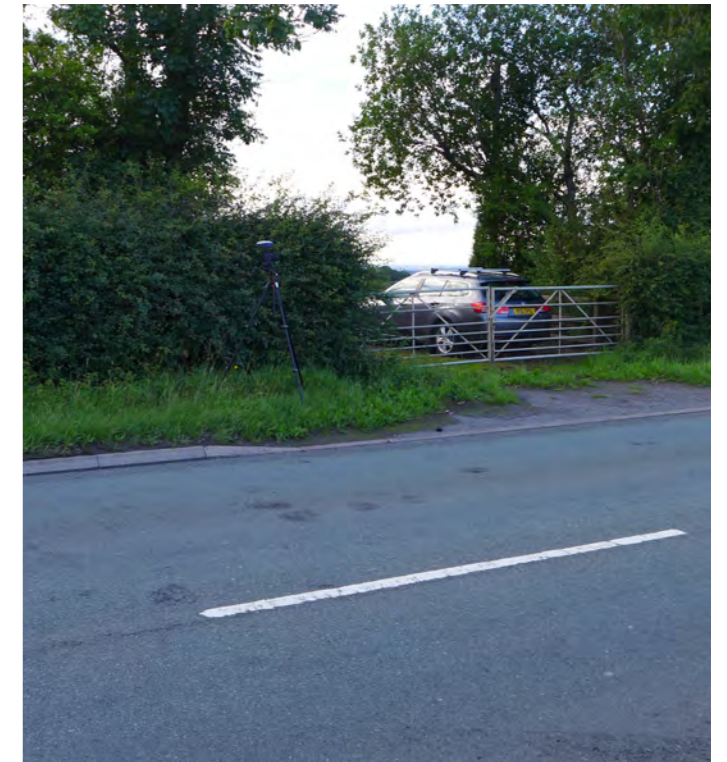


Existing View Summer 23:38

Camera Location:



Tripod:



Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective



Point of Perspective



Existing View Summer 20:04

Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective



Point of Perspective

Existing View Summer 20:39

Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



Point of Perspective

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Point of Perspective



Existing View Summer 20:55

Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

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Existing View Summer 21:10



Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective

Point of Perspective

Existing View Summer 21:21



Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective

Point of Perspective

Existing View Summer 21:41



24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective



Point of Perspective



Point of Perspective

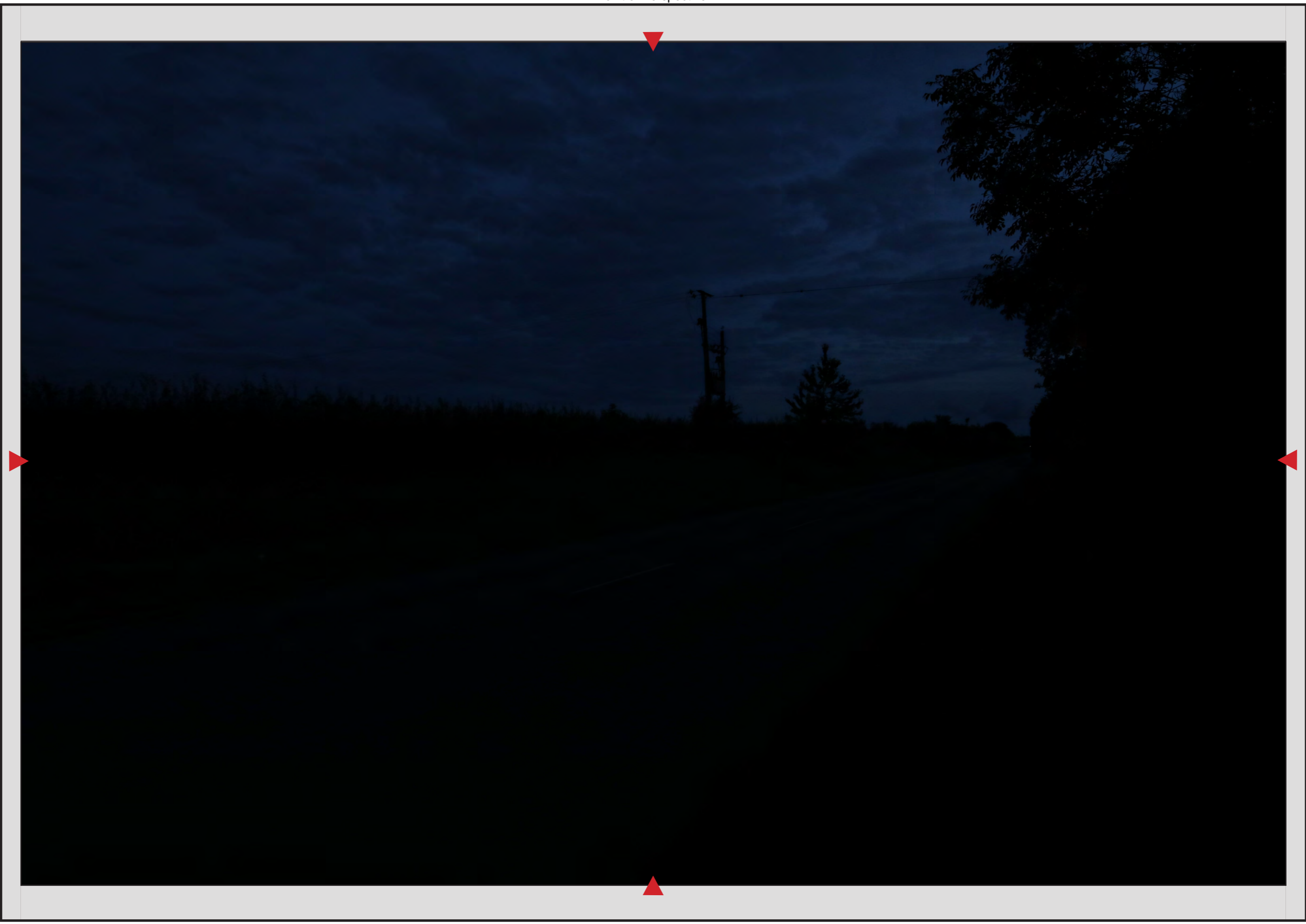


Point of Perspective



Existing View Summer 21:56

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



Point of Perspective

Point of Perspective

Point of Perspective

Point of Perspective



Existing View Summer 22:22

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



Point of Perspective

Point of Perspective

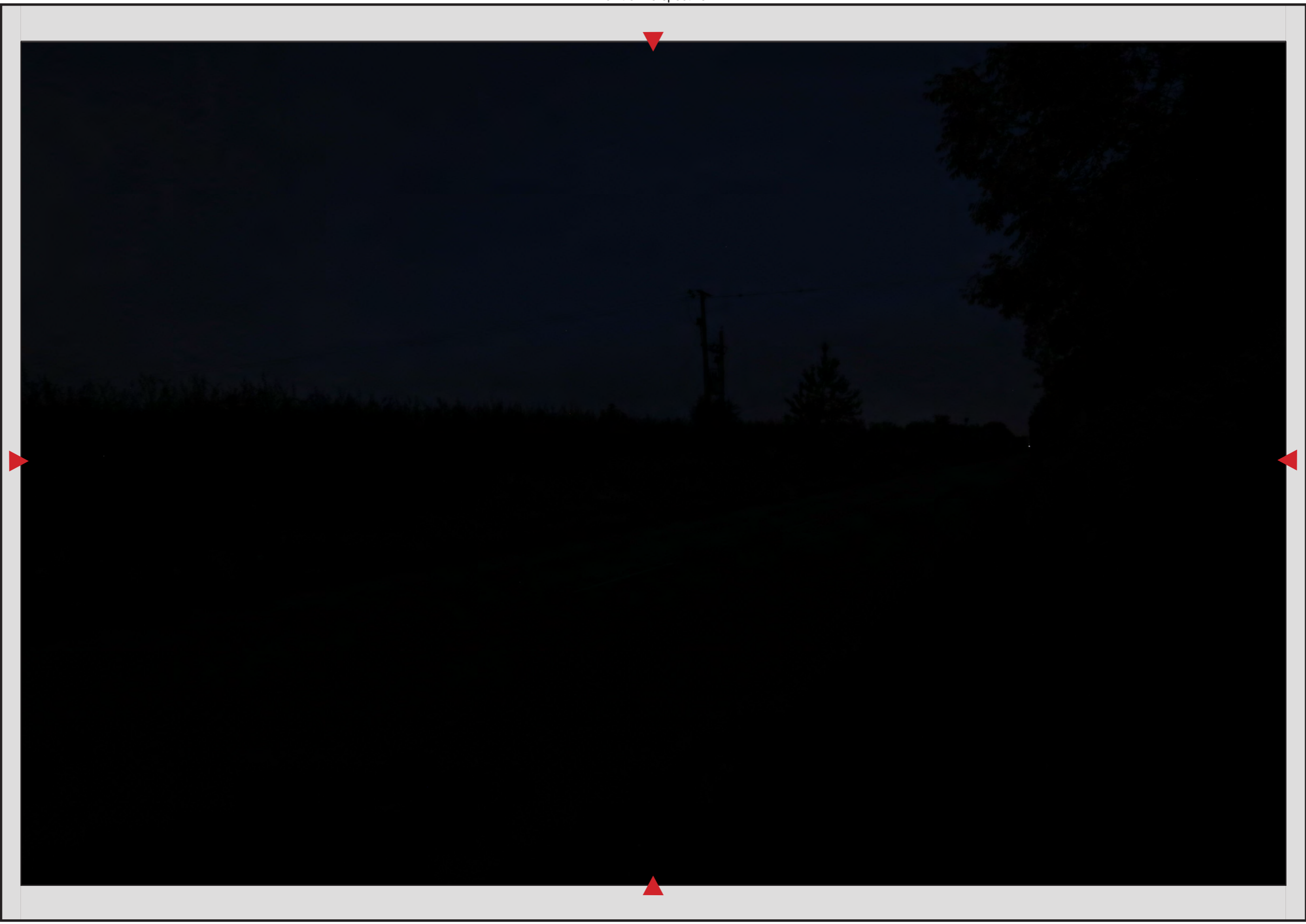
Point of Perspective

Point of Perspective



Existing View Summer 22:38

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



Point of Perspective



Point of Perspective



Point of Perspective



Point of Perspective



Existing View Summer 23:10

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective



Point of Perspective

Point of Perspective

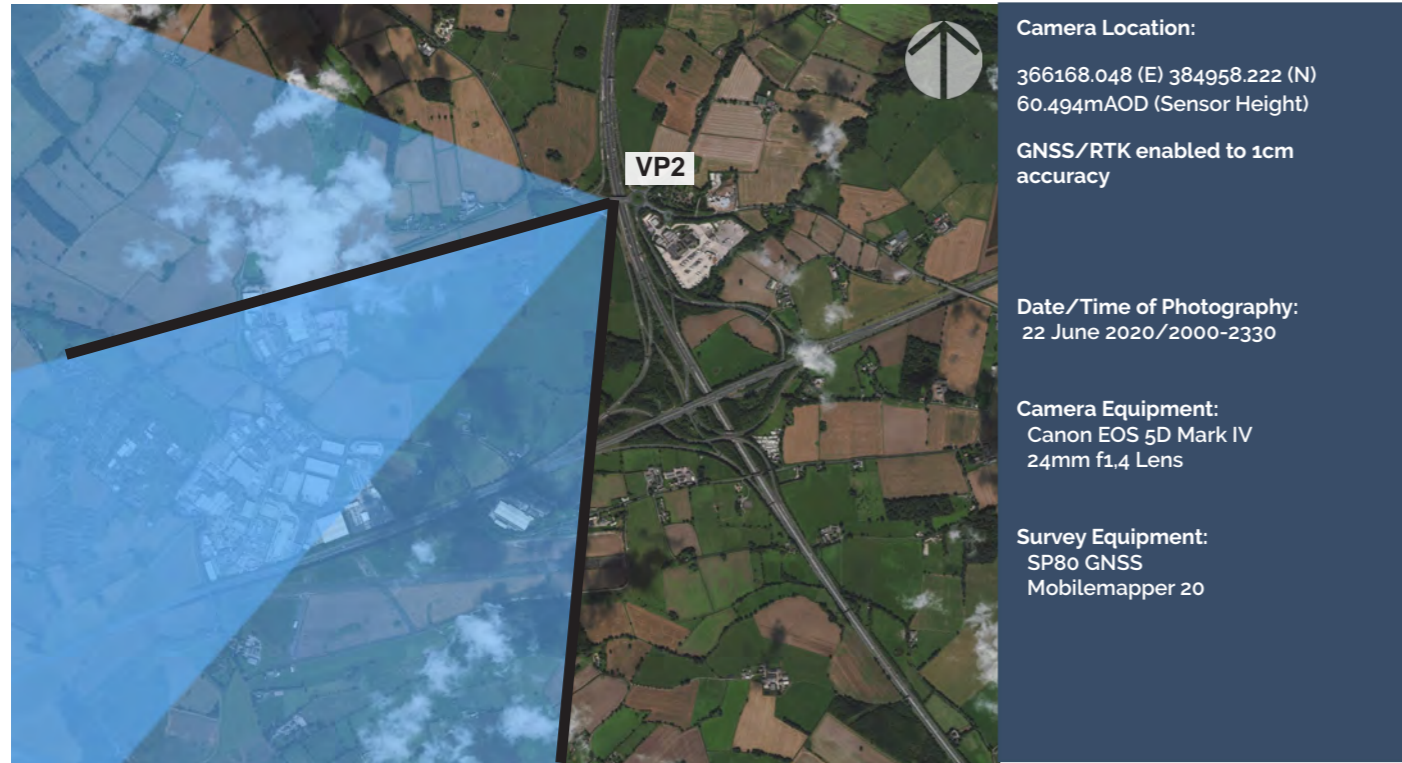


Point of Perspective

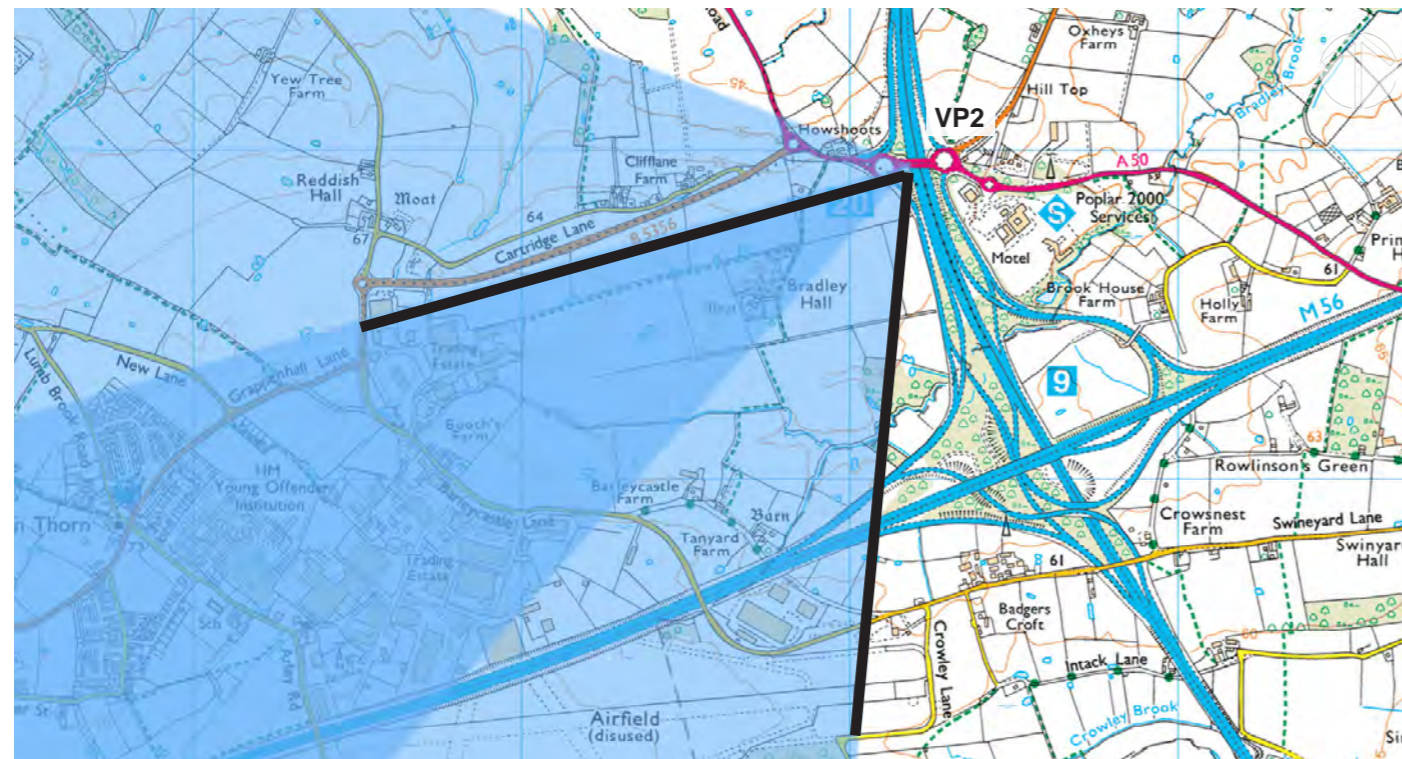


Existing View Summer 23:38

Camera Location:



Tripod:



Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective



Point of Perspective



Existing View Summer 20:01

Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective



Point of Perspective



Existing View Summer 20:14

Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



Point of Perspective

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Point of Perspective



Existing View Summer 20:34

Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

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Point of Perspective



Existing View Summer 20:56

Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

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Existing View Summer 21:26

Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective

Point of Perspective

Existing View Summer 21:53



24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



Point of Perspective

Point of Perspective

Point of Perspective

Point of Perspective



Existing View Summer 22:36

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



Point of Perspective

Point of Perspective

Point of Perspective

Point of Perspective



Existing View Summer 23:05

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



Point of Perspective

Point of Perspective

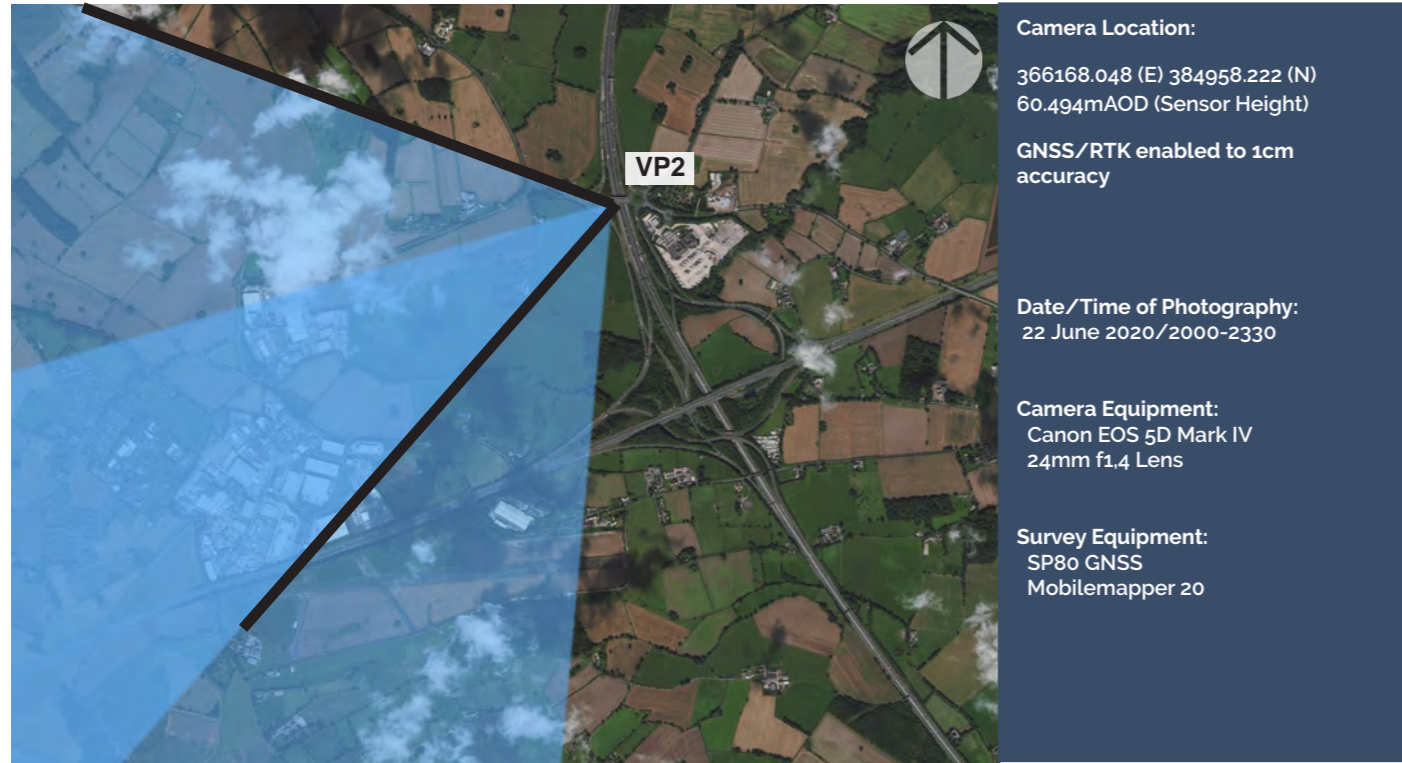
Point of Perspective

Point of Perspective

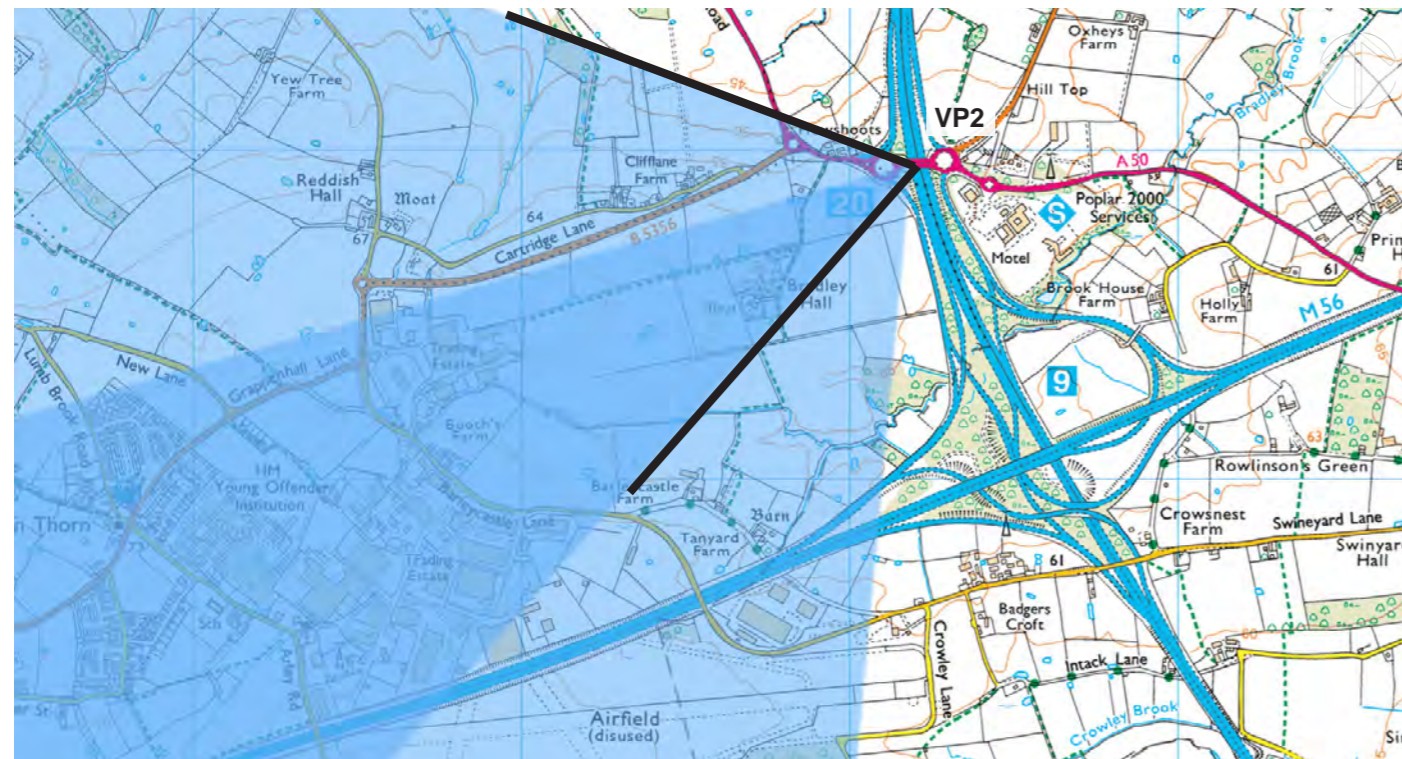


Existing View Summer 23:32

Camera Location:



Tripod:



Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective



Point of Perspective

Existing View Summer 20:01

Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective



Point of Perspective



Existing View Summer 20:14

Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



Point of Perspective

Point of Perspective

Point of Perspective



Existing View Summer 20:34

Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective



Point of Perspective



Existing View Summer 20:56

Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

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Point of Perspective



Existing View Summer 21:26

Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

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Point of Perspective

Existing View Summer 21:53

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

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Point of Perspective



Point of Perspective



Point of Perspective



Existing View Summer 22:36

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective



Point of Perspective



Point of Perspective



Point of Perspective



Existing View Summer 23:05

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective



Point of Perspective



Point of Perspective



Point of Perspective

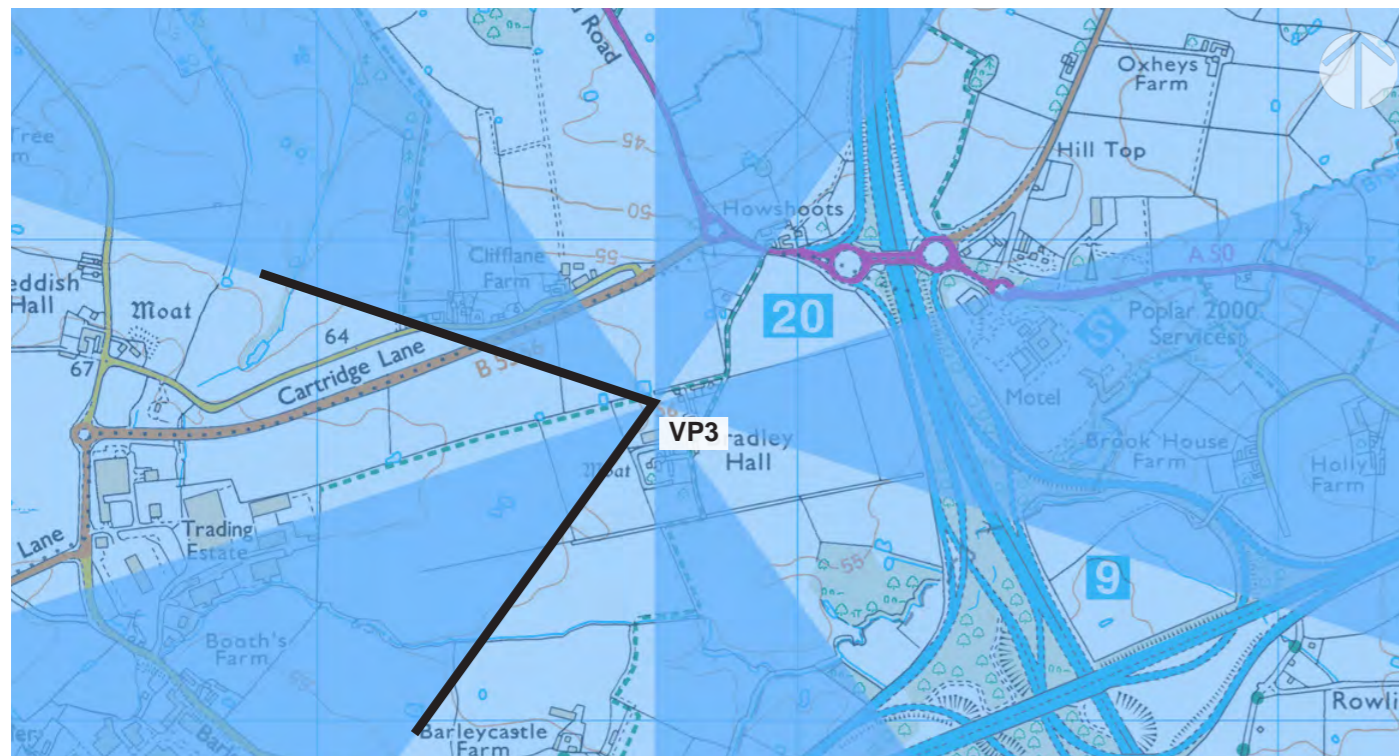


Existing View Summer 23:32

Camera Location:



Tripod:



Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective



Point of Perspective



Existing View Summer 20:04

Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective



Point of Perspective



Existing View Summer 20:40

Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective

Point of Perspective

Existing View Summer 20:56



Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective

Point of Perspective



Existing View Summer 21:13

Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



Point of Perspective

Point of Perspective

Point of Perspective



Existing View Summer 21:27

Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective

Point of Perspective

Existing View Summer 21:55



24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective



Point of Perspective



Point of Perspective



Point of Perspective



Existing View Summer 22:25



24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



Point of Perspective

Point of Perspective

Point of Perspective

Point of Perspective



Existing View Summer 22:41

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



Point of Perspective



Point of Perspective



Point of Perspective



Point of Perspective



Existing View Summer 22:54

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective



Point of Perspective



Point of Perspective



Point of Perspective



Existing View Summer 23:11

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective



Point of Perspective



Point of Perspective



Point of Perspective



Existing View Summer 23:26

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective



Point of Perspective

Point of Perspective



Point of Perspective

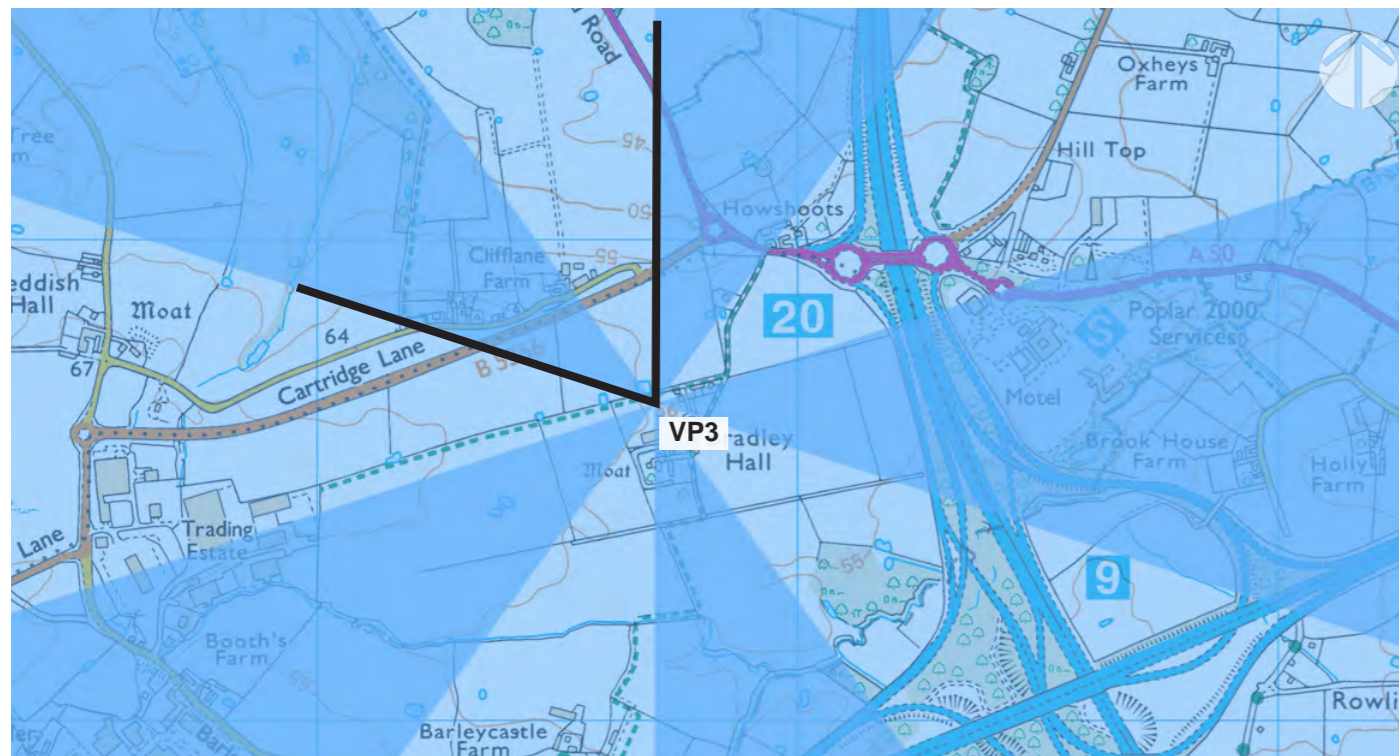


Existing View Summer 23:38

Camera Location:



Tripod:



Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective

Point of Perspective

Existing View Summer 20:04



Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective

Point of Perspective

Existing View Summer 20:40



Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective

Point of Perspective

Existing View Summer 20:56



Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective

Point of Perspective



Existing View Summer 21:13

Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



Point of Perspective

Point of Perspective

Point of Perspective



Existing View Summer 21:27

Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective

Point of Perspective

Existing View Summer 21:55



Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



Point of Perspective

Point of Perspective

Point of Perspective



Existing View Summer 22:25

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



Point of Perspective

Point of Perspective

Point of Perspective

Point of Perspective



Existing View Summer 22:41

Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



Point of Perspective

Point of Perspective

Point of Perspective



Existing View Summer 22:54

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



Point of Perspective

Point of Perspective

Point of Perspective

Point of Perspective



Existing View Summer 23:11

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective



Point of Perspective



Point of Perspective



Point of Perspective



Existing View Summer 23:26

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective



Point of Perspective



Point of Perspective



Point of Perspective

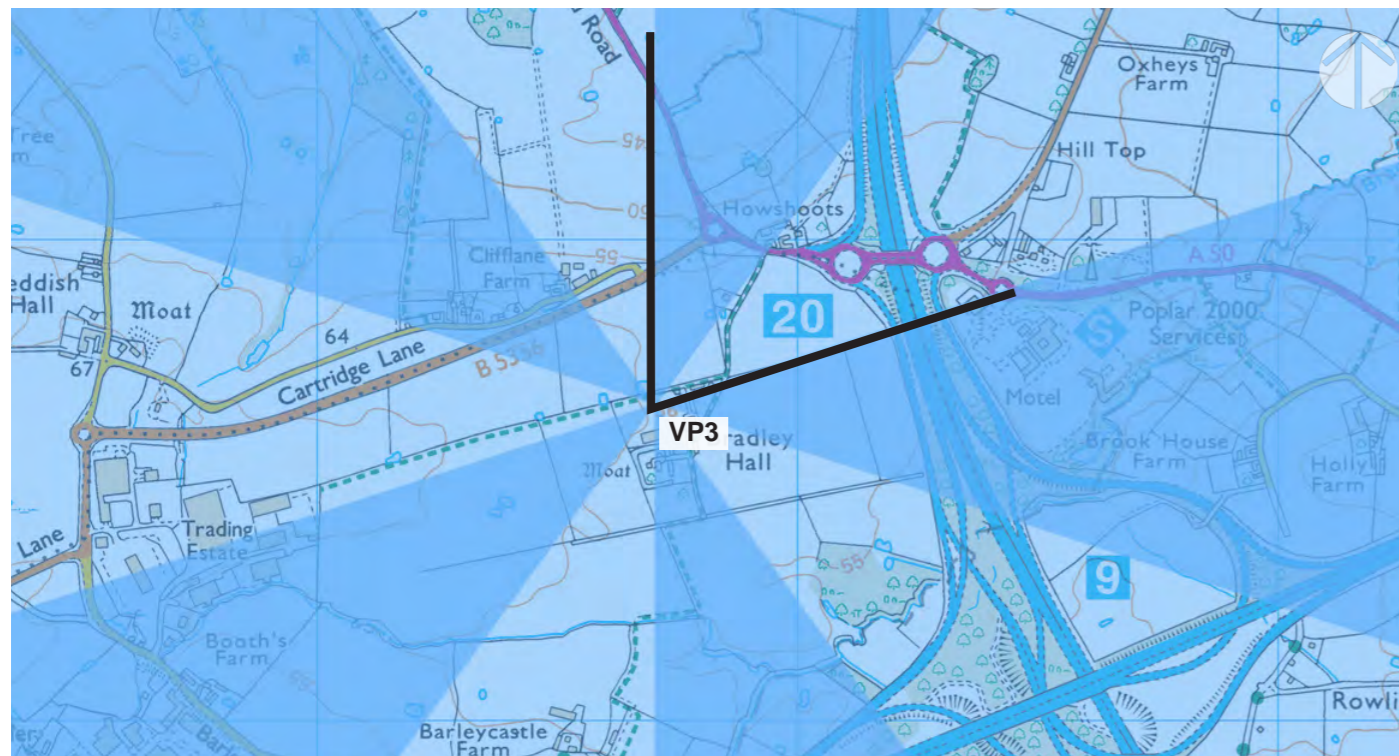


Existing View Summer 23:38

Camera Location:



Tripod:



Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective



Point of Perspective



Existing View Summer 20:04

Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective

Point of Perspective

Existing View Summer 20:40



Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective

Point of Perspective

Existing View Summer 20:56



Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective

Point of Perspective



Existing View Summer 21:13

Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective

Point of Perspective



Existing View Summer 21:27

Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective

Point of Perspective

Point of Perspective



Existing View Summer 21:55

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective



Point of Perspective



Point of Perspective



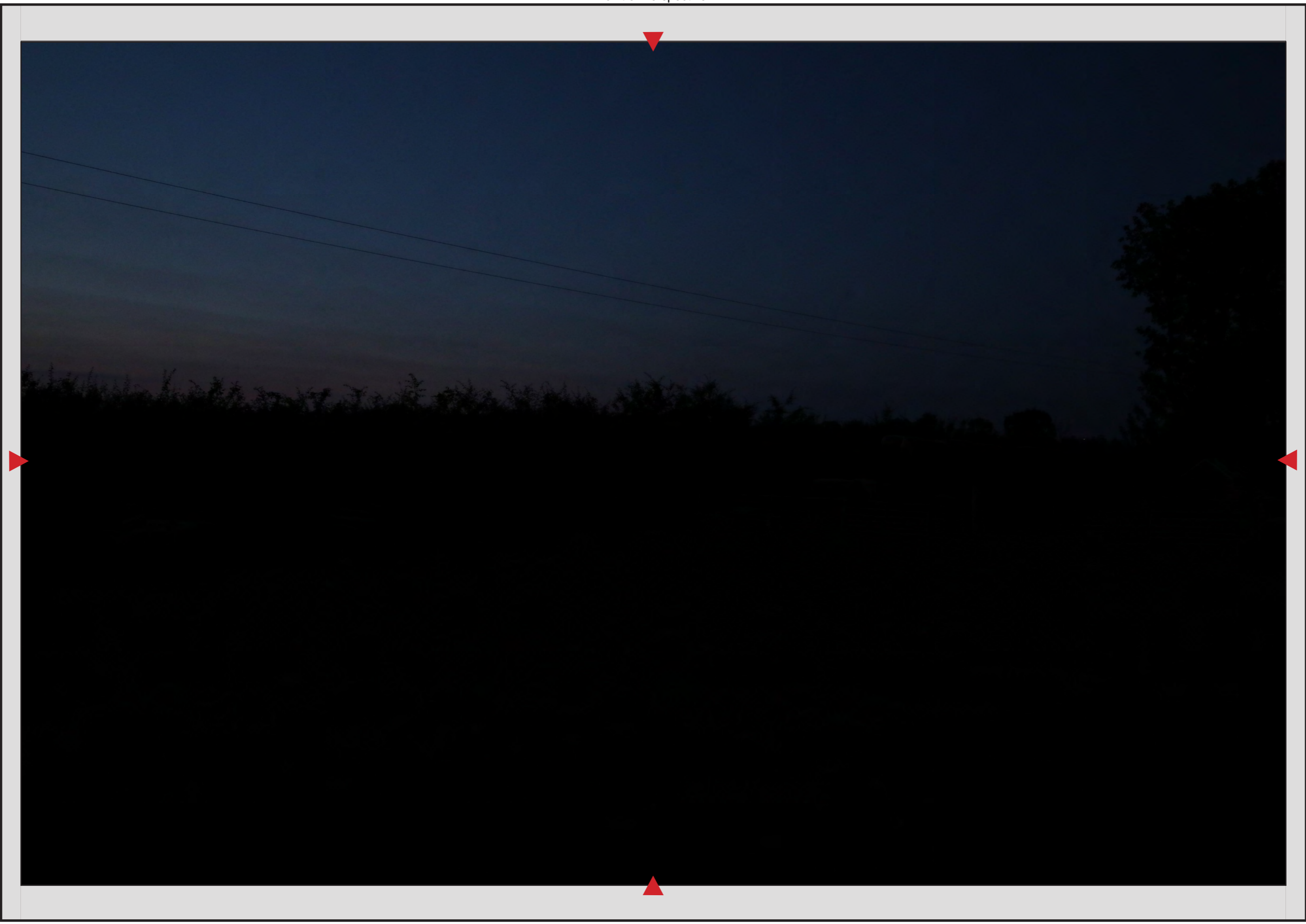
Point of Perspective



Existing View Summer 22:25



24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



Point of Perspective

Point of Perspective

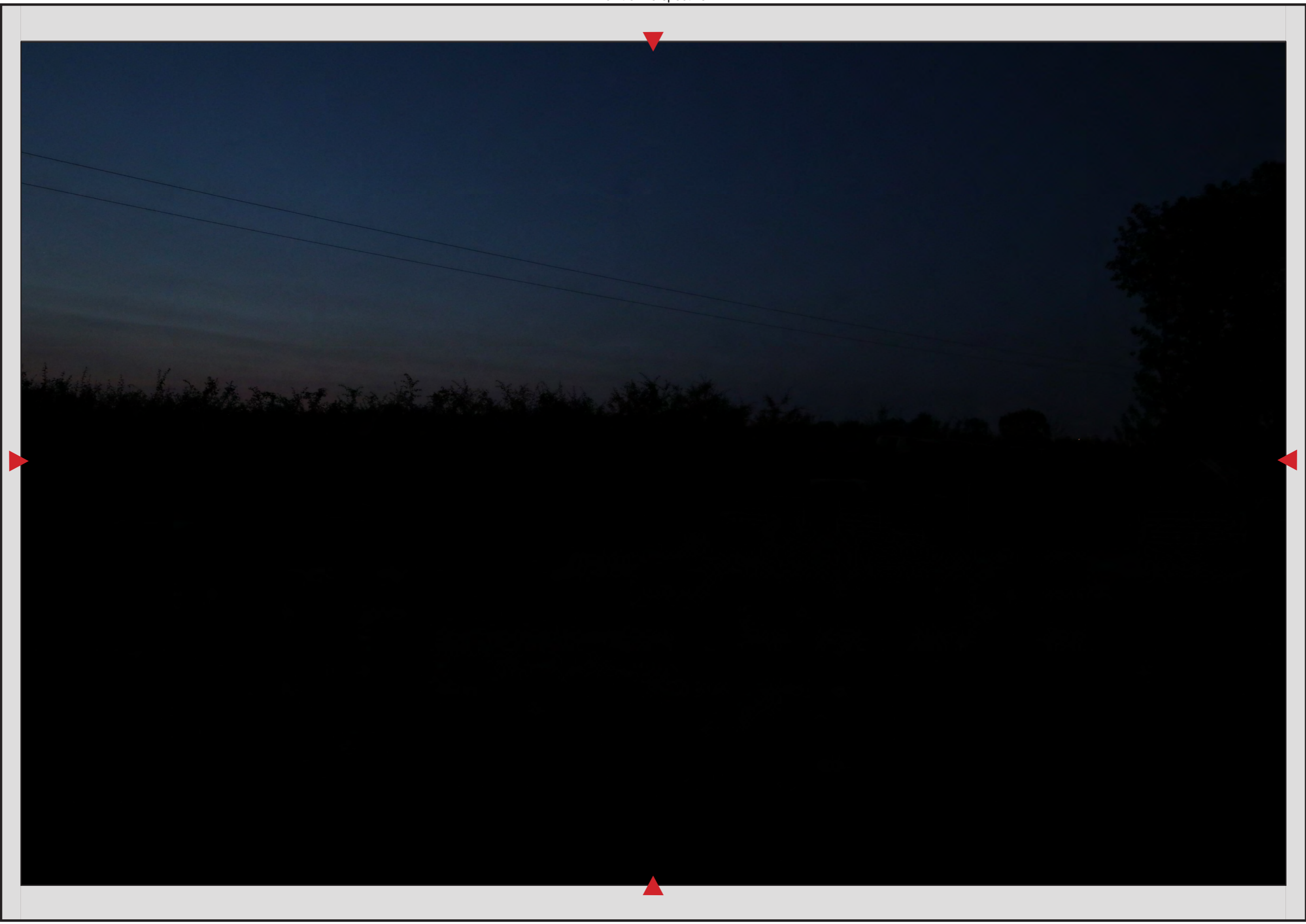
Point of Perspective

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Existing View Summer 22:41

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



Point of Perspective

Point of Perspective

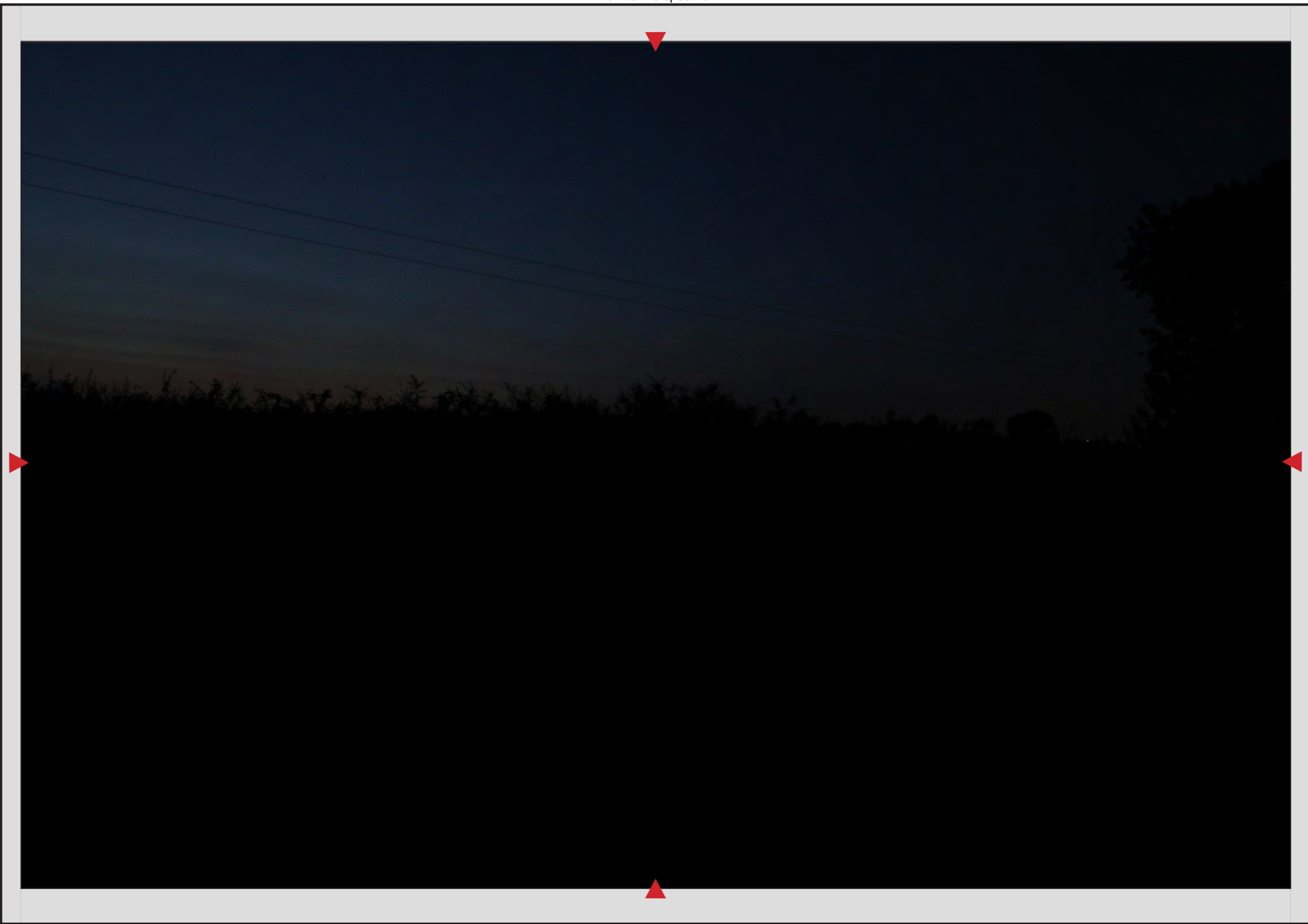
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Existing View Summer 22:54

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



Point of Perspective

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Point of Perspective



Existing View Summer 23:11

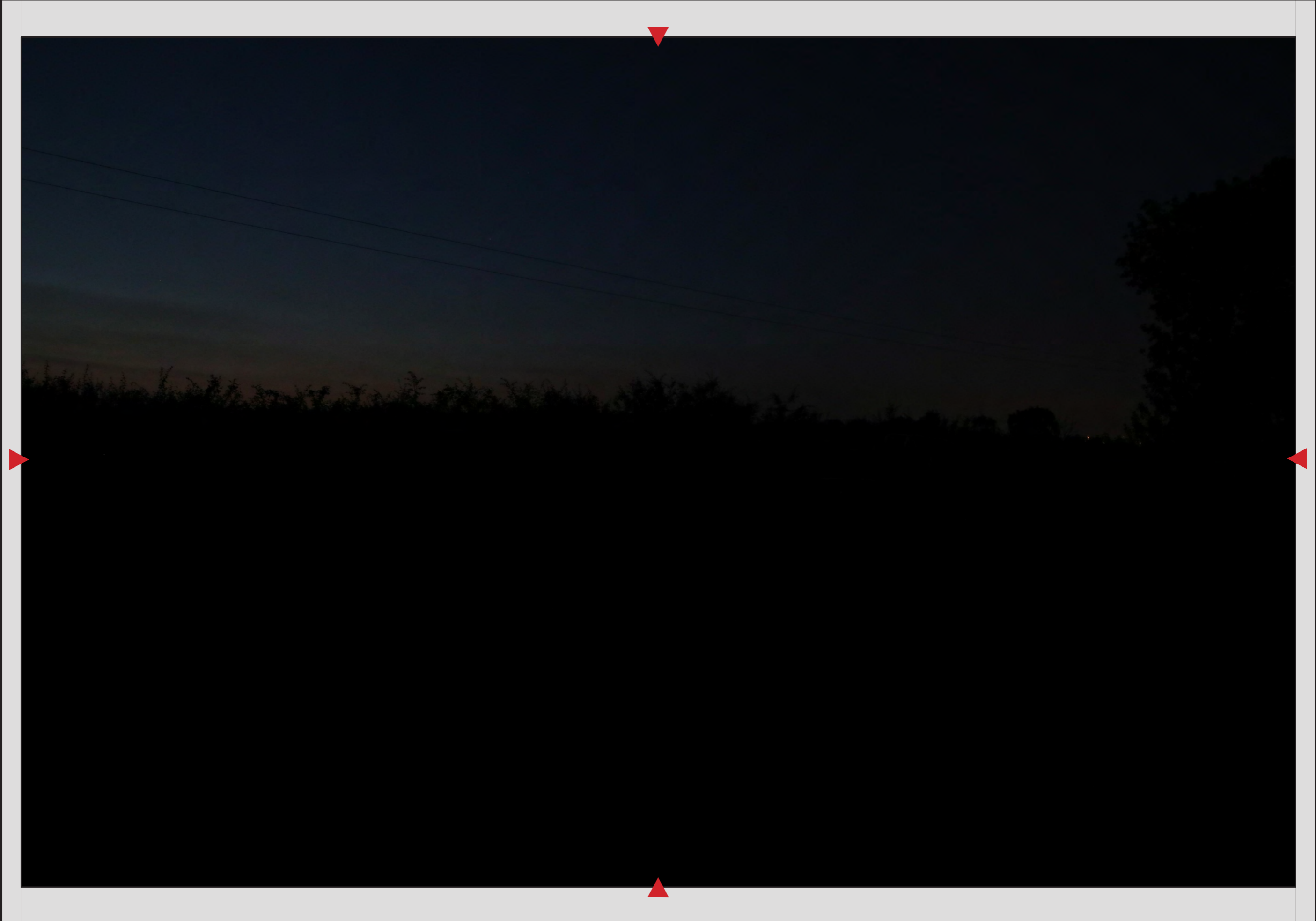
24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective



Point of Perspective

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Point of Perspective



Existing View Summer 23:26

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

Point of Perspective



Point of Perspective



Point of Perspective



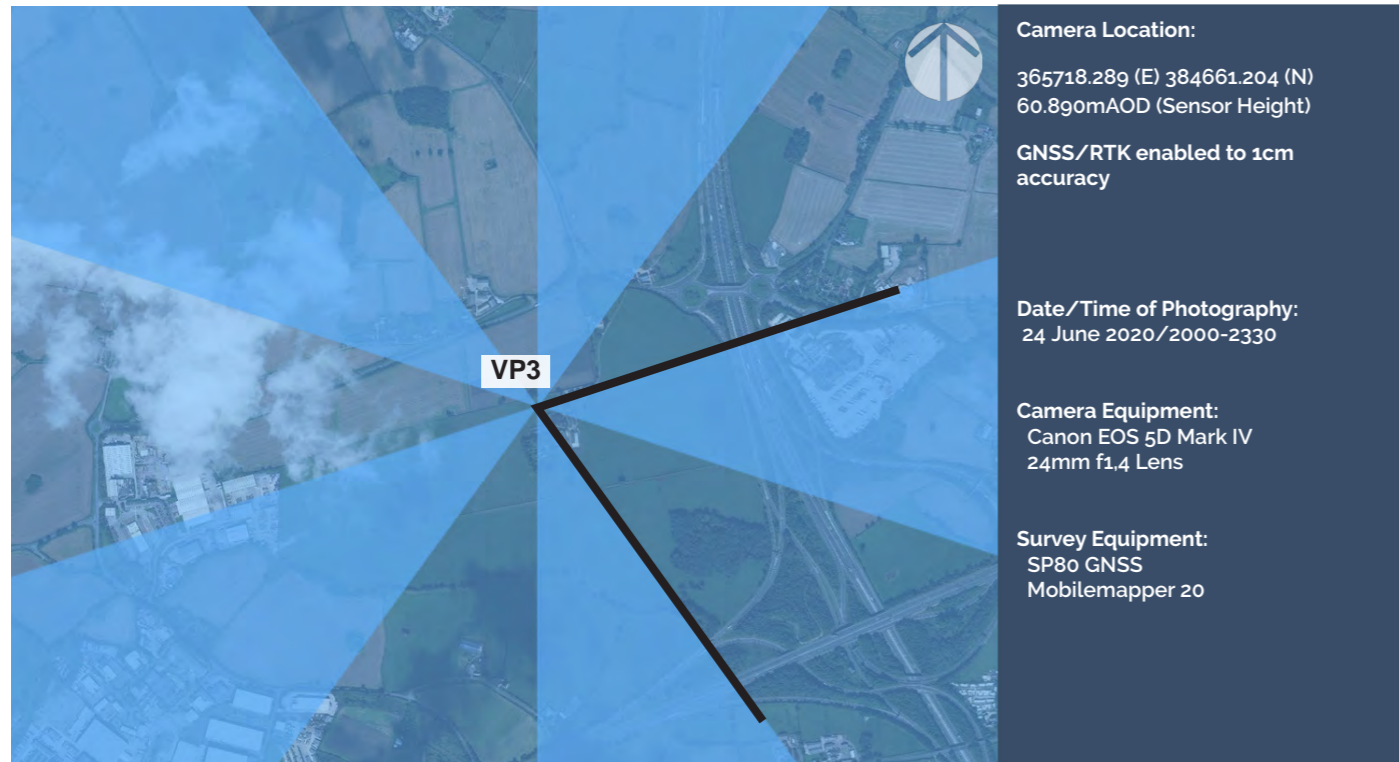
Point of Perspective



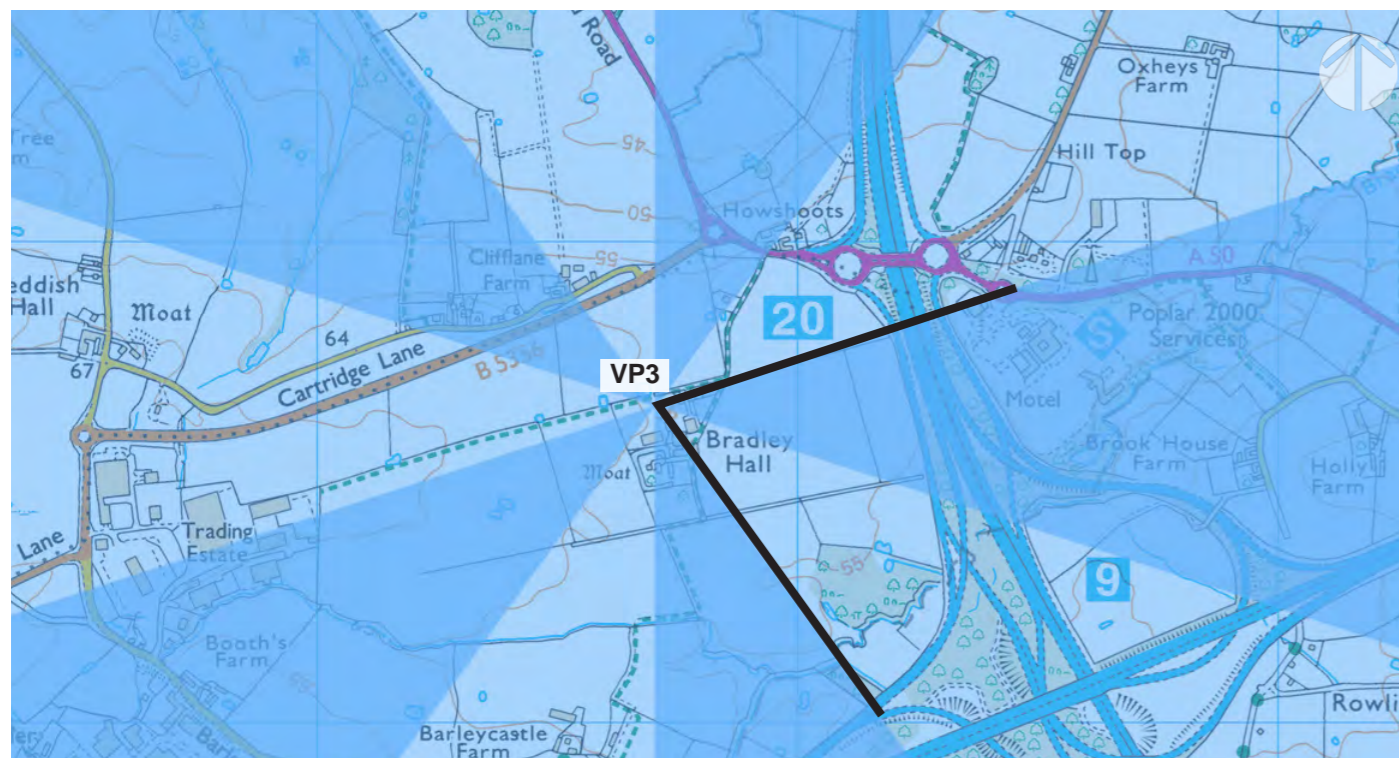
Existing View Summer 23:38



Camera Location:



Tripod:



Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

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Existing View Summer 20:04

Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

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Existing View Summer 20:40

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24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

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Existing View Summer 20:56

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24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

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Existing View Summer 21:13

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24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

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Existing View Summer 21:27

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24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

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Existing View Summer 21:55

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

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Existing View Summer 22:25

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



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Existing View Summer 22:41

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Existing View Summer 22:54

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



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Existing View Summer 23:11

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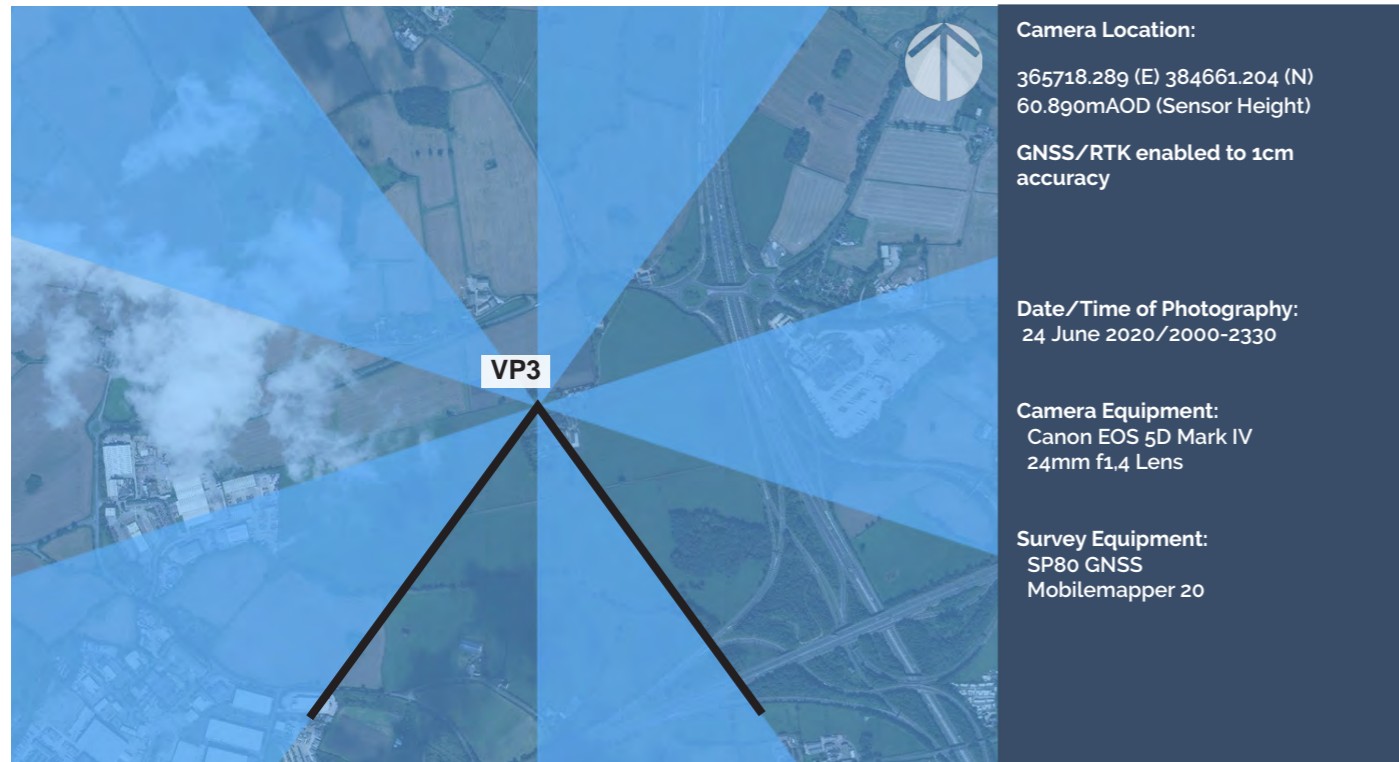


Point of Perspective

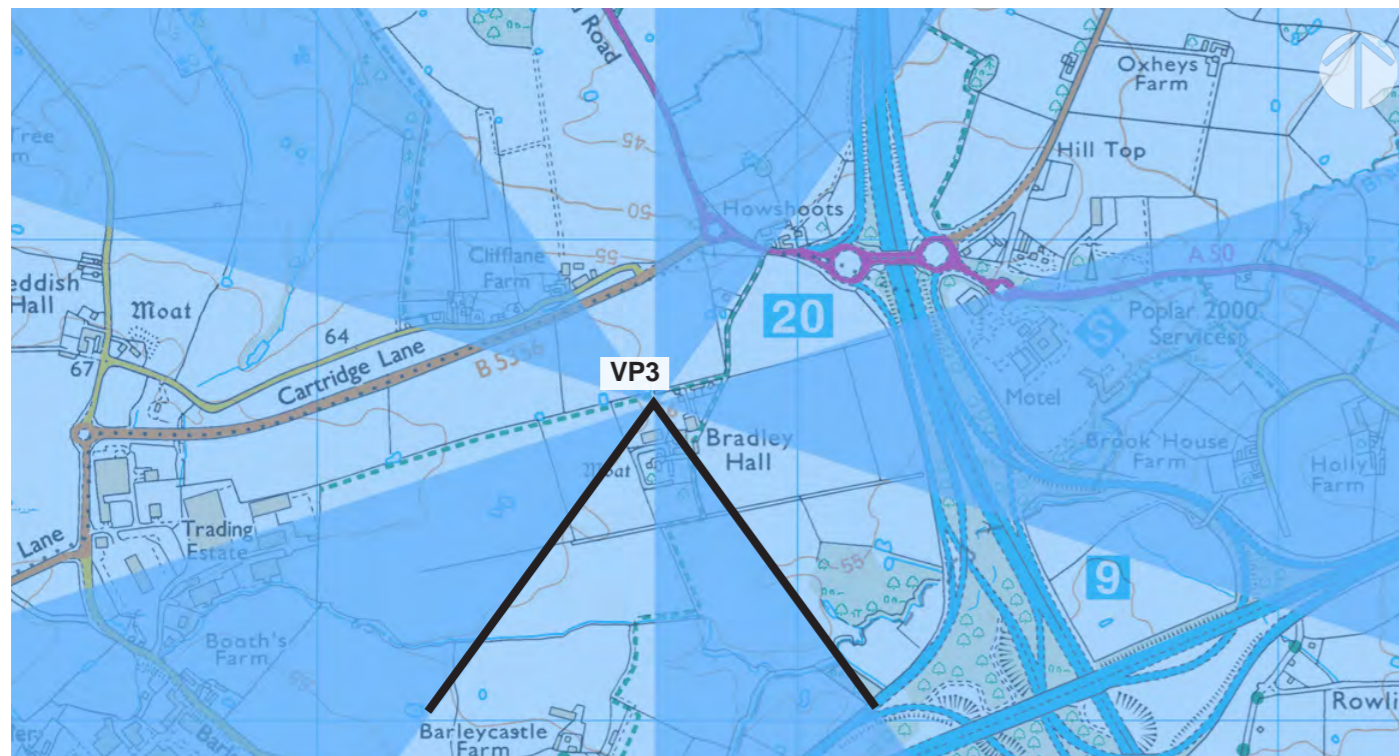


Existing View Summer 23:38

Camera Location:



Tripod:



Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



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Existing View Summer 20:04

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Existing View Summer 20:40

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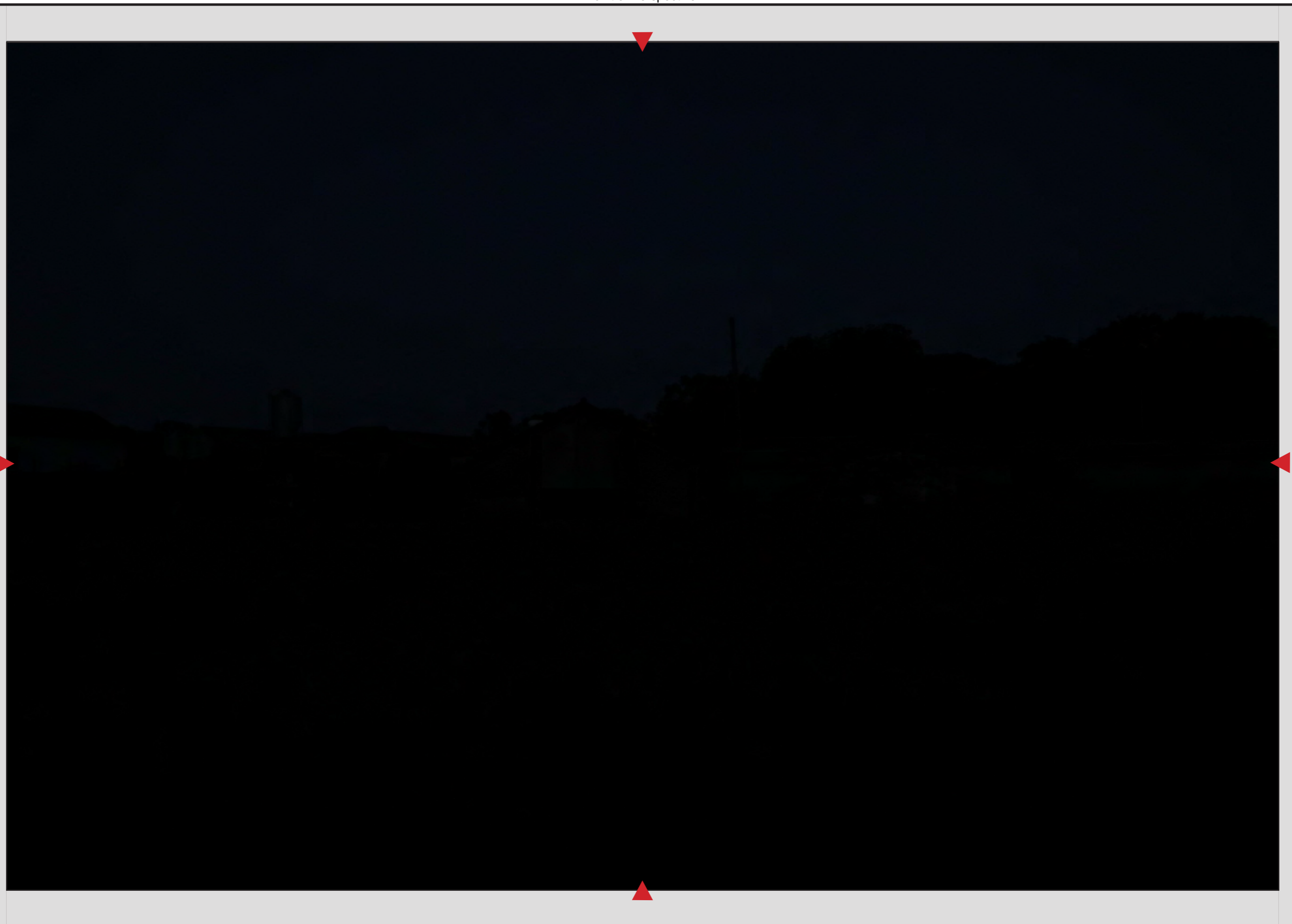
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Existing View Summer 22:54

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



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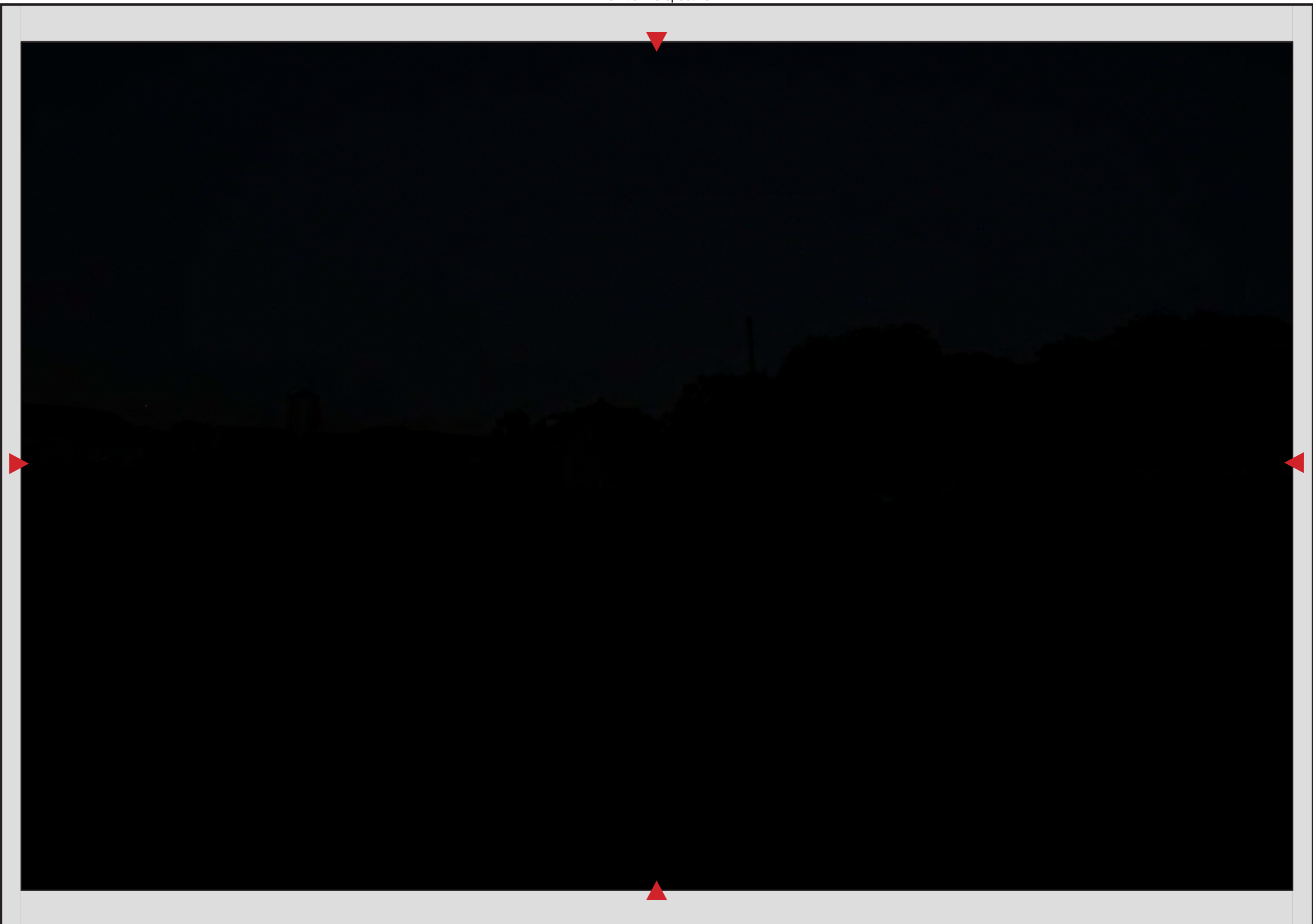
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Existing View Summer 23:11

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



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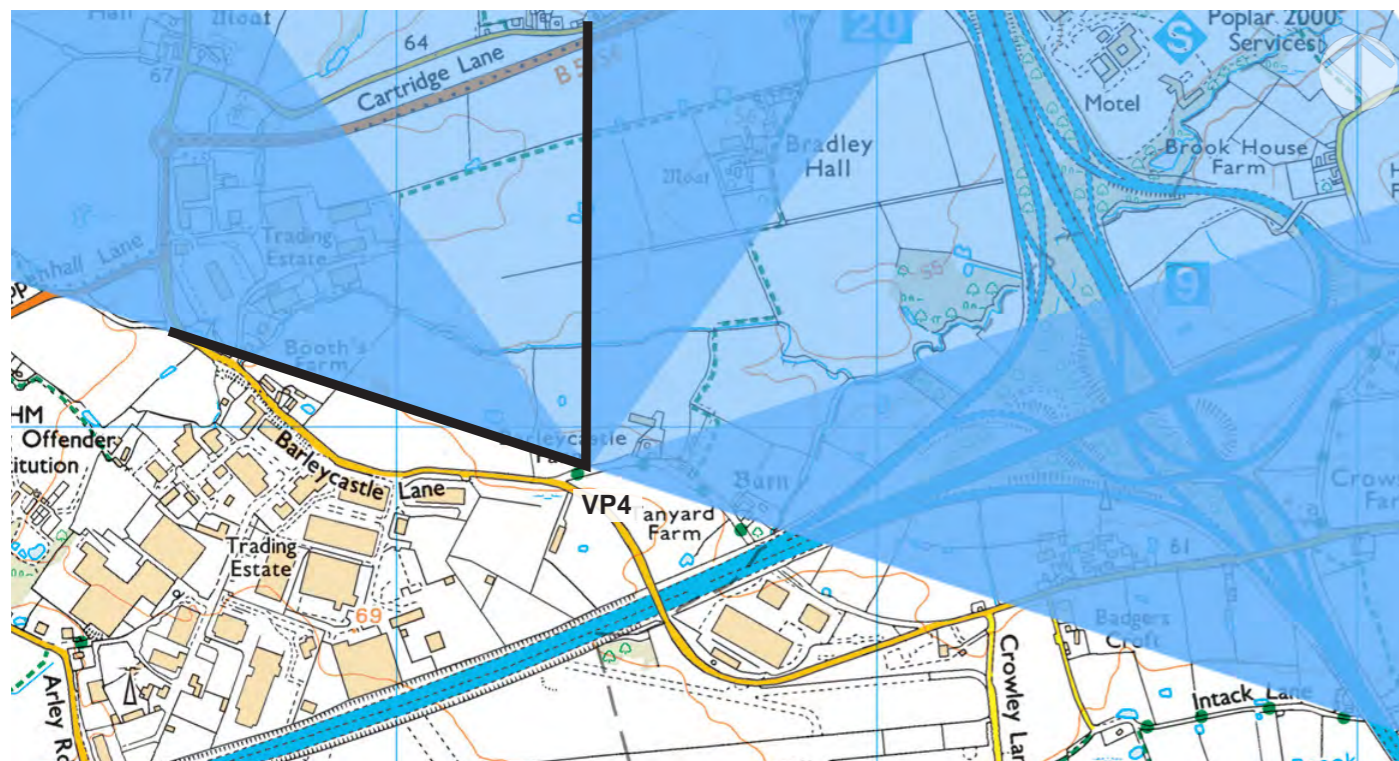


Existing View Summer 23:38

Camera Location:



Tripod:



Point of Perspective

24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



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Existing View Summer 19:53

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24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)



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Existing View Summer 21:14

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24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

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Existing View Summer 21:31



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Existing View Summer 21:56



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Existing View Summer 22:12

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24mm Lens Planar Projection (actual 24.54mm; 72.52 deg HFOV)

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Existing View Summer 22:24

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Existing View Summer 22:40

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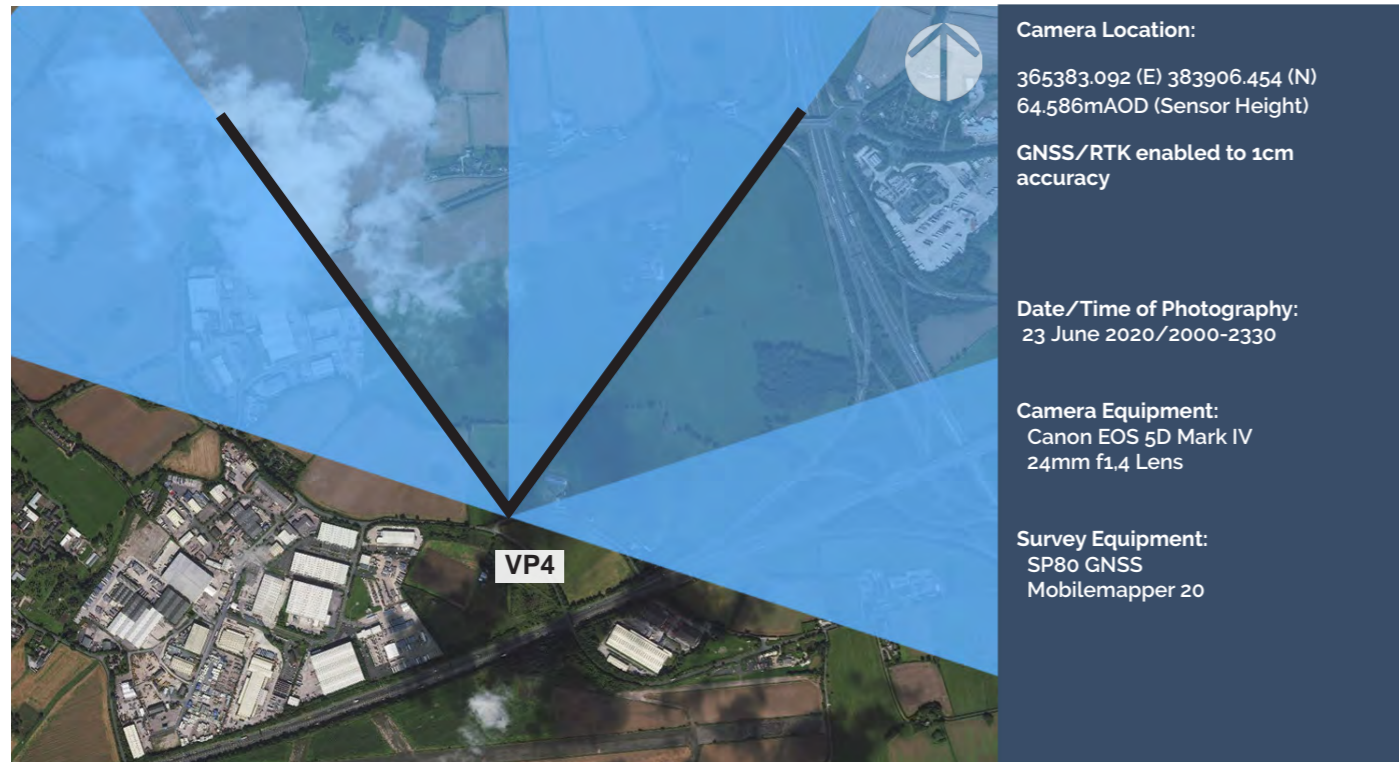


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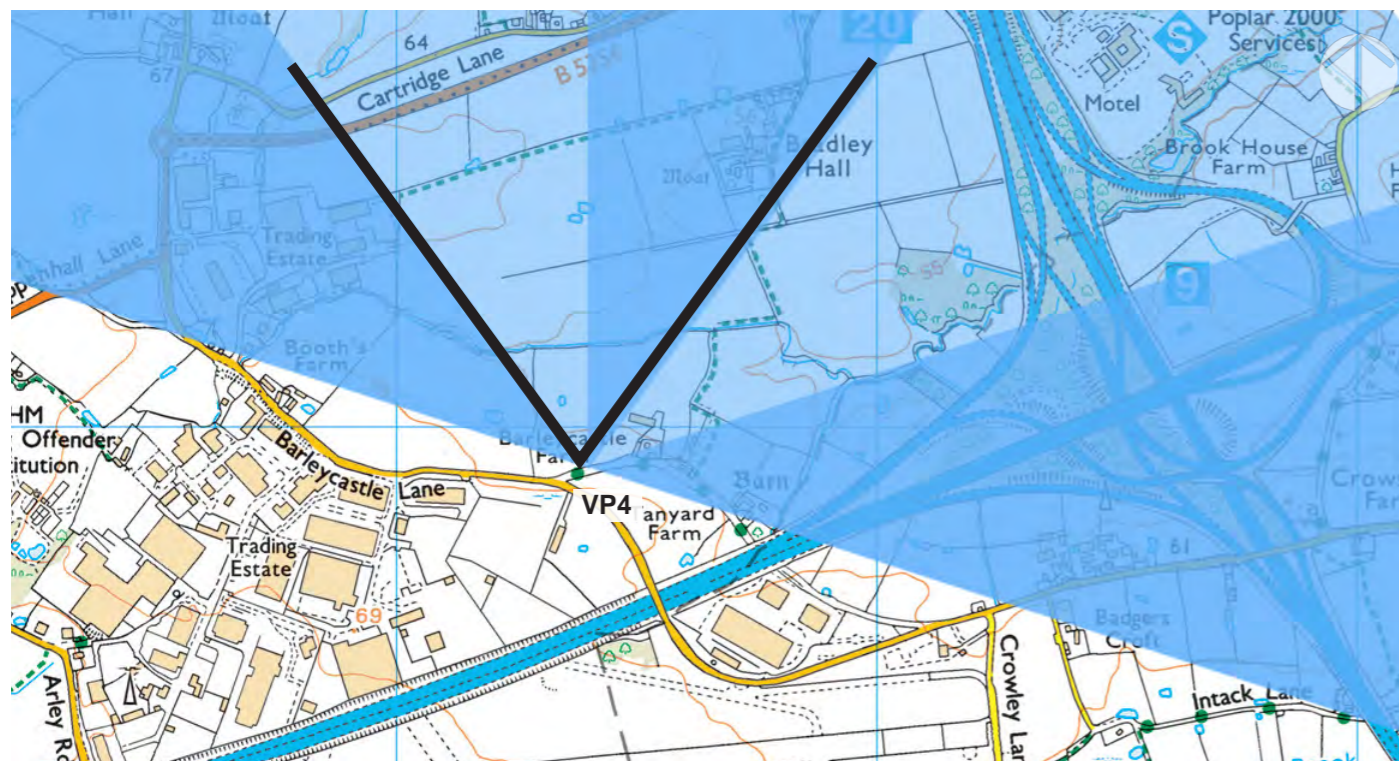


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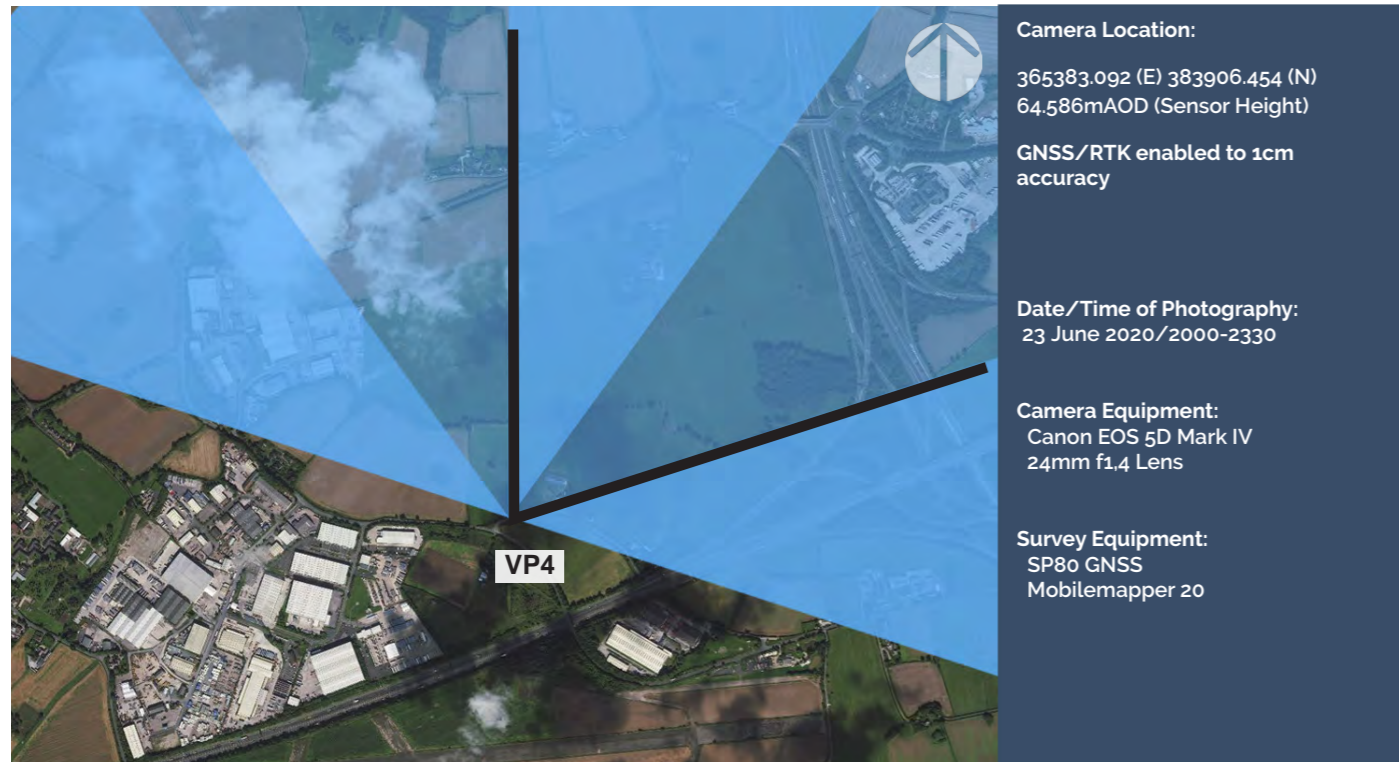


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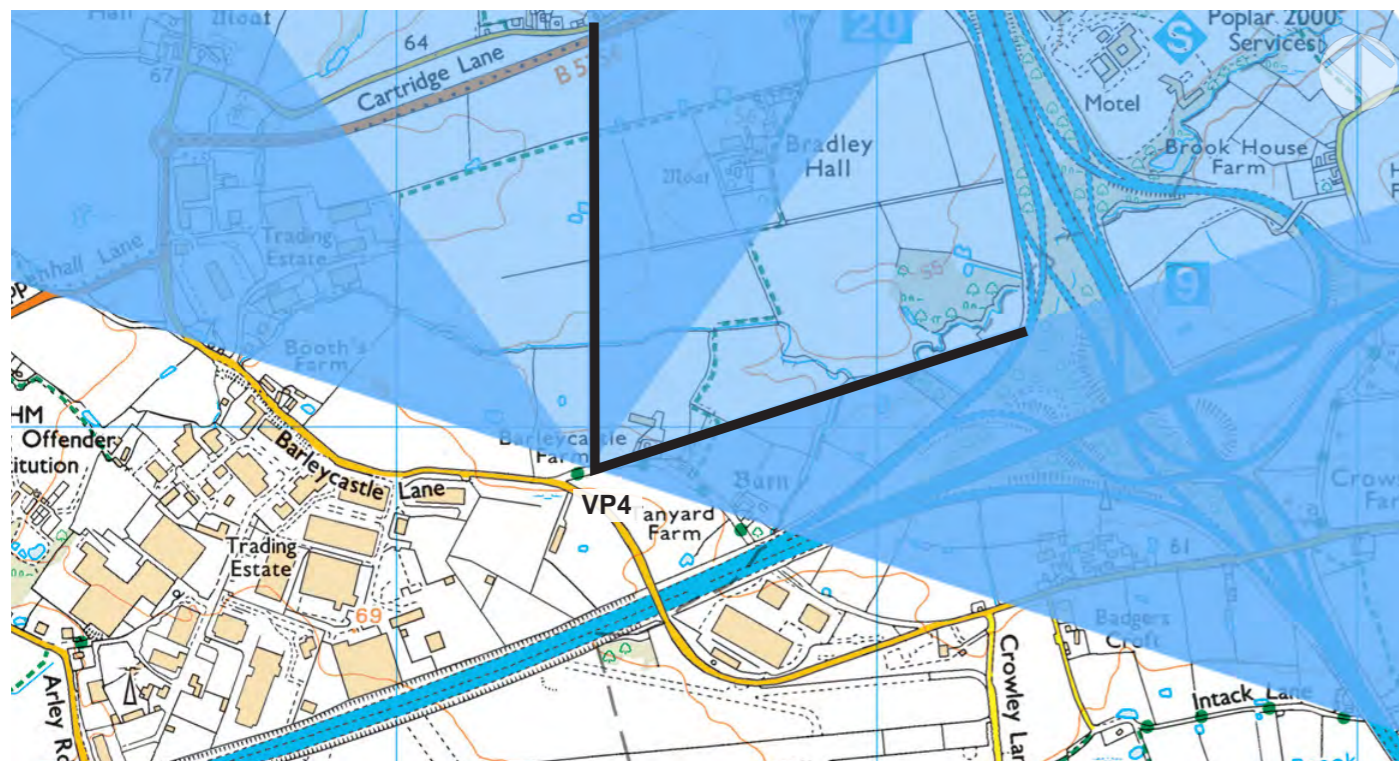


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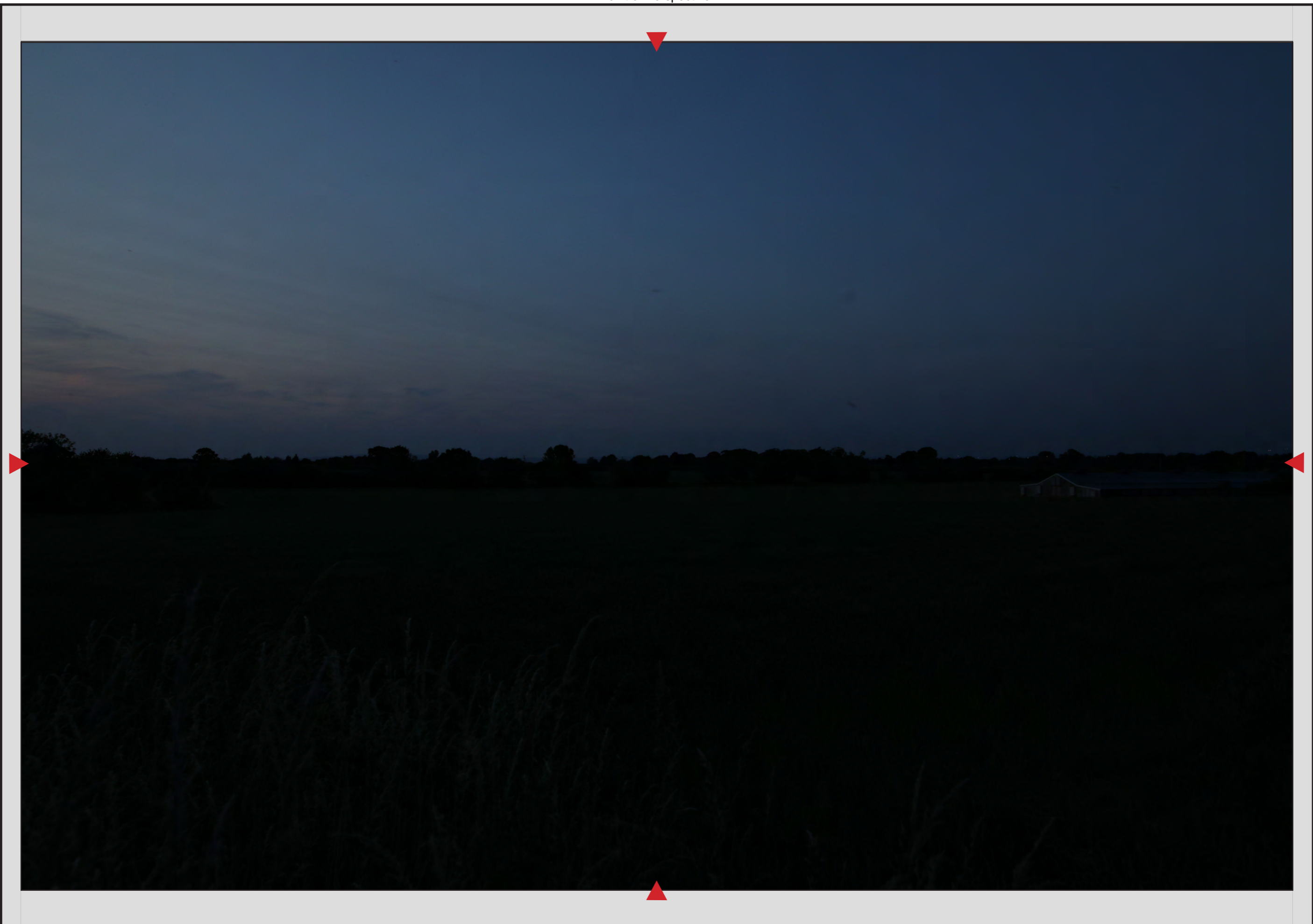
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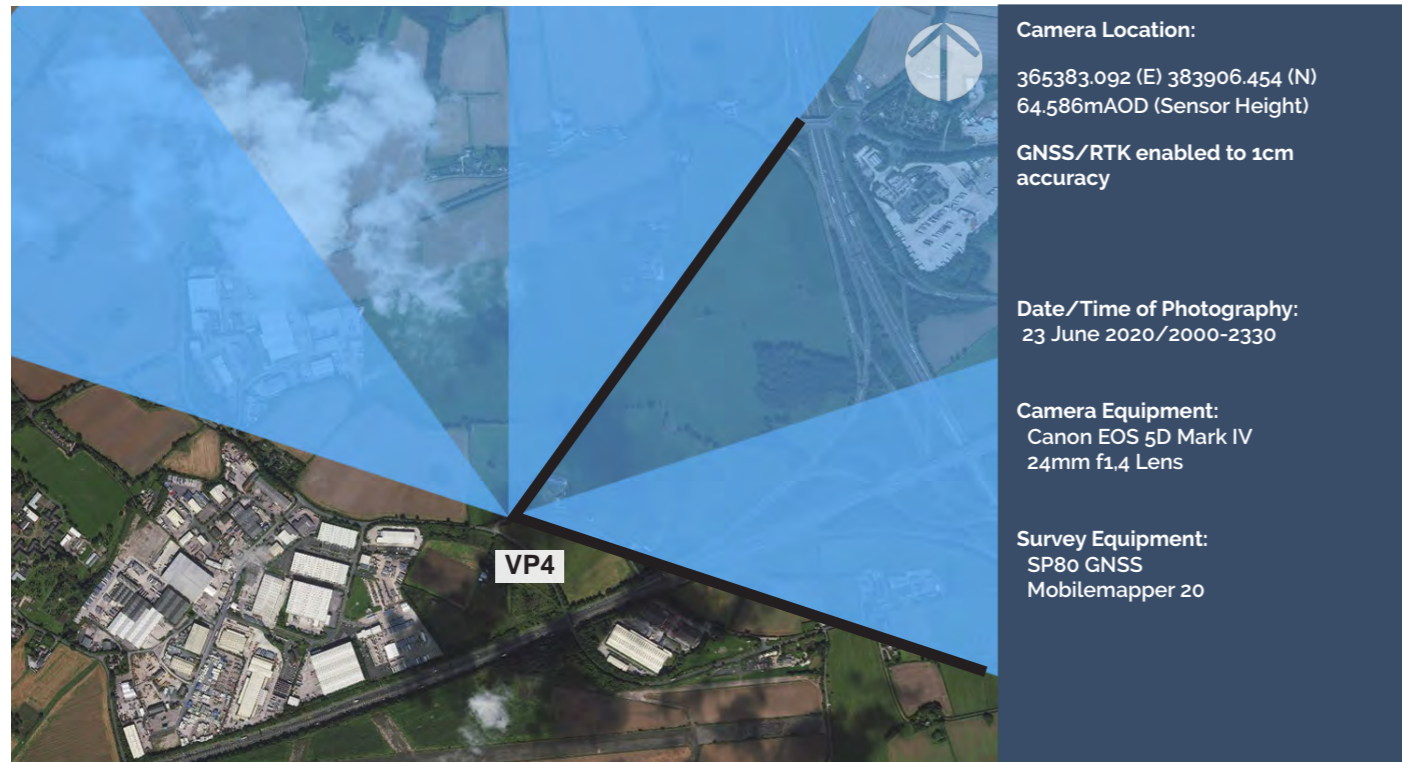
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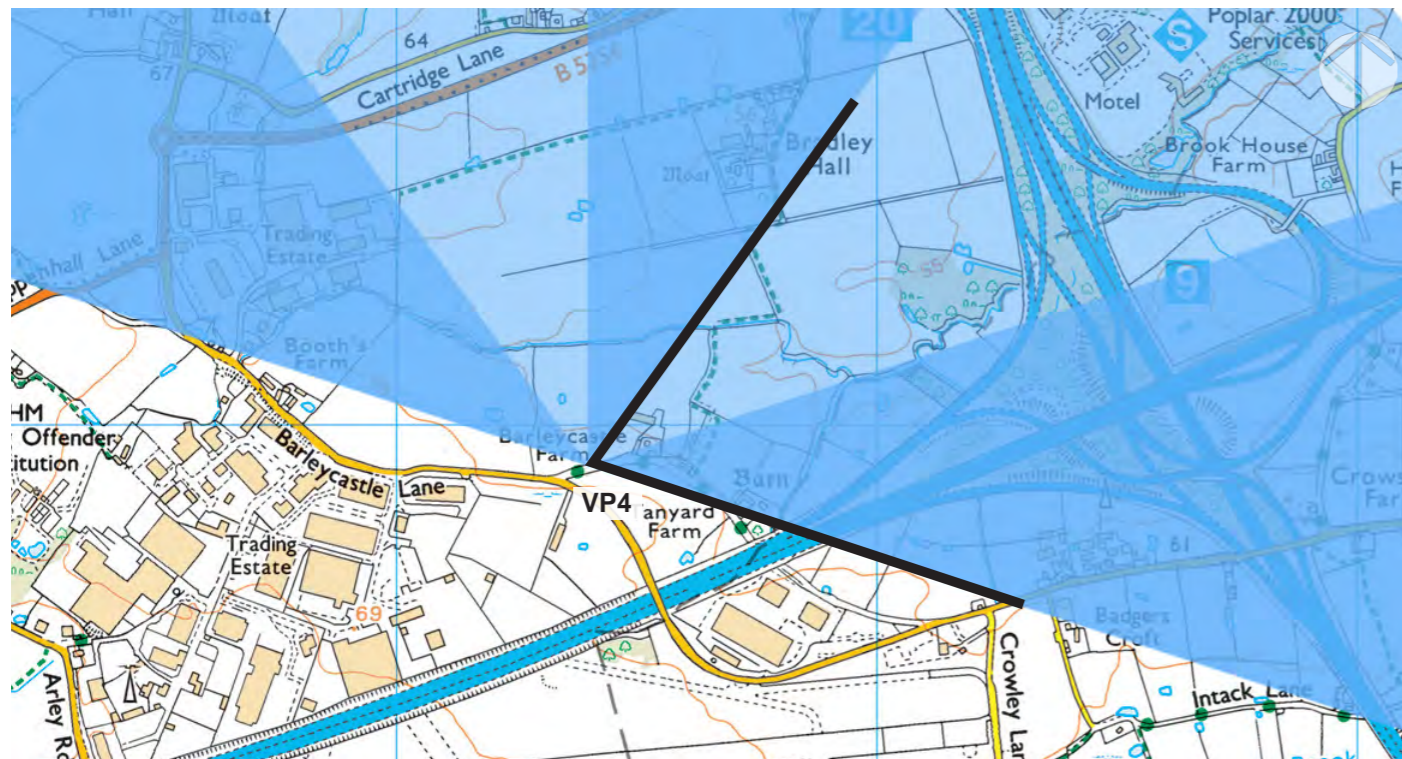
Existing View Summer 23:38



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Tripod:



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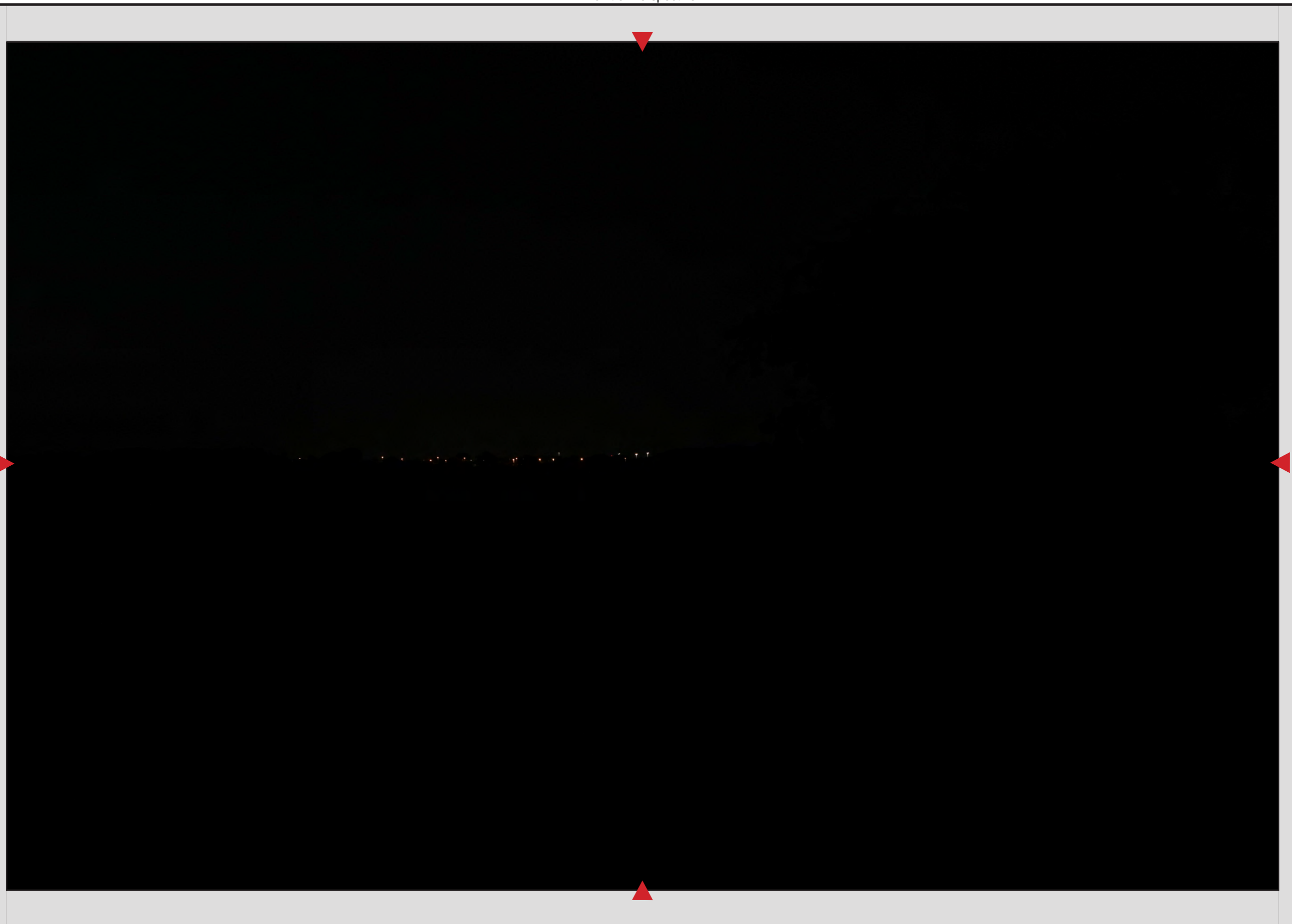
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Point of Perspective



Existing View Summer 23:38



SPECTRA
PRECISION

Spectra Precision SP80 GNSS Receiver

The Most Connected GNSS Receiver

UNMATCHED
RELIABILITY
RUGGED
INNOVATIVE




SP80

SP80 GNSS Receiver

The Spectra Precision SP80 is a next generation GNSS receiver that combines decades of GNSS RTK technology with revolutionary new GNSS processing. Featuring the new 240 channel "GG" chipset, the SP80 system is optimized for tracking and processing signals from all GNSS constellations.

In addition, SP80 is the most connected GNSS receiver in the industry. It is the first to offer a unique combination of integrated 3.5G cellular, Wi-Fi and UHF communications with SMS, email and anti-theft features.

These powerful capabilities, packaged in an ultra-rugged and cable-free housing with unlimited operation time (hot-swappable batteries), make SP80 an extremely versatile turnkey solution.

Key Features

- New 240-channel GG ASIC
- Z-Blade GNSS engine
- 3.5G cellular modem
- Internal UHF radio
- Built-in Wi-Fi communication
- SMS and e-mail alerts
- Anti-theft protection
- Hot-swappable batteries



Patented inside-the-rod mounted UHF antenna design



Unique 6G GNSS-centric Technology

Exclusive Z-Blade processing technology running on a next-generation Spectra Precision 240-channel 6S ASIC fully utilizes all 6-GNSS systems: GPS, GLONASS, BeiDou, Galileo, QZSS and SBAS. The unique GNSS-centric capability optimally combines GNSS signals without dependency on any specific GNSS system; this allows SP80 to operate in GPS-only, GLONASS-only or BeiDou-only mode if needed. In addition, SP80 supports the recently approved RTCM 3.2 Multiple Signal Messages (MSM), a standardized definition for broadcasting all GNSS signals from space, regardless of their constellation. This protects the surveyor's investment well into the future by providing superior performance and improved productivity as new signals become available.

SMS and Email Messaging

SP80 has a unique combination of communication technologies including an integrated 3.5G GSM/UMTS modem, Bluetooth and Wi-Fi connectivity, and optional internal UHF transmit radio. The cellular modem may be used for SMS text messages and e-mail alerts as well as regular Internet or MMS connectivity. Likewise, SP80 can use all available RTK correction sources and connect to the Internet from the field using WiFi hotspots, where available. The internal UHF transmit/receive radio allows for quick and easy setup as a local base station. This saves time and increases the surveyor's efficiency.

Anti-Theft Protection

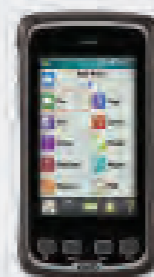
A unique anti-theft technology secures SP80 when installed as a field base station in remote or public places and disabled if the product is disturbed, moved or stolen. This technology allows the surveyor to lock the device to a specific location and make it unusable if the device is moved elsewhere. In this case, SP80 will generate an audio alert and show an alert message on its display. Furthermore, an SMS or e-mail will be sent to the surveyor's mobile phone or computer and provide the receiver's current coordinates allowing tracking of its position and facilitating recovery of the receiver. SP80's anti-theft technology provides surveyors with remote security and peace of mind.

The Most Powerful Tool for Reliable Field Use

The SP80's rugged housing, created by Spectra Precision's engineering design lab in Germany, incorporates a host of practical innovations. Dual hot-swappable batteries can be easily exchanged in the field as a one-hand operation for an interruption-free working day, ensuring surveyors remain productive until the job is done. The impact-resistant glass-fiber reinforced casing, designed to withstand 2m pole drops and waterproof to IP67, ensures that SP80 can handle the toughest outdoor conditions. The patented UHF antenna, set inside the rugged carbon fiber rod, extends the range of RTK radio performance at the same time as armoring protection. The sunlight-readable display offers instant access to key information like the number of satellites, RTK status, battery charge and available memory. These powerful design features combine to make SP80 the most capable, most reliable GNSS receiver, backed by a comprehensive standard 2-year warranty.

The Spectra Precision Experience

With the most advanced and rugged field data collectors from Spectra Precision, surveyors get maximum productivity and reliability every day. Spectra Precision Survey Pro or FAST Survey software is specifically tailored for the SP80 GNSS receiver providing easy-to-use, yet powerful GNSS workflows, letting the surveyor concentrate on getting the job done. Spectra Precision Survey Office Software provides a complete office suite for post-processing GNSS data and adjusting survey data, as well as exporting the processed results directly back to the field or to engineering design software packages. Combined with Spectra Precision field and office software, SP80 is a very powerful and complete solution.



MobileMapper®20



Expanded capabilities for any GIS application

EASY
AFFORDABLE
ACCURATE



MobileMapper 20

MobileMapper 20

Geographical Information Systems and Location Based Services are now being used in a wide range of applications and organizations. The growing need for geo-localization is naturally boosting the demand for efficient and affordable data collection solutions. Spectra Precision is leading the democratization of GNSS, enabling wider access to professional mapping. With MobileMapper 20, Spectra Precision makes it possible to deploy a professional accurate GIS receiver to any field work force.

Powerful and complete, MobileMapper 20 is the ideal enabling tool for a huge range of positioning applications.

With MobileMapper 20, organizations will improve the quality of their georeferenced information and their field productivity, yielding reduced operational costs.

Secure Your Field Work

- A wide range of capabilities in a compact, lightweight design
- Several days of battery life
- Rugged and reliable

Unpack and Start Logging

- Ready-to-use complete mapping solution for field and office
- User friendly Windows® Embedded Handheld 6.5
- Easy-to-use software for short learning curve and quick logging operations

Ideal for Data Maintenance or Inspection

- Log your assets in real-time with 1 to 2 meter accuracy
- Connect field and office work force for maximum productivity
- Achieve half meter accuracy with post-processing

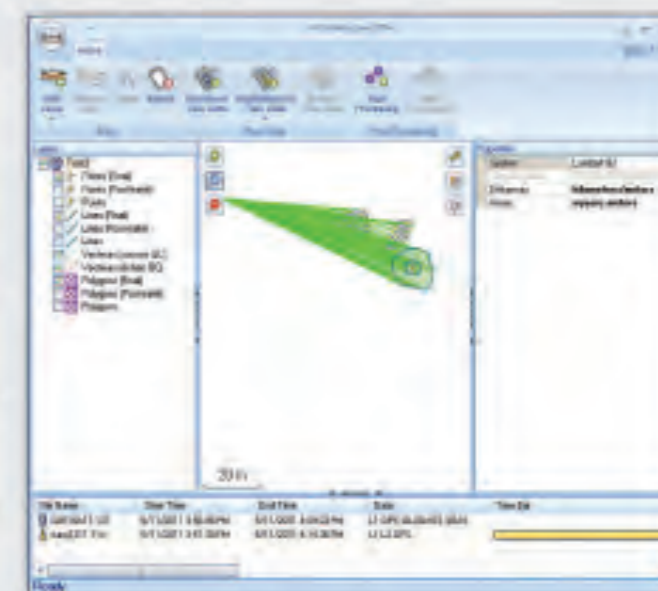
MobileMapper Field and Office Software

A complete solution

The Spectra Precision MobileMapper software suite includes all the GIS features that professionals really need, without the burden of complicated and rarely used functions.

Running on MobileMapper receivers, MobileMapper Field is the perfect solution for GIS data collection, asset management, area measurement, map creation and update. The software is very intuitive and easy-to-use, requiring minimum training. It also provides a direct interface to external sensors for a complete field solution.

The Spectra Precision MobileMapper Office tool can be used to differentially post-process raw GPS data collected with the MobileMapper field software. Through an internet connection, MobileMapper Office can automatically find and download the base data files that will match the collected raw data; it then computes corrected positions automatically.



Tune MobileMapper 20 To Your Applications

With Windows Embedded Handheld 6.5 you may upload necessary utilities or software on your MobileMapper 20, to suit your next job. You can collect GIS/GPS points and maps via the GIS application of your choice, either third-party software such as LRSI® ArcPad® or a purpose-built Spectra Precision application.



04 OPERABILITY CONNECTIVITY ACCESSORIES



DUST/WATER RESISTANCE

The EOS 5D Mark IV exterior's joint areas are sealed by outer rubber coating and dust/water resistant material.

MAGNESIUM ALLOY EXTERIOR

Weighing only 810g, the EOS 5D Mark IV's magnesium alloy exterior ensures the camera remains lightweight yet durable, making it especially suitable for use in harsh environments.



OPTIONAL BG-E20 BATTERY GRIP

Featuring a new slimmed down grip, the BG-E20 provides improved handling ease and comfort when shooting in portrait mode. Powered by two batteries, it extends battery life, lending extra support for long periods of movie or stills shooting.

EOS System Accessories

EF24-105mm f/4L IS II USM

Covering from wide angle to mid-telephoto, this versatile lens features improved optical and IS performance, durability, with Air Sphere coating for flare and ghosting suppression. With low-speed USM and noise reduction for improved movie compatibility performance, the lens works with Dual Pixel CMOS AF to provide users a silent, smooth movie shooting experience.



LATITUDE
N 14° 51' 57"
LONGITUDE
E 101° 33' 41"
ELEVATION
290m

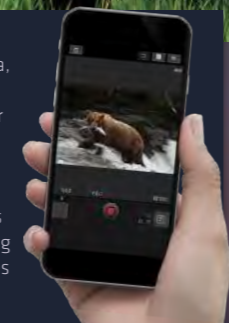


BUILT-IN GPS

The built-in GPS acquires shooting location data, allowing users to easily categorise their images based on GPS information even when the power is off.

BUILT-IN WI-FI/NFC

The built-in NFC and Wi-Fi capabilities supports the IEEE 802.11b/g/n (2.4Ghz) standard, allowing users to seamlessly connect and transfer images and videos via the Camera Connect app.



EOS 5D Mark IV

SPECIFICATIONS

Image Sensor Type	CMOS sensor	Shutter speed	1/8000 sec. to 30 sec. (total shutter speed range; available range varies by shooting mode). Bulb, X-sync at 1/200 sec.
Aspect ratio	3:2	Continuous shooting speed	High-speed continuous shooting: Max. approx. 7.0 shots/sec. Low-speed continuous shooting: Max. approx. 3.0 shots/sec. Silent continuous shooting: Max. approx. 3.0 shots/sec.
Image sensor size	Approx. 36.0 x 24.0 mm	Max. burst	JPEG Large/Fine: Approx. 110 shots (Card Full) RAW: Approx. 17 shots (Approx. 21 shots) RAW+JPEG Large/Fine: Approx. 13 shots (Approx. 16 shots)
Effective pixels	Approx. 30.4 megapixels	External Speedlite	Compatible with EX-series Speedlites
Image type	JPEG, RAW (14-bit Canon original), RAW+JPEG simultaneous recording possible	Flash metering	E-TTL II autofocus
Pixels recorded	L (Large): Approx. 30.1 megapixels (6720 x 4480) L-RAW: Approx. 30.1 megapixels (6720 x 4480)	Flash exposure compensation	±3 stops in 1/3- or 1/2-stop increments
Picture Style	Auto, Standard, Portrait, Landscape, Fine Detail, Neutral, Faithful, Monochrome, User Defined 1-3	Recording format	MOV, MP4
Viewfinder Type	Eye-level pentaprism	Movie	4K Motion JPEG Full HD/HD: MPEG-4 AVC/H.264 variable (average) bit rate
Coverage	Vertical/Horizontal approx. 100%	Audio	MOV: Linear PCM, MP4: AAC
LCD Monitor Type	TFT colour, liquid-crystal monitor	Movie recording size	4K (4096x2160), Full HD (1920x1080), HD (1280x720: High Frame Rate movie)
Monitor size and dots	Wide 8.1 cm (3.2-in) (3.2) with approx. 1.62 million dots	Frame rate	NTSC (119.9p/59.94p/29.97p/24.00p/23.98p) PAL (100.0p/50.00p/25.00p/24.00p)
AF points	Max. 61 points (Cross-type AF point: Max. 41 points)	Live View Shooting/ Movie Shooting Focus method	Dual Pixel CMOS AF
Focusing brightness range (via Viewfinder)	EV -3 - 18 (Conditions: f/2.8-sensitive centre AF point, One-Shot AF, room temperature, ISO 100)	Dimensions (w x h x d)	Approx. 150.7 x 116.4 x 75.9 mm / 5.93 x 4.58 x 2.99 in.
Focus operation	One-Shot AF, AI Servo AF, AI Focus AF, Manual focusing (MF)	Weight	Approx. 890 g / 31.39 oz. (Including battery, CF card, SD memory card), Approx. 800 g / 28.22 oz. (Body only)
AF fine adjustment	AF Microadjustment	DISCLAIMERS	*All the data above is based on Canon's testing standards and CIPA (Camera & Imaging Products Association) testing standards and guidelines. *Dimensions and weight listed above are based on CIPA Guidelines (except weight for camera body only). Product specifications and the exterior are subject to change without notice. *If a problem occurs with a non-Canon lens attached to the camera, consult the respective lens manufacturer.
Metering mode	Approx. 150,000-pixel RGB+IR metering sensor and 252-zone TTL open-aperture metering EOS iSA (Intelligent Subject Analysis) system	Multiple Exposures	Number: 2 to 9 exposures Control: Additive, Average, Bright, Dark
ISO speed (Recommended exposure index)	Scene Intelligent Auto: ISO 100 - ISO 12800 set automatically P, Tv, Av, M, B: ISO Auto, ISO 100 - ISO 32000 manual setting (in 1/3- or whole-stop increments), and expansion to L (equivalent to ISO 50), H1 (equivalent to ISO 51200), H2 (equivalent to ISO 102400) provided.		
Exposure compensation	Manual: ±5 stops in 1/3- or 1/2-stop increments AEB: ±3 stops in 1/3- or 1/2-stop increments (can be combined with manual exposure compensation)		
Flicker reduction	Possible		
HDR Shooting - Dynamic range adjustment	Auto, ±1, ±2, ±3		

EOS DIGITAL

Canon
Delighting You Always

TAKE ON THE INFINITE

Made in JAPAN



EOS 5D Mark IV

4K 30p

Dual Pixel CMOS AF

Dual Pixel RAW

4K Frame Grab

30.4 MEGA PIXELS CMOS

61 High Density Retriever AF

ISO 32000

70 Frames Per Sec

Wi-Fi / NFC

GPS

CANON IMAGING ASIA

CANON ASIA

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SNAPSHOT

SNAPSHOT.CANON-ASIA.COM

SOUTH AND SOUTHEAST ASIA REGIONAL HEADQUARTERS:

CANON SINGAPORE PTE. LTD.
1 Fusionopolis Place
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www.canon-asia.com

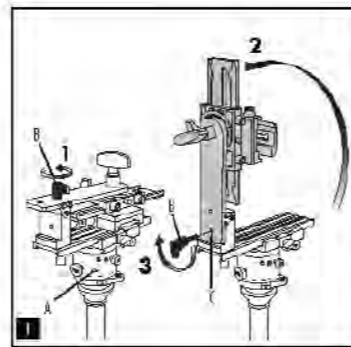
Insist on an original warranty by your sales office.
Specifications are subject to change without notice.
Images are simulated.

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APPENDIX 4: CAMERA EQUIPMENT (MANFROTTO 303 SPH)



303SPH
Spherical "VR" Head



The spherical "VR" head is designed to allow panoramic views to be created by Computer From a camera panoramic sequence of digital or digital photographic images (different from real time video).

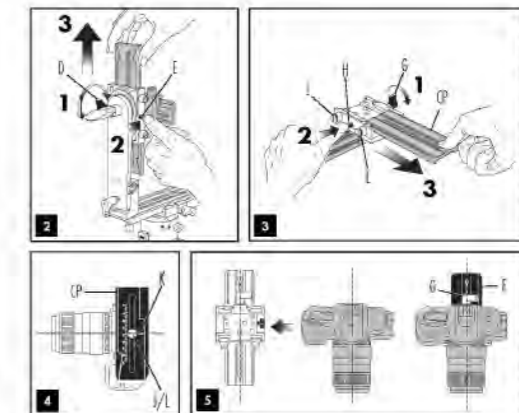
There are 4 requirements to achieve good panoramic sequence shots:

1. Accurate leveling of the panoramic axis.
2. A horizontal head that enables you to choose the angle of rotation between one distant object and the next.
3. The ability to position the camera in the "Nodal Point" (the intersection of the horizontal axis of rotation, it eliminates any perspective distortions between the near and distant objects in the scene).
4. An additional leveling axis that enables you to shoot several panoramic sequences at different vertical angles in order to achieve a complete spherical scene.

The spherical "VR" head consists of two main modules that perform the functions mentioned above: points 2, 3 and 4.

If your tripod has a built-in leveling device (such as the Manfrotto BKH tripod's Shim ball ball), you will need to use one of its leveling accessories (available from the Manfrotto range) to ensure precise leveling of the head (see page 11).

SET UP 1
Fix the leveling device (as supplied) to the tripod, then fix the "VR" head on the leveling device via knob "F". Completely remove knob "B", rotate the vertical axis to the vertical position as shown in Fig. 1 and lock it in place by screwing knob "D" in lock "C".

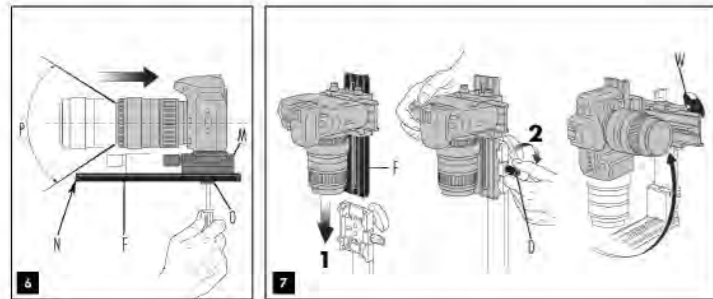


2 Remove the top assembly (Fig. 2) by releasing knob "D". To slide it completely out of the housing, push safety button "E".

Remove camera plate "CP" (Fig. 3) by releasing knob "D". To slide it completely out of the housing, push safety button "E".

You will find two screws attached to the top assembly: screw "F" (Fig. 3) is 1/4 in. (1" to 3/8 in.). Depending on your camera tripod attachment, choose the correct screw and use it to fix your camera to plate "CP" (Fig. 4). Use a coin or screwdriver to lock the core. It aligns the lens with the center of the plate as indicated by letter "H".

Mount the camera on the top assembly as shown in Figure 5 by sliding the camera's plate into the housing following the direction shown by the "Insert" arrow. Lock in place using knob "D". Before locking, take care to align the lens with the long plate "F" - the lens axis must be perfectly above the size of the plate as shown in Figure 5. The angle of the lens on the retinal knob "D" can be repositioned as required without affecting the lock ball. Pull the lens outward, rotate as required and release and it will locate in the new position.



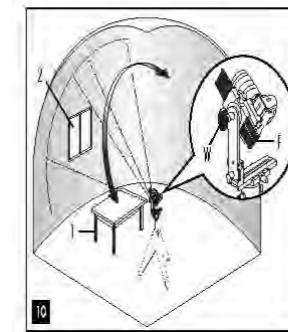
NOTE 1
The position of the housing "M" relative to the long plate "F" will need to be adjusted: loosen screw "G" to slide the housing. The ideal position is with the camera body as far back on the plate as it can go before the front edge "N" of the long plate "F" becomes visible in the camera's field of view "P".

MOUNT THE CAMERA ON THE HEAD 2
Mount the whole top assembly (camera on the head) as shown in Figure 7 by sliding the long plate "F" into the housing and locking it by screwing knob "D". Then screw knob "W" and move the camera on the vertical plate.



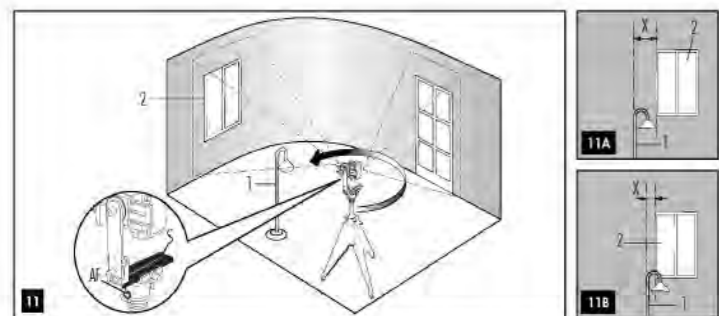
8 Turn the camera's plate "CP" into the housing. The camera's plate "CP" must be perfectly aligned with the long plate "F". The lens axis must be perfectly above the size of the plate as shown in Figure 5. The angle of the lens on the retinal knob "D" can be repositioned as required without affecting the lock ball. Pull the lens outward, rotate as required and release and it will locate in the new position.

9 The angle of the lens on the retinal knob "D" can be repositioned as required without affecting the lock ball. Pull the lens outward, rotate as required and release and it will locate in the new position.



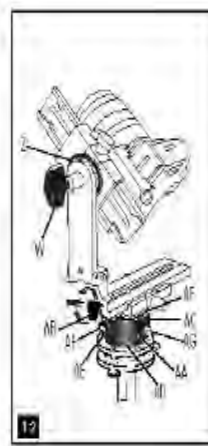
ADJUST POSITIONING OF THE "NODAL POINT" 10
If the two axes (near and distant objects) of varying distance from the point where the shot is being taken (near and distant objects), the "Nodal Point" needs to be more accurately positioned to follow (the greater a possible "N" will reduce camera's).
Note:
- FIRST AXIS LONGITUDINAL POSITIONING.
- SECOND AXIS LONGITUDINAL POSITIONING ONLY WHEN LONGITUDINAL POSITIONING HAS BEEN SET.

LONGITUDINAL POSITIONING 10
(See Figure 10). Choose a frame that contains both a near object "1" and a distant object "2" situated along the same vertical line of vision.
1. See Figure 10A and 10B) loosen knob "D" and move the camera on the vertical plate to bring the two objects best to the top and then to the bottom of the frame, checking whether the height gap "Y" between the two objects in the two frames, the same fraction the distance remains, the more accurately the "Nodal Point" has been positioned.
2. For optimum results, make minor adjustments by moving plate "F".
Once the right position is achieved it is VERY USEFUL to memorize it by noting the position of the plate "F" on the index of the graduated scale.



LATERAL POSITIONING 11
(See Figure 11). Choose a frame that contains both a near object "1" and a distant object "2" situated along the same horizontal line of vision.
1. (See Figure 11A and 11B) loosen knob "AF" and move the camera around the panoramic axis so that the two objects are first on the left hand side of the frame, then on the right. Check whether the horizontal gap "X" between the two objects varies in the two frames; the more constant the distance remains, the more accurately the "Nodal Point" has been positioned.
2. For optimum results, make minor adjustments by moving plate "F".

Once the right position is achieved it is VERY USEFUL to memorize it by noting the position of the plate "F" on the index of the graduated scale.

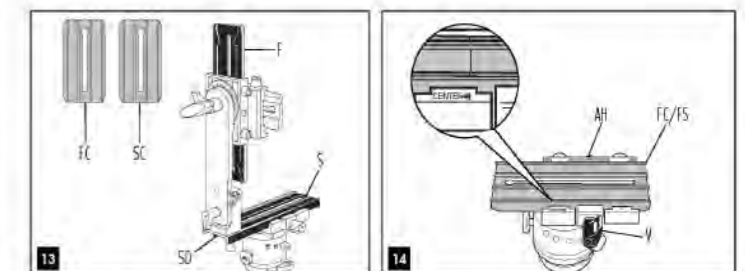


INSTRUCTIONS FOR SPHERICAL PANORAMA CENTERING 12
Digital panoramic views are obtained by stitching after panoramic sequences taken at different angles, from a horizontal line. For you will need to have the camera's panoramic sequence you will need to complete the sphere (depending on the angle of the horizontal line being followed) starting with the panoramic sequence, choose the initial vertical angle using the retinal knob "D" (Fig. 12).
Loosen locking knob "AF" or remove it completely. If you do not wish to remove it, use the counterbalancing device (available from Manfrotto) to assist in a vertical position, with the camera's plate "CP" in the vertical position.

Choose the angle of view in the angle of rotation between each shot for the panoramic sequence, according to the table below:

Angle of view	45°	60°	45°	30°	30°	60°	30°	15°	10°	9°
n. shots	4	5	5	10	12	13	16	24	28	72

• Loosen knob "AF" and the camera's plate "CP".
• Release locking knob "AF" and rotate the camera on the plate "CP" to the position of the first shot.
• Hold the camera in position and rotate the central knob "D" until the item "Nodal Point" is reached, then lock knob "D".
• Lock the head and then rotate the camera to the next "Nodal Point" without releasing "AF" and lock the camera.
Continue this process until the panoramic sequence is completed.
Once you have completed the first complete panoramic sequence, you can start with the other panoramic sequences needed to cover the sphere: change the vertical angle using knob "D" and rotate knob "D" and release the camera's plate "CP" as needed for each of the sequences.
The head of the base "D" has graduated retinal knob "D" and a horizontal knob "AF" to the camera's base "D". This will allow you to rotate the camera on the head. There is also a knob "D" to rotate the camera's plate "CP" along the vertical axis of rotation "D" and lock the camera's plate "CP" to the position being shooting.
NOTE: The angle of the lens on the retinal knob "D" can be repositioned as required without affecting the lock ball. Pull the lens outward, rotate as required and release and it will locate in the new position.



ADDITIONAL PLATES 13
If you have a very compact camera we suggest you to use the short slide "SC" (Fig. 13) and "FC" (supplied with the head) instead of the two long plates "F" and "S" in order to reduce space and weight of the system.
To replace the slide "S" use screw "SS" (Fig. 13).
To replace the plate "F", please refer to Fig. 4 and use screw "D".

USE OF THE KIT AS AN INVERSE PANORAMA TRIPOD 14
The head can also be used as a horizontal, useful for shooting object panoramas. For this use, loosen knob "F" and push button "AF" to slide the lower plate "S" out of the housing on the panoramic rotation axis into a plane of the long plate and top assembly, insert one of the two shorter plates supplied as a base to your object. The plate housing has a "center" mark to help you position your object assembly above the center of panoramic rotation.