LDĀDESIGN

Relocation of Marshall Aerospace and Defence Group, Cranfield

Landscape and Visual Appraisal
July 2019

A 17 Minster Precincts
Peterborough
PE1 1XX
United Kingdom
T 01733 310 471

W www.lda-design.co.uk

LDA Design Consulting Ltd
Registered No. 09312403
17 Minster Precincts, Peterborough, PE1 1XX

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Version:	1.3
Version date:	02.08.19
Comment	Draft

This document has been prepared and checked in accordance with ISO 9001:2015.

1.0 Summary

The Site is located to the north west of Cranfield Airfield and has an extant planning permission for a new Air Park with aircraft hangars up to 17.2m tall and a hotel building up to 23.8m tall.

The Site has a second extant planning permission for the diversion of 3no. existing Public Rights of Way to be relocated to the northern and western perimeter of the site.

Marshall Aerospace and Defence Group (MADG) are currently reviewing the Site as an option for the relocation of their operations at Cambridge Airport (herein referred to as the MADG proposal). This proposal increases the density, width and height of the development area from the extant proposal, with the tallest building at 26m.

A site visit was carried out in July 2019 to assess any potential impact on visual amenity and landscape character that the MADG proposal would have when considered against the extant permissions.

The study area is rural in character with Cranfield University, the adjacent Airport and Technology Park establishing and urban presence. The airfield is situated on an elevated plateau. There are open views across the airfield towards the site with longer distance intermittent views from undulating landform to the north. From the south of the plateau, land descends towards the edge of Milton Keynes where the warehouses at Magna Park are visible.

The increase in scale (spread, density and height) of the MADG proposal from the extant permission broadens the area where development will be visible. The introduction of built form with the extant permission and the MADG proposal will be most noticeable within views around the perimeter of the airfield and Cranfield where the buildings will be easily identifiable as new additions. The increase in height and proximity to the road of the MADG proposal will have a greater impact in these locations than the extant permission but there will be no change to the character.

The MADG proposal extends the area of visual influence to the west in an area not previously affected by the extant permission. Here the view and rural character will fundamentally be changed from the extant permission where before the development was barely perceptible above the existing tree line.

The change to the landscape character of the area would remain largely unchanged between the extant permission and the MADG proposal with the exception of views from the west of the Site. Where the extant permission is visible, the MADG proposal is also visible but on a larger scale.

Landscape mitigation measures with the extant proposal focussed on the quality and design of the built form with new planting providing a softening of the perimeter. The increased development area for the MADG proposal decreases opportunities for green infrastructure mitigation, meaning the focus will again be on quality of built form.

2.0 Introduction

2.1. Appointment & Brief

LDA Design was appointed by Marshall Aerospace and Defence Group (MADG) in June 2019 to carry out a Landscape and Visual Appraisal (LVA) of land to the north of Cranfield Airport. The purpose of this LVA is to identify landscape and visual receptors that may be affected by the proposed development and provide advice as to whether the proposed MADG development is appropriate for the location; how well it can be absorbed into the current landscape; and how it would change the views people experience.

The site has an extant planning consent, granted in 2018, against which the MADG proposals are compared, identifying the differences between the consented and proposed schemes and the resulting implications on the landscape.

This report has been prepared as part of a suite of documents for pre-application to be submitted to South Cambridgeshire District Council. This document should be read in conjunction with other supporting documents submitted on behalf of MADG.

2.2. Methodology

This LVA has been prepared, so far as appropriate to a preliminary appraisal of this nature, in accordance with the methodology recommended in Guidelines for Landscape and Visual Impact Assessment (3rd edition, 2013). The site and surrounding area were visited during July 2019 to undertake the site survey and landscape and visual appraisal.

The study comprises the following:

- A desktop review of local planning documents identifying key environmental policies of relevance to landscape and visual matters. Documents reviewed include:
  - Central Bedfordshire Core Strategy and Development Management Policies (published 2009)
  - Central Bedfordshire Pre-submission Local Plan 2015-2035 (published January 2018)
- A landscape and visual appraisal of the site and its context to determine key landscape characteristics and visual sensitivities of the site and its surroundings. Documents reviewed as a source of baseline information include:
  - Central Bedfordshire Landscape Character Assessment (published July 2015)
  - Milton Keynes Landscape Character Assessment (published June 2016)
  - Bedford Borough Landscape Character Assessment (published May 2014)
  - Natural England National Character Area Profile no.88 (published 2014)
- A review of the documents relating to the planning consent for Cranfield Air Park, in particular the work undertaken by the Environmental Dimension Partnership on landscape and visual matters, contained in chapter 11 of the Environmental Statement and the supporting Technical Annex.

- A landscape analysis of the site, leading to a landscape strategy to inform the site's development proposals.

The above is supported by contextual figures, viewpoint photopanels, viewpoint wireframes of potential scheme and landscape analysis plans. These drawings are referenced throughout the report. Methodology for the production of photo viewpoints and wireframes are included in Appendix 7.

2.3. The Site and its Location

2.3.1. Location

The site is located within the parish of Cranfield, a village in Central Bedfordshire Council's administrative district located to the western edge of the county of Bedfordshire (refer to Figure 1).

Milton Keynes is approximately 10km to the south east of the site and Bedford is approximately 13km to the north east.

The site is located on land owned by Cranfield University, to the north of Cranfield Airport and directly opposite the settlement area of Cranfield, separated from it by the airfield.

2.3.2. The Site

The site (approximately 24.9ha) is rural in character and consists of fields with a mixture of arable crops, open grassland, and scrubland occupied by semi-established pioneer trees and hedgerows. A short, above ground drain runs through the western part of the site.

The site is bounded to the north by Crawley Road, to the west by College Road, to the south by buildings associated with Cranfield Airport and to the east by the airfield with the runway approximately 210m from the edge of the site.

Adjacent buildings associated with the airport are mid-century brick-built hangar buildings which are approximately 13.4m high to top of parapet, and 15.6m to roof apex *(based on survey drawings from extant planning applications)*. Beyond these to the south are more recent contemporary buildings ranging from two to three storeys and up to 17.6m tall *(on approved planning drawings, Building 52 on the campus is noted as 17.6m tall, the AIRC building to the south is noted as 16.6m tall*).

There are three existing public rights of way crisscrossing the site itself (FP20, 22 and 35) which connect into the surrounding footpath network.

2.4. Extant planning consent

Planning permission was granted in 2018 (ref: CB/17/05862/OUT) to expand the existing airport into the north west of the airfield to create an extended Air Park. The granted application was a hybrid consisting of two stages. Full permission was granted for the first phase of the development, and outline permission for the second phase under the same permission.

The permitted scheme, as shown in Appendix 3.1, consists of five hangar buildings, a hotel, a terminal building and ancillary offices and is located to the west of the site running parallel with the runway. The three larger hangars (9, 10 and 11) are located to the north of the site and are approximately 17.2m high to the apex with each having a footprint of 101m x 101m. To the middle of the site, the two small hangars are located which are approximately 16.9m high at the apex.

A hotel building is located to the south of the site with a height of 23.8m at the apex. The terminal building and offices are located east of the hotel facing the runway with a varied roof height, the maximum being 14.2m high at the apex. With the exception of the hotel, the buildings have a curved roof design with the eaves being lower than the apex.

The scheme also includes a new Fuel Farm located to the northern most part of the site as well as alterations to the existing road network including re-routing College Road to create a new roundabout intersection with Crawley Road. The scheme creates three new access points to the site from College Road and all associated parking is located on the western part of the site.

A secondary application for diverting the three Public Rights of Way (ref: CB/17/05142) that cross the site was also granted and forms the Section 106 agreement associated with the permission for the Air Park.

2.5. The Proposed Development

MADG are still working to define the built requirements of the scheme which will be built out in phases through to about 2030. Given the time horizons for the project, the requirements are evolving and are not yet fixed by the client. The proposal reviewed in this Landscape and Visual Appraisal is considered the realistic maximum in terms of the number and size/scale of the hangar buildings. Any amendments to the scheme would be considered through any subsequent EIA process including LVIA, once the business requirements are clear. The relevant documents, found in Appendix 6 and 7 respectively, are Mott McDonald drawing '403957-MMD-CRA-XX-DR-C-0009 PRE P1 – Indicative Cranfield Masterplan – Option 3 Max' and Gebler Tooth drawing '1301-GTA-CRA-SK-120 1.0 – Option B Block Plan'.

The Cranfield proposals assessed within this appraisal include the following:

- 16no. hangar bays consisting of:
    - 4 x twin hangers at 26m high
    - 4 x twin hangers at 22m high
- Paint hanger at 21m high
- Land Systems building at 15m high

The proposals also include 12m high ancillary buildings such as a Head Quarters (HQ) and Facilities around the perimeter of the hangers. These have not been assessed for this high-level appraisal as the taller buildings described above will have a greater effect on landscape and visual receptors.

For this site, the 15m high Land Systems building is proposed to be within the Cranfield Technology Park. As there are already a number of existing buildings of a similar scale and

height to proposed in proximity to the Land Systems building, this is not assessed in further detail within this appraisal, as it is judged that limited additional effects on landscape and visual receptors would be produced.

Outside of the redline boundary, to the east of the site and adjacent to Crawley Road is a fuel farm, the precise siting of the fuel farm will be subject to ongoing discussions with Cranfield University as airport operator. The proposal also includes an extension to the existing runway and associated guidance lighting into the adjacent fields on the opposite side of Crawley Road. The proposal assumes the reconfiguring of the intersection between College Road and Crawley Road, and the PROW relocation in the extant permissions which lie outside of the redline boundary will be implemented.

All car parking and facilities buildings are located to the west of the site adjacent to College Road with three access points off this road as the extant permission.

2.6. Scheme comparison

The principal differences between the approved scheme and the proposed scheme relevant to this landscape and visual assessment are:

Redline boundary

The redline boundary for Phase I of the extant planning permission included the airfield as well as a proportion of College Road and Astwood Road. The redline for Phase 2 was for two areas within the overall Phase 1 redline boundary.

For the purposes of this preliminary LVA, the redline boundary assumed for the MADG proposals is only for the development area, does not include the existing road network or the area designated for reconfiguring the road and PROW to the northwest of the site. Any subsequent planning application would need to consider any other modifications to roads, Public Rights of Way or airfield infrastructure. The focus for this preliminary appraisal has been on the visual impact of the proposed buildings.

Development area and density

The extant proposal has a footprint of approximately 5.8ha or 19% of the MADG redline site area. For comparison the MADG proposal has a footprint of approximately 9.9ha which is approximately 34% of the redline site area.

The increase in built form on the MADG proposal and the transitional clearance restrictions on building height results in an increase in density of buildings on the site and along College Road. On the extant permission for Phase 2 the building line is approximately 165m from Crawley Road. In the MADG proposal the building edge is approximately 106m closer to Crawley Road. In both proposals the development is aligned so it is parallel with the runway. The MADG proposal increases built development closer to the runway edge where possible.

Height of the buildings

The tallest building height on the extant permission was 23.81m for the Phase II hotel located to the south west of the site (*it is worth noting that there is a discrepancy on the approved planning drawing in the height of the hotel, whereby the roof height is both noted in the*

levels as 23.81m high and 16.10m high. The drawn height is 23.81m and so this has been assumed for this study – see appendix 3.2). The other buildings on the extant permission vary between 14.2m and 17.2m high with the tallest hangars located to the north of the site nearest to College Road.

The MADG proposal increases maximum building height to 26m. This is comparable to the tallest building in the extant permission (2m difference) but is typically between 9 and 12m taller than the other buildings in the extant permission.

Landscape

The extant proposal requires full scale clearance of all vegetation from the site within the redline boundary. The same would be required for the MADG scheme. Both schemes include new tree planting along College Road and the MADG scheme also introduces additional tree planting along Crawley Road where it is possible to so without compromising the safe operation of the airport.

Access

The extant scheme creates three new access points off College Road as well as reconfiguring the intersection between Crawley Road and College Road to create a new roundabout and new Public Right of Way along the perimeter of the site.

The proposed MADG scheme assumes the same layout for the new road intersection (this is outside the redline boundary) and retains the use of the three new access points along College Road. The proposed route for the new PROW is also assumed to be retained.

3.0 Planning Context

This section addresses the relevant planning context, giving an overview of the main planning documents applicable to the Site with policies directly relevant to the landscape and visual appraisal.

The site lies within the administrative boundary of Central Bedfordshire Council. *Figure 1* shows the relevant landscape and heritage planning constraints that are applicable to the Site and the surrounding area. This illustrates that the site is not covered by any landscape designations. It is however classified as part of the Forest of Marston Vale area which is a community initiative to reforest areas of woodland that were lost due to industry.

Three Public Rights of Way cross the site (FP20, 22 and 35), with several more passing in close proximity. The nearest listed buildings are located approximately 1km away to the south east of the site and within the historic centre of Cranfield village where there are several Grade II listed buildings congregated around the Grade I listed church. Ringtail Farmhouse, a Grade II listed farmhouse is located to the north west of the site and is the only other listed building within 1km of the site. This lies outside of CBC's administrative boundary.

3.1. Local Planning Policy

Current local planning policy is described Central Bedfordshire Core Strategy and Development Management Policies document (adopted November 2009). This identifies four key policies relevant to landscape against which applications will be reviewed.

As the site is locally designated as the Forest of Marston Vale area policies CS16 and DM14 will be applied to any application.

CS16 – Landscape: Landscape and Woodland

The Council will:

- *Protect, conserve and enhance the Chilterns Area of Outstanding Natural Beauty;*
- *Conserve and enhance the varied countryside character and local distinctiveness in accordance with the findings of the Mid Bedfordshire Landscape Character Assessment;*
- *Resist development where it will have an adverse effect on important landscape features or highly sensitive landscapes;*
- *Require development to enhance landscapes of lesser quality in accordance with the Landscape Character Assessment;*
- *Continue to support the creation of the Forest of Marston Vale recognising the need to regenerate the environmentally damaged landscape through woodland creation to achieve the target of 30% woodland cover in the Forest area by 2030;*
- *Conserve woodlands including ancient and semi-natural woodland, hedgerows and veteran trees; and*
- *Promote an increase in tree cover outside of the Forest of Marston Vale, where it would not threaten other valuable habitats.*

CS17 – Green Infrastructure

The Council will:

- *Seek a net gain in green infrastructure through the protection and enhancement of assets and provision of new green spaces as set out in the Strategic, Mid Bedfordshire and Parish Green Infrastructure Plans.*
- *Take forward priority areas for the provision of new green infrastructure in the Forest of Marston Vale (including the Bedford and Milton Keynes Waterway), the Ivel Valley, the Greensand Ridge, the Flit Valley and the Chilterns.*
- *Require new development to contribute towards the delivery of new green infrastructure and the management of a linked network of new and enhanced open spaces and corridors.*

Development that would fragment or prejudice the green infrastructure network will not be permitted.

CS18 – Biodiversity and Geological Conservation

The Council will:

- *Support the designation, management, and protection of biodiversity and geology including national designations (SSSI's), locally important County Wildlife Sites (CWS's) and Regionally Important Geological and Geomorphological Sites (RIGGS); as well as those local priority habitats and species identified in the Local Biodiversity Action Plan.*
- *Support the maintenance and enhancement of habitats, identify opportunities to create buffer zones and restore and repair fragmented and isolated habitats to form biodiversity networks.*

Development that would fragment or prejudice the biodiversity network will not be permitted.

DM14 – Landscape and Woodland

The Council will ensure that:

- *The highest level of protection will be given to the landscape of the Chilterns AONB, where any development which has an adverse impact on the landscape will be refused;*
- *Planning applications are assessed against the impact the proposed development will have on the landscape, whether positive or negative. The Landscape Character Assessment will be used to determine the sensitivity of the landscape and the likely impact. Any proposals that have an unacceptable impact on the landscape quality of the area will be refused.*
- *Proposals for development that lie within the Greensand Ridge or the Flit Valley will be required to conserve or enhance the landscape. Any proposals that have an adverse impact on the landscape in these areas will be rejected unless there is a particular need for, or benefit arising from the proposal that would override this requirement.*
- *Proposals for development within the Northern Marston Vale, the Forest of Marston Vale, Ivel Valley, the urban fringe around the major service centres and along the main road corridors will be required to provide landscape enhancement on or adjacent to the development site or contribute towards landscape enhancement in these areas.*
- *Trees, woodland and hedgerows in the district will be protected by requiring developers to retain and protect such features in close proximity to building works. Tree Preservations Orders will be used to protect trees under threat from development. Any trees or hedgerows lost will be expected to be replaced.*
- *Tree planting or contributions towards planting for the purposes of enhancing the landscape will be sought from new developments. Any planting for the purposes of mitigating the carbon impact of new development will be sought in line with government advice.*

3.2. Other Guidance Documents

Green Infrastructure Plan, 2010

Cranfield Parish Council produced a Green Infrastructure Plan in 2010 (see Appendix 3) which identified aspirations for the village and Wharley End as well as identifying areas for enhanced access. There were three items identified by the parish council in relation to the airfield site:

- Improvements required to existing Public Rights of Way through the site;
- Introduction of a new green infrastructure route around the northern perimeter of the site;
- Protection of the view from the north east looking south across the airfield from PROW FP22 ; and
- Introduction of a 'Green gym' within the site boundary.

3.3. Planning Permissions

There are four granted permissions on areas adjacent to the site which may impact upon the future development of the site. They are as follows:

CB/19/00107/FULL – *'New 3G football turf pitch facility with associated buildings, car parking spaces, access & flood lighting'*

Cranfield Airport was consulted during the application and at the time their safety advisors reviewed the documentation and agreed the proposals were acceptable. However this relates only to the aircraft currently using the airport and not any variation to these *(application postdates extant permission).*

CB/14/05007/OUT – *'Outline planning application for the demolition of the existing dwellings at 47 and 49 Mill Road and the erection of up to 230 dwellings and associated infrastructure, with all matters reserved except for access'.*

CB/19/00926/NMA - *Non-Material Amendment - Amendment to CB/17/04313/RM dated 26/02/2018 - Reserved matters submission for 117 dwellings to include appearance landscape, layout and scale (all matters except access) pursuant to outline permission CB/14/05507/OUT - Development to be carried out in accordance with the proposed landscaping drawings (Revisions H)*

Currently under construction.

CB/17/01402/OUT – *'Outline planning permission for the erection up to 78 residential dwellings with public open space, landscaping, sustainable drainage system (SuDS) and land for provision of a doctor's surgery. All matters to be reserved'.*

25.05.17 – Application Refused

20.03.18 – Granted on Appeal (with conditions)

This scheme was not supported by Cranfield Airport for safety reasons, but the evidence base was dismissed at appeal. The site boundary meets the edge of a maintenance strip required by the airport. The outline proposal for the above application indicates there will

not be any built development within 300m from the edge of the runway, and that the tallest building in the development will be 10m which will be outside of the 1:7 transitional zone *(application postdates extant permission).*

CB/17/05142/FULL – Proposed diversion of footpath and creation of new footpath. This scheme is for the permanent diversion of the existing Public Rights of Way that cross the site area and to create a single improved footpath which follows the western and northern perimeter of the site from Cranfield University to the village of Cranfield. The applicant for this proposal is Cranfield University and formed part of the Section 106 agreement for the implementation of CB//17/05862/OUT (as mentioned above).

4.0 Landscape and Visual Context

This section provides an analysis of the Site within its wider spatial context and outlines how this context can help inform the Site proposals.

4.1. Topography

The landscape is characterised by a large flat and open plateau on which the village of Cranfield, the University and the Airport are all located (refer to *Figure 2*). This descends to an undulating landscape of localised ridges and valleys, predominantly to the north creating an intricate landscape. Intermittent longer distance views across the landscape from higher ridges are possible.

The site is located upon the high ground of the plateau and is largely level with a gentle slope from north to south across the site at generally 10-105m AOD.

4.2. Vegetation

The ground cover is typically arable farming interspersed with horse paddocks as illustrated in the aerial photograph at *Figure 3*. This is occasionally broken up by small woodland areas, some of which are ancient. Agricultural fields are typically bounded by hedgerows although some have been denuded and lost over time.

Road edges are typically lined with a grass verge, drainage ditch and established hedgerow set back from the road edge. Where hedgerows have been denuded, a simple grass verge and ditch separates the fields from the road.

4.3. Routes

The site has several Public Rights of Way in the vicinity including two national walking trails. The John Bunyan Trail to the east and the Milton Keynes Boundary Walk to the west run almost parallel to a 1km line from the site boundary.

There are three existing public rights of way crisscrossing the site itself (FP22, 35 and 20). These provide a pedestrian connection between the University and the village but are remote, unobserved rural paths with no lighting and so are not regularly used to connect the two settlements. The Public Rights of Way also provide a connection between the National Walking trails.

Given the airfield is active, aircraft taking off and landing have an influence on the tranquillity of the surrounding area and are an ever-present reminder of the airfield's existence upon users of local routes.

Within 3km of the site, there are no motorways, A or B roads. The local road network is made up of rural, meandering roads that provide connections between local villages and the airport.

4.4. Settlement

The largest settlement in the vicinity of the site is the village of Cranfield, a predominately residential area with a population of approximately 5,400 people. Cranfield Airport,

University and Technology Park are located directly opposite the residential settlement and are separated from the village by the airfield.

The airport buildings, which consist of a collection of hangars look out onto the Airfield. The University buildings form a belt around the airport buildings with student residences located to the north of the site on a slightly elevated position. To the south west of the airport is Cranfield University Technology Park which is a collection of two storey office buildings. The Nissan Technical Centre is located to the south of the site and is screened by a tree belt.

The extant permission (ref: CB//17/05862/OUT) continues the airport pattern of development as a linear extension of the urban edge along College road. The proposed buildings are similar to the existing hangars in terms of height and footprint.

The next sizeable settlement in the area is the village of North Crawley, which is designated with a conservation area, 3km to the northwest of the site. This is located within Milton Keynes Council with a population of approximately 736 people (2011 census). Other settlements beyond the airfield tend to be small hamlets with occasional individual farmhouses. Large agricultural buildings are occasionally present but are not easy to visually identify within the landscape.

Magna Park, on the eastern edge of the settlement of Milton Keynes, is visible from the south of the plateau where the land begins to descend and is a visible feature within the landscape from this part of the landscape character area.

The airport itself is visible built component within the landscape, albeit that its not necessarily a settlement, but it has been a significant built feature since the RAF base was established at Cranfield in 1937. Aeroplanes taking off and landing provide a visible connection and guide to the location of the airstrip even when the associated built form of the airport itself is not visible.

4.5. Landscape Character

Landscape Character describes a distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another. Landscape Character Assessments are undertaken at a National and Local scale and is defined as the process of identifying and describing variation in the character of the landscape, using this information to assist in managing change in the landscape.

4.5.1. National Landscape Character

At a national level, the site is located within National Character Area (NCA) 88: Bedfordshire and Cambridge Claylands and describes the region as *'broad, gently undulating, lowland plateau dissected by shallow river valleys that gradually widen as they approach the Fens NCA in the east'.*

Whilst the national assessment is undertaken at too broad a scale to inform an appraisal of the site, it provides useful context, noting that '*Airfields developed a presence in the region in the 20th Century, and although many are no longer in existence several are still operational as military, business or technology centres and as such form part of the built landscape of the region'.*

The NCA makes several references to the importance of the airfields in the region defining them as a *'Landscape attribute - rich archaeological and heritage resource contributing to a strong sense of place and history'* and *'Airfields built in the Second World War have been given a new lease of life as business hubs and local airports or are awaiting a second phase of development often including residential development'.*

The airfields are also recorded as one of ten 'services' which provide a *'sense of place / inspiration'* for the character area and one of seven services which contribute to a sense of history.

4.5.2. Local Landscape Character

Central Bedfordshire Landscape Character Assessment

A Landscape Character Assessment was carried out in 2015 which identifies the site and majority of the study area as 'Type 1: Clay Farmland'. An extract from the LCA is appended to this report in Appendix 1. This area is characterised as open and exposed, with medium to large scale plateaus and long distant views. It is predominately rural with arable fields with occasional horse paddocks. Settlement is concentrated on the plateau, with smaller hamlets and occasional farmhouses scattered throughout the character area.

It is noted within the assessment that Cranfield University and the adjacent Technology Park have a strong visible presence across the plateau creating an urban skyline distinct from the rest of the character area. The elevated location means the development can be visible in long distance views. Subtle changes in the topography, wooded areas and tree belts across the character area provide screening of the development for visual amenity receptors.

Long distance views from the character area to the warehouses on the eastern periphery of Milton Keynes define the transition between urban and rural according to the assessment.

The Landscape Character Assessment identified the following key positive landscape features / strategic sensitivities of the landscape which are relevant to development at Cranfield:

- *Landscape pattern is provided by the remaining hedgerows and mature hedgerow trees despite their poor condition. This is vulnerable to erosion from further loss of hedgerows and hedgerow trees and lack of management*
- *Open and exposed character with long distant views and strong skylines*
- *Strong rural character over much of the area, which is vulnerable to urban influence for instance the visible and audible impact of roads and large scale development*
- *Areas of surviving small irregular fields are vulnerable to further loss due to agricultural reorganisation*

The Landscape Character Assessment identified two visual sensitives within the area:

- *Local skylines created by subtle changes in topography which are vulnerable to cluttering by vertical development and notably demand for wind turbine development (e.g. views to potential turbines on skylines)*

– *Long ranging views to the wooded horizons of the Mid Greensand Ridge and across lower lying rural landscape of the North Marston Vale and Salford – Aspley Clay Vale*

The LCA put forward guidelines for new development:

– *Avoid further linear expansion at Cranfield and ensure that cumulative effects of further development at Cranfield University and Technology Park and Airfield together with potential future development does not impact on the rural character and highly visible highest ground of the plateau*

– *Monitor the introduction of large scale industrial style agricultural buildings into the landscape. Integrate new buildings into the landscape with appropriate broad leafed planting.*

– *Conserve strong skylines. Avoid introducing large scale vertical features where these will detract from undeveloped skylines, key views or characterising landmarks*

4.6. Visual

4.6.1. Zone of Theoretical Visibility (ZTV) Study

A Zone of Theoretical Visibility (ZTV) study was generated, based on buildings modelled at 26m above ground level and located across the Site using Mott McDonald Masterplan drawing as a base (for assessment purposes). The analysis was carried out using a topographic model including settlements and woodlands as visual barriers in order to provide a more realistic indication of potential visibility.

The ZTV study (*Figure 4*) was used to aid the identification of those receptors likely to be most affected by development of the Site and those which are unlikely to have visibility. However, areas shown as having potential visibility may have visibility of the development screened by local features such as trees, hedgerows, embankments or buildings.

The ZTV for the proposed development shows that potential visibility is widespread across the high ground of the plateau and ridges to the north. Where the ground descends from the plateau to valleys, visibility of the proposals reduces. This is more pronounced to the south east of the site where the land descends more rapidly and there is more dense woodland at Marston Thrift.

4.6.2. Actual Visibility of the Site

As noted above, areas shown as having theoretical visibility may have visibility of the development screened by local features such as trees, hedgerows, embankments or buildings.

The actual visibility of the Site from the surrounding landscape was established during a site visit in July 2019 and is illustrated in *Figure 5 - Zone of visual influence (ZVI)* and by the accompanying viewpoint photographs illustrated in Viewpoints 1 to 11 *(Figures 6 – 16)*. *Figure 4* identifies the locations of the viewpoints referenced in this analysis.

Site observations confirm that the more open, uninterrupted views of the site are from the plateau. Views of the site become more intermittent beyond the plateau due to the

intricacies of the landscape which is a combination of the undulating topography as well as the extensive vegetation within the wider landscape which significantly reduces the extent of visibility of the proposed development from that illustrated by the ZTV.

5.0 Landscape and Visual Analysis

5.1. Landscape Character

5.1.1. Existing

The airfield covers a large area of the plateau and is adjacent to the site. Apart from the runway and apron hardstanding, the rest of the area is maintained grassland. Although the runway is visible from the edge of the site due to its position, the maintained grassland differentiates the airfield from the adjacent fields of arable crops.

The northern section of the site is open and provides clear views across the plateau towards Cranfield when approaching from Crawley Road and of the airfield when approaching from Astwood Road. Residential development at the edge of Cranfield, currently under construction, will bring the edge of the settlement to within approximately 540m of the site. The floodlights of the adjacent sports pitches are a visible feature in the landscape. The historic centre of Cranfield and the church are not visible in views from College Road or Crawley Road looking across the site.

The southern part of the site is more naturalistic with areas of scrub and semi mature pioneering tree species colonising the area. This contributes to the overall rural appearance of the site.

The site boundaries are largely hedgerows, typical of the character area, and post and mesh fences. Hedgerows are separated from the road edge by grass verges and ditches. The hedgerows alongside the road edges are maintained and kept short.

5.1.2. Extant Permission

The extant permission includes the clearance of all existing vegetation on the site and fundamentally changes the rural character of the site to urban. The nearest building to Crawley Road would be Hangar 11, 165m from the edge of the road. Vehicular parking is located behind the buildings to the west of the site with a grass area separating the airside hardstanding from the road.

In addition the permitted PROW relocation creates a 10m buffer between the edge of the road and the boundary to the airfield. The existing hedgerow and ditch along Crawley Road remains undisturbed with the proposed footpath and bridle way beyond and a new ditch and hedgerow separating the path form the airfield. The new PROW continues along College Road with a new hedgerow alongside the road edge, the footpath and bridle way and then new tree planting within the air park car park. The hedgerow planting to the boundary is in keeping with the landscape character of the area.

5.1.3. MADG proposal

The MADG proposal does not change the urban character of the site from the extant permission and new baseline, however, the edge of development would move closer (approximately 105m closer) to the boundary of the site at Crawley Road moving the urban edge further into the rural character area.

It is assumed that the works to the PROW along the north and west boundaries of the site would be implemented as part of any development on the site and so there would be no change to the character of the site or its boundaries from the extant permission.

5.2. Visual Analysis

The visual analysis of the Site was undertaken as a two-stage process. Firstly, a Zone of Theoretical Visibility (ZTV) Study was undertaken to determine the potential visibility of development on the Site. This was followed by a Site visit to determine the actual visibility of the Site, taking account of localised vegetation and features not modelled in the ZTV desk study.

5.2.1. Views from Cranfield village to the east of the site

The view from the western edge of the settlement as demonstrated by Viewpoint 1 *(Figure 6)* is across arable fields enclosed by hedgerows. Beyond is the airfield which is viewed as a large grassland with single storey isolated buildings visible to the northern area. Established trees and hedgerows on the opposite side of the plateau are visible in the middle distance and screen the view and changes in topography beyond. The existing airport and university buildings on the opposite side of the airfield are intermittently visible, occasionally screened by established planting such as that off Merchant Lane or dwellings which back onto the airfield. On a clear day, the wind turbines, approximately 9km away at Emberton, can be seen in the far distance above the tree line.

The extant permission introduces built form into a greenfield site and causes a considerable change to the view for dwellings on the western edge of Cranfield and for people using the Public Rights of Way. The development is however, positioned within the context of the existing airport and so is viewed as a continuation of the existing built form.

The MADG proposal increases the width and density of visible development so that where there were previously middle-distance views between buildings, there will now be a continual line of built form. There will be a recognisable increase in the height of the buildings but this has less impact on views from this location than the increase from the extant permission in terms of length and density of the development.

5.2.2. Views from the south of the airfield

From the south of the airfield along Stillitters Farm Road as demonstrated by Viewpoint 7 at *Figure 12* (and *Figure 17* for wireframe visual*)*, the airport and university buildings are visible over an established hedgerow along the boundary of the site. The airstrip is also visible within the grassed field with the settlement edge of Cranfield visible to the east of the view. From the south of the airfield the land begins to descend and views of the warehouses at Magna Park at the edge of Milton Keynes become visible. The descending topography and mature vegetation mean that the airport and the associated building are not visible from the south of the site until the ridge of the plateau is reached.

The extant permission extends the existing visible built form and appears as a continuation of the existing built form without intruding on the view.

The MADG proposal would continue the urban character established by the extant permission, and although the building heights will have increased, due to perspective the effect of this will be less pronounced than other areas in the vicinity of the site and are less likely to impact negatively on the views due to the context of the rest of the airport buildings and as such would be a minimal change.

5.2.3. Views from the south west of the airfield and Cranfield University

From the south west of the site on minor roads the University buildings, including the student residences are visible intermittently when not screened by areas of tree planting.

The extant permission would largely be screened by the existing built form of the university buildings as well as variations in the topography and existing tree planting.

With the increased height of the hangars in the MADG proposal it is probable that the tops of the buildings would just be visible over the top of the tree line, however within the context of the other built form there would not be a noticeable impact on the view.

5.2.4. Views from the west of the site

Close views towards the site, as illustrated at viewpoint 2 at Wharley Farm (*Figure 7*) include buildings at Cranfield University and the Airport, as well as long distance views to development along the western edge of Cranfield village.

The view from the west of the site is across slightly rolling arable land which forms a gentle valley to Chicheley Brook in the middle distance. Field boundaries are lined with established hedgerow with occasional mature trees, and blocks of established tree planting as demonstrated by viewpoint 3 taken at the intersection of the Milton Keynes Boundary Walk and the intersection with PROW FP23 (*Figure 8* and *Figure 18*) and viewpoint 9 at Rings Wharley Farm (*Figure 14*). To the south of the view the University buildings are partially visible between and above the mature vegetation. The sewage works at the end of Wharley Road are also visible between groups of trees in the middle distance.

The extant permission introduces new built form into the view and would be largely screened behind the layering of blocks of existing mature planting. Areas would be visible between tree groups and above hedgerows which would be similar to the effect the existing University buildings have on the view. This would be most noticeable in the southern part of the site where the built form would be taller. The overall impact would be to introduce more urban built form into a new location in the landscape but it would not be more perceptible in the view than the current buildings are.

From this location, both the increase in building heights and the lengthening of the development area for the MADG proposal gives the urban built form an increased impact on the view and the buildings will be more noticeable above the treeline along the length of the site.

5.2.5. Views from the north east of the site

The view from PROW BW30 (viewpoint 6 illustrated on *Figure 11*) is representative of longer distance views of the area. The view is of gently rolling arable fields sweeping

downwards to the north, with grass pathways against established hedgerows at field edges, and intermittent blocks of tree planting. Individual agricultural and residential buildings are occasionally visible along the route between areas of tree planting. There are glimpses to the wind turbines at Emberton in the far distance, and electricity pylons beyond. Viewpoint 8 at PROW FP21 near Perry Hill Farm (*Figure 13* and *Figure 19* as wireframe visual) illustrates a middle-distance view towards the site.

The extant permission introduces new built form into the north section of the view and would be largely screened behind the layering of blocks of existing mature planting. Areas would be visible between tree groups and above hedgerows which would be similar to the effect the existing University buildings have on the view. The overall impact would be to introduce more urban built form into a new location in the landscape but it would not be more perceptible in the view than the current buildings are.

From this location, the increase in building heights for the MADG proposal gives the urban built form an increased impact on the view and the buildings will be more noticeable both between blocks of planting and to the south of the site, above the treeline. The increase in the length of the development has less impact here as the buildings in the southern part of the site would largely be screened by the existing planting.

5.2.6. Views from the north west of the site

Views from this location as demonstrated by viewpoint 10 (*Figure 15*) and viewpoint 11 (*Figure 16* and *Figure 20* for wireframe visual) are of arable fields with blocks of mature vegetation, some of which is ancient woodland. Hedgerows form field boundaries. Public right of ways vary from broad field tracks to narrow paths through crops. Views are open and exposed with less local variations in topography. Any visible built form is individual properties and agricultural buildings largely screened by existing planting.

The extant permission introduces new built form into an area where there was none before. This is a noticeable addition to the landscape but the open and exposed nature of the view avoids the building dominating. Existing tree planting would also provide some screening of the development in some views.

The proximity of the MADG proposal to Crawley Road means the development would be a more visible urban form in the landscape than the extant permission. The increased height of the buildings would mean little of the development would be screened behind existing tree planting.

5.2.7. Views from College Road, Crawley Road and Astwood Road

There are open views across the airfield and plateau from these routes with the University Airport buildings and communication towers perceptible in the far distance as demonstrated by Viewpoint 4 (*Figure 9*). The runway is not visible and the view appears as grassland with short hedgerows along the road edge. From Astwood Road the existing vegetation on the site obscures the University and airport completely as demonstrated by Viewpoint 5 (*Figure 10*).

With the extant permission the urban impact of the airport becomes more visible to the north of site. This will be most noticeable on the approach form Astwood Road where there

is currently no visibility of the existing airport. The new buildings will be a highly visible addition to the views from these local routes. The development is set back from the road edge which provides separation between the road and the buildings and helps reduce the impact.

With the MADG proposal the set back of the development from the road edge reduces. Combined with the increased building height in this location means the development will be more dominating in the landscape than the extant permission. The approach from Astwood Road will again be the view most impacted by the development.

6.0 Conclusion

6.1. Review against extant planning permission

Figure 5 identifies the area of difference between visibility of the extant and MADG proposal. The principal points of note are as follows:

6.1.1. Visibility extended across a broader area

The increase in scale (spread, density and height) of the MADG proposal from the extant permission broadens the area where the development will be visible.

The impact of development in the extant permission is greatest in views around the perimeter of the airfield and the west of the village of Cranfield. However, the existing Airport and University buildings provide an urban context for the extant permission and this is unchanged with the MADG proposal.

To the north of the site the landscape is more rural in character with no visibility of the existing airport. The extant permission begins to introduce an urban element which is partially screened by existing topography and vegetation. The MADG proposal accentuates the introduction of urban elements both in extent and height which would be more noticeable within the landscape but would generally be perceived in the same way as the extant permission.

6.1.2. MADG proposals perceived as a separate identity within landscape

Views from the west demonstrated by Viewpoint 3 Wireframe *(Figure 18)* present a fundamental difference between the two proposals. Where the extant permission is barely perceptible above the existing tree line, the MADG proposal is clearly visible and would span a large proportion of the view. Views of existing University buildings are visible from this location but are separated from the proposed development by a woodland block west of the Sewage Works. This would prevent the MADG proposal from being read as a continuation of the existing built form but does provide an element of urban context.

6.1.3. Limited effects on landscape character

The change to the landscape character of the area would remain largely unchanged between the extant permission and the MADG proposal. Where the extant permission is visible, the MADG proposal is also visible but on a larger scale.

Much of the vegetation in the character area is broad leafed deciduous hedgerow and tree. In the winter both the extant permission and the MADG proposal will be more visible within the landscape. The existing University and Airport buildings will also become more visible which will mean any development is interpreted as a continuation of the existing built form.

6.2. Landscape strategy

The extant permission identifies the following measures to mitigate change in the landscape:

- high quality design of the development
- urban context provided by proximity of the development to the existing airport
- introduction of planting along the perimeter to assist the building to assimilate into its context without acting as screening
- provision of a new PROW to the west and north perimeter of the site softening the edge of development
- separation from the public provided by the 165m set back from the road edge

With the exception of the setback between the development edge and the existing road network, the other landscape mitigation measures continue to be implemented through the MADG proposal.

List of illustrations

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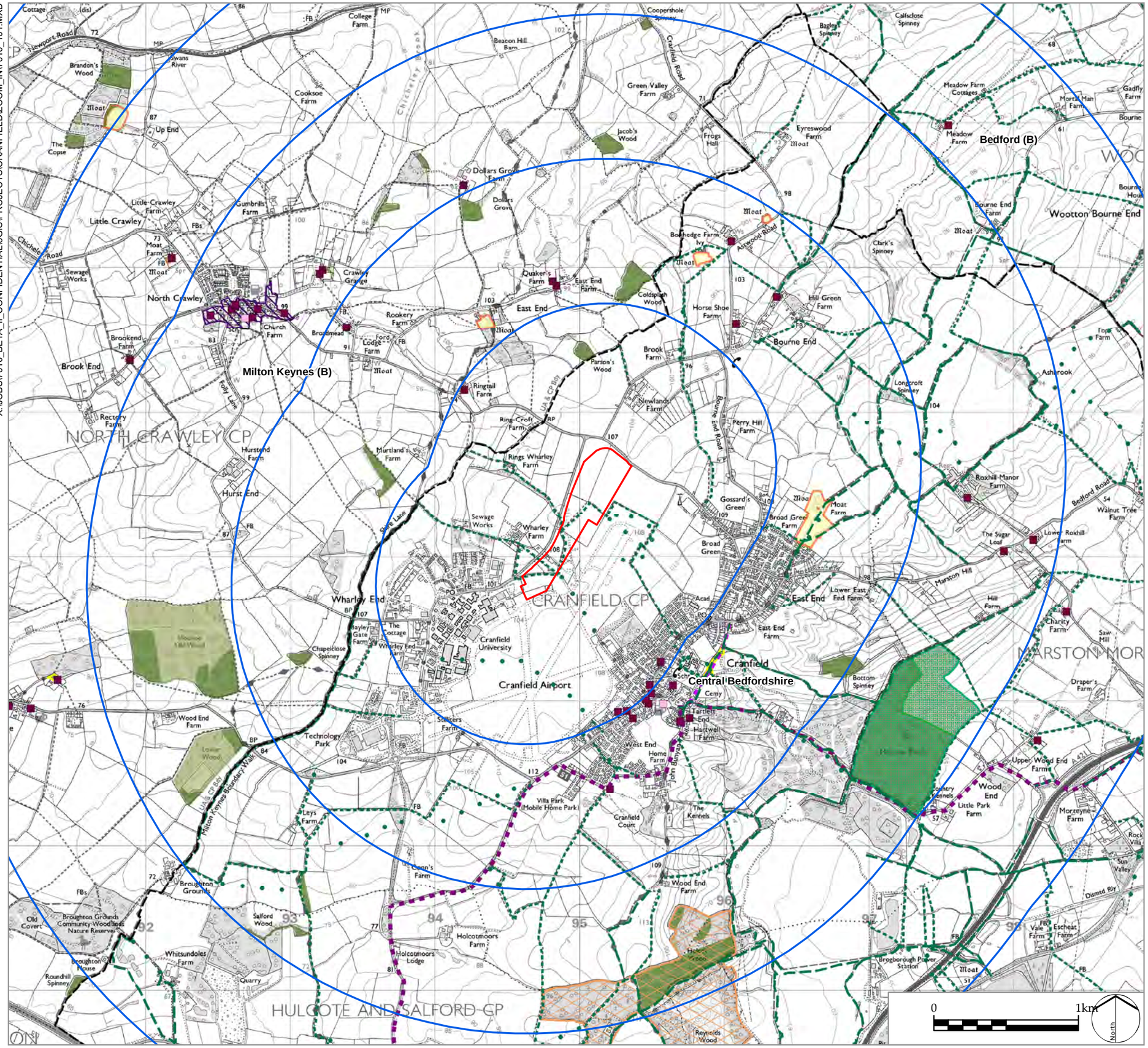

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OS Open data / © Natural England / © DEFRA / © DECC / © English Heritage. Contains Ordnance Survey data © Crown copyright and database right 2015 | Aerial Photography - World Imagery:

LEGEND

- Site boundary
- Distance from site boundary (1, 2, 3 and 4km)
- District boundary
- Conservation Areas
- Local Nature Reserves
- Open Access Land
- Woodland Trust Sites
- Sites of Special Scientific Interest
- Registered Common Land
- Ancient & Semi-Natural Woodland
- Ancient Replanted Woodland
- Scheduled Monuments
- Listed Building (grade indicated) I II* II
- National Cycle Route
- National Cycle Link

Public Rights of Way (PROW)

- Bridleway
- Footpath
- Other routes with Public Access

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Figure 1:
Location and Policy Context

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Area measurements for indicative purposes only.

Sources: Ordnance Survey, Natural England, Historic England, Foresty Commission, SUSTRANS, ESRI, DCLG

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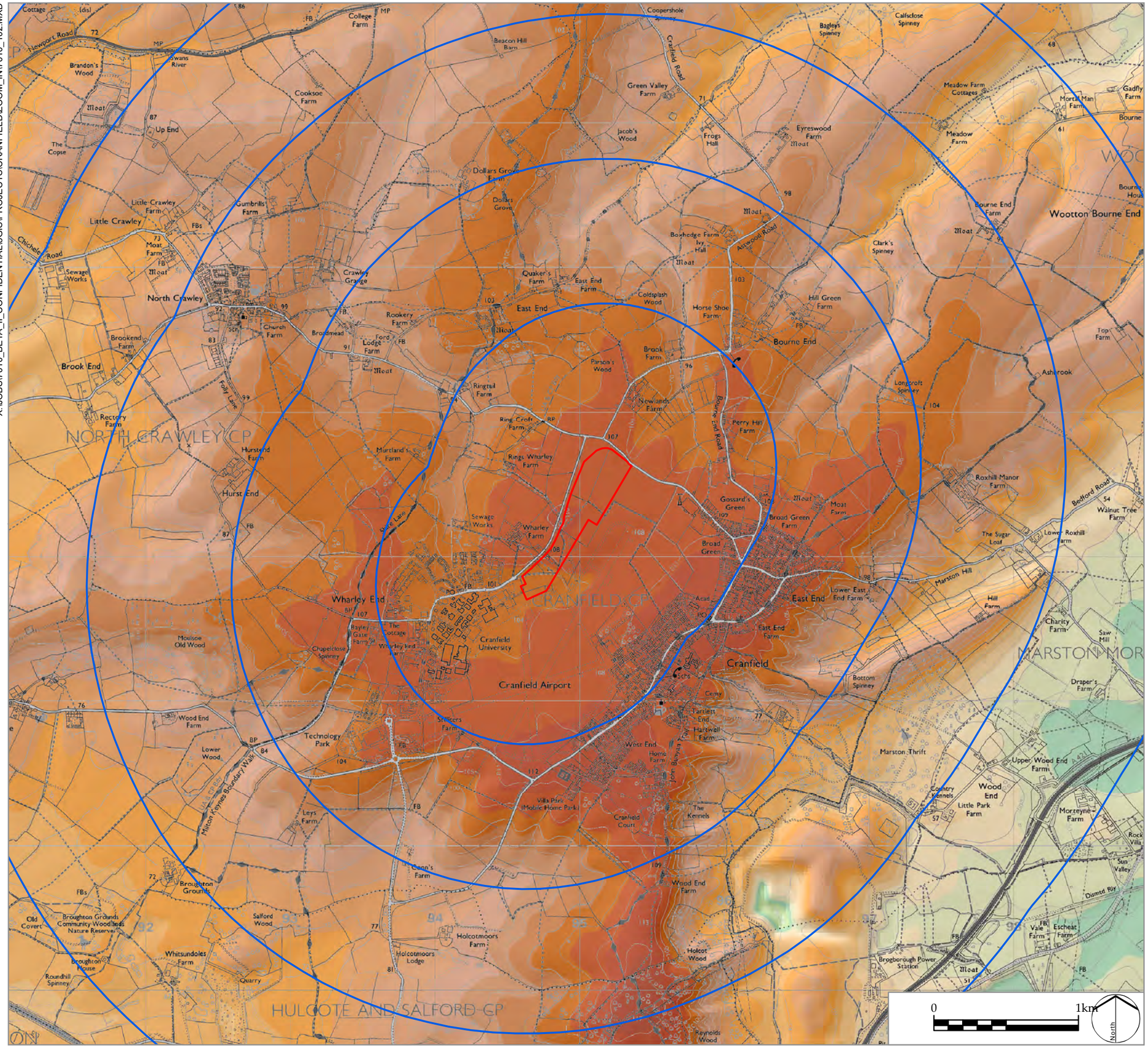

LEGEND

- Site boundary
- Distance from site boundary (1, 2, 3 and 4km)

Elevation (mAOD)

115 - 120	65 - 70
110 - 115	60 - 65
100 - 110	55 - 60
100 - 105	50 - 55
95 - 100	45 - 50
90 - 95	40 - 45
85 - 90	35 - 40
80 - 85	30 - 35
75 - 80	25 - 30
70 - 75	

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Figure 2:
Topography

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Sources: Ordnance Survey, NextMap25

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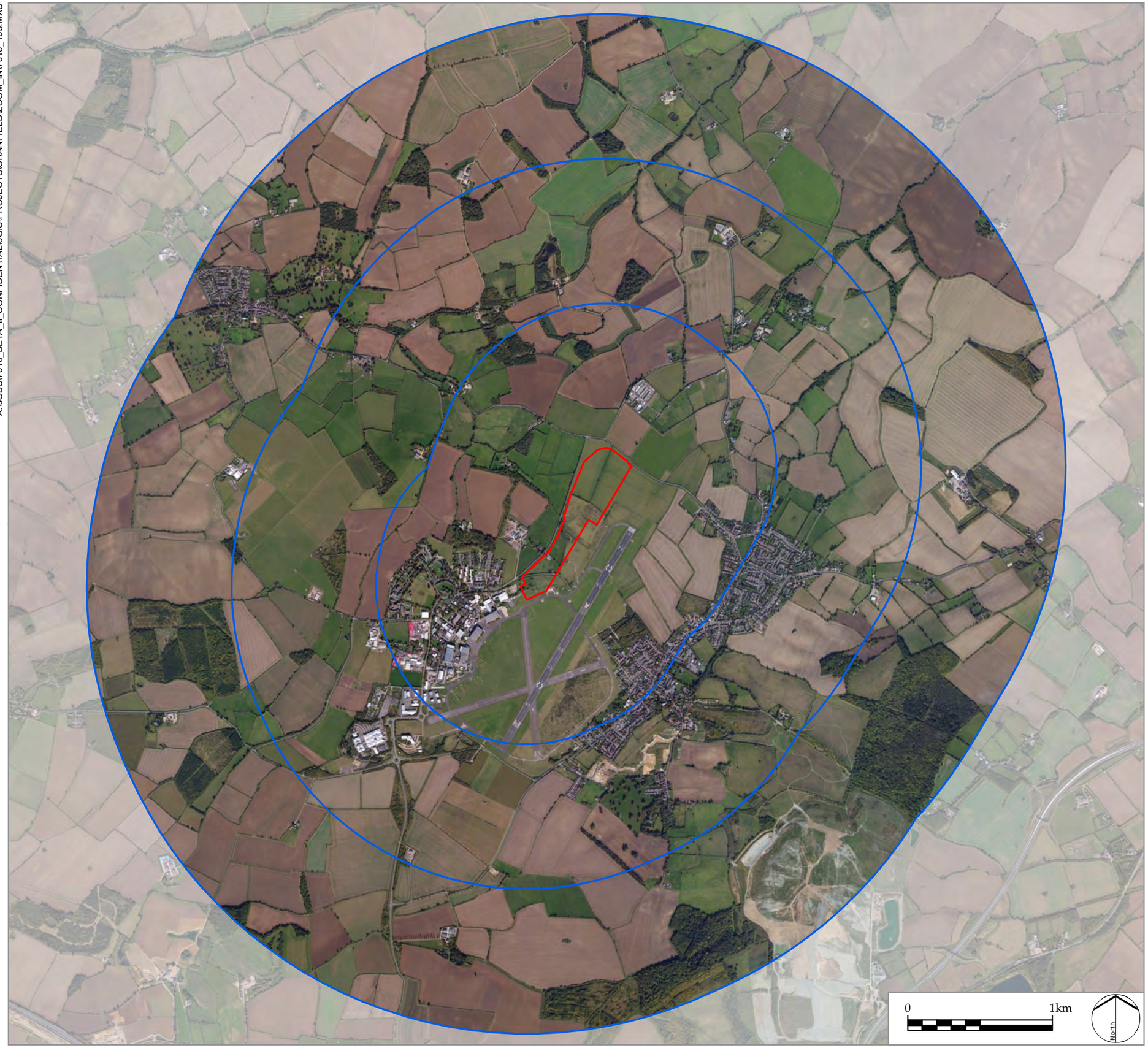

LEGEND

Site boundary

Distance from site boundary (1, 2, and 3km)

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Figure 3:
Aerial photograph

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Area measurements for indicative purposes only.

Sources: Esri

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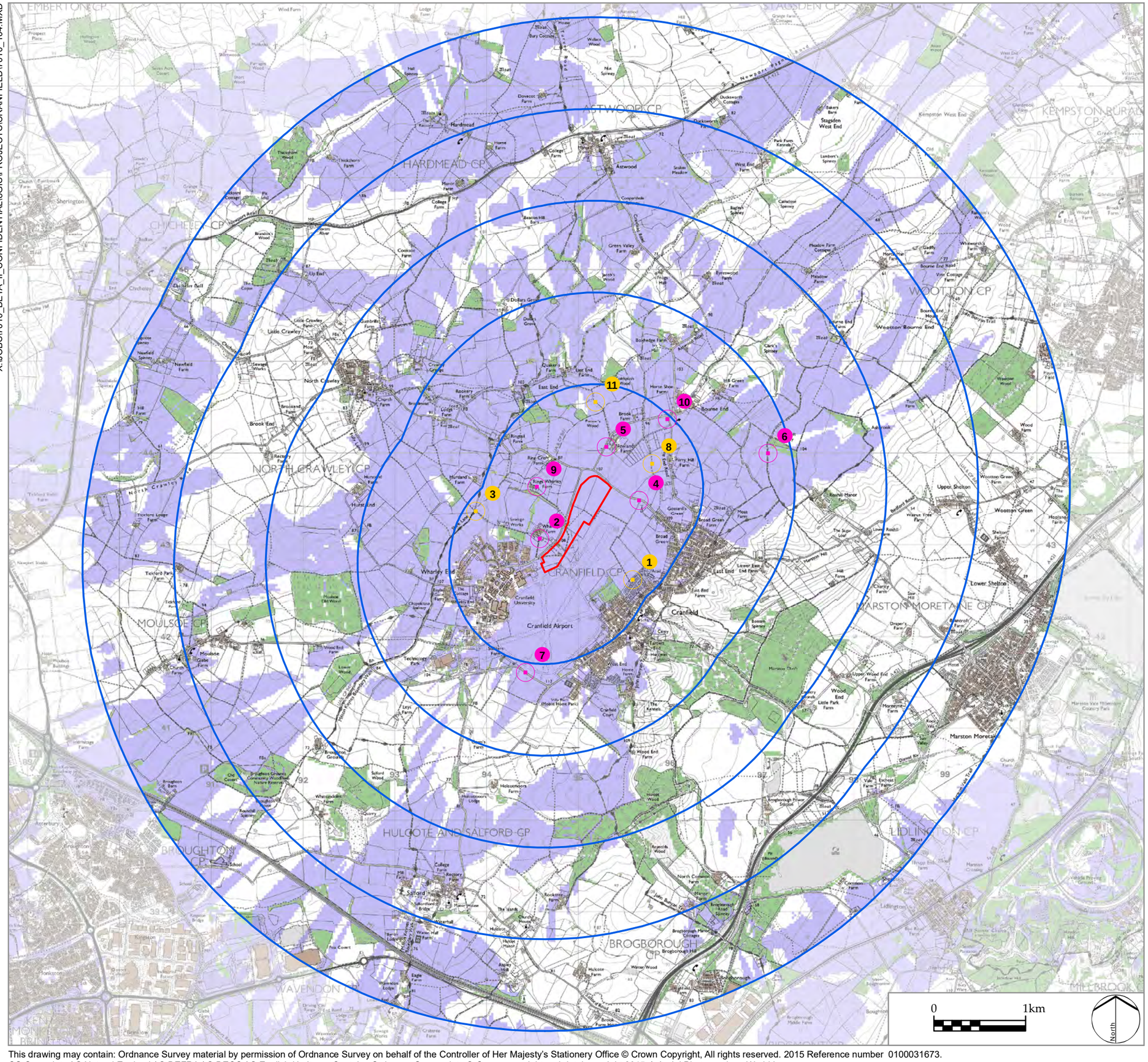

LEGEND

- Site boundary
- Distance from site boundary (1, 2, 3, 4 and 5km)
- Settlement
- Woodland
- Zone of Theoretical Visibility
- Viewpoints
- Viewpoints with wireframe visual

This drawing is based upon computer generated Zone of Theoretical Visibility (ZTV) studies produced using the viewshed routine in the ESRI ArcGIS Suite. The areas shown are the maximum theoretical visibility, taking into account topography, principal woodlands and settlements, which have been included in the model with the heights obtained from Nextmap 25. It should be noted that in some areas woodlands included within the ZTV may comprise active forestry, resulting in the felling and replanting of some areas modelled in the ZTV study. The ZTV study reflects this pattern at a specific point in time, as it is based on real height information. Whilst the felling cycle will alter the heights of different areas of forestry over time, altering localised visual effects, the wider pattern will remain relatively constant.

The model does not take into account any localised features such as small copses, hedgerows or individual trees and therefore still gives an exaggerated impression of the extent of visibility. The actual extent of visibility on the ground will be less than that suggested by this plan.

The ZTV includes an adjustment that allows for Earth's curvature and light refraction. It is based on Nextmap 25 terrain data and has a 25m^2 resolution.

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Figure 4:
Zone of Theoretical Visibility Study and Viewpoints

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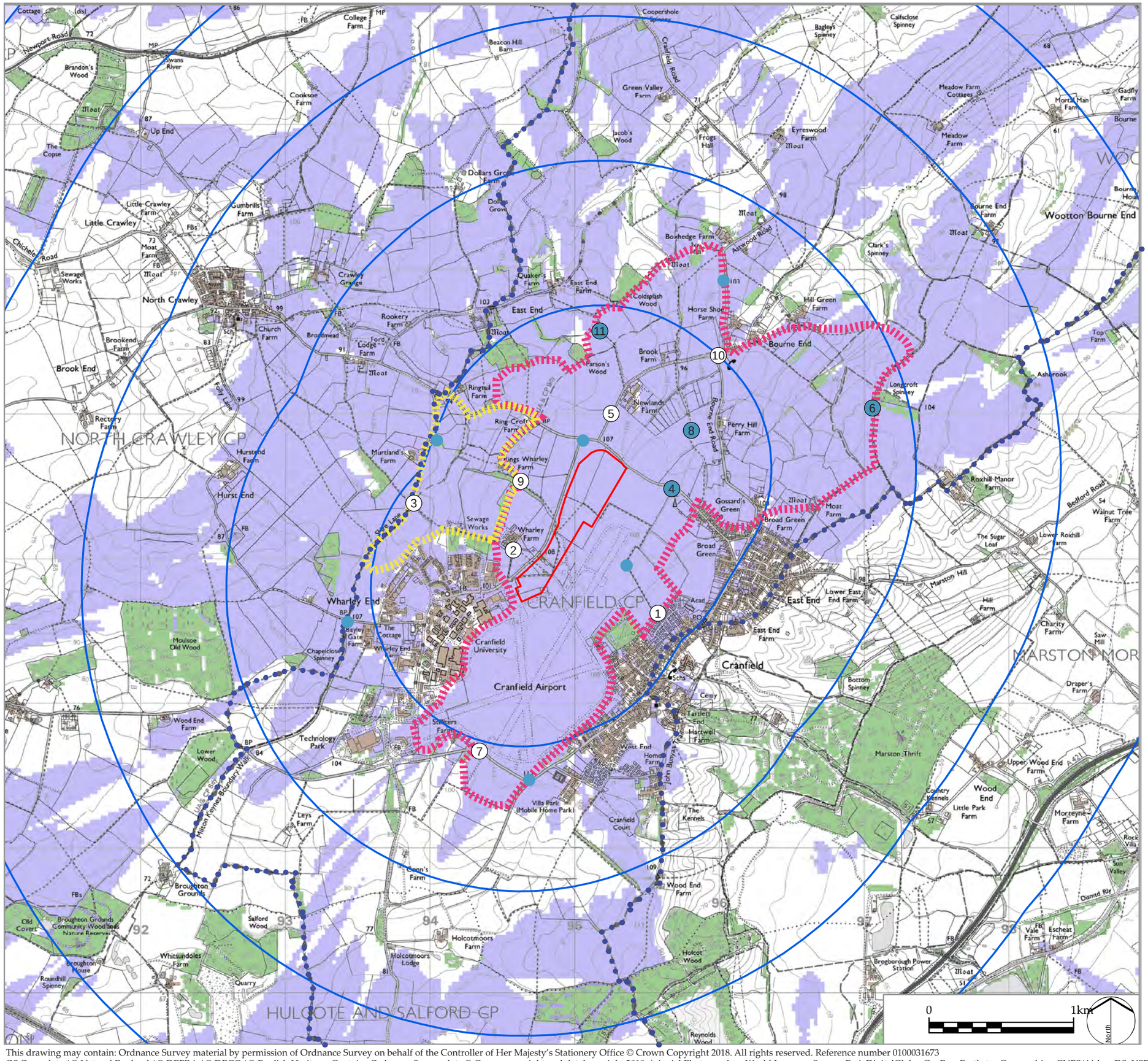

LEGEND

- Area where both extant permission and MADG proposal are perceptible
- Area where a fundamental change to the view occurs with MADG proposal
- Zone of Theoretical Visibility (ZTV)
- Long distance recreational routes
- (0) Photo Viewpoint Reference
- Extant Permission LVIA Viewpoint Locations
- (0) Photo Viewpoint Reference in close proximity to extant permission photo Viewpoint location

REV.	DESCRIPTION	APP.	DATE
A	Update to ZVI boundary	NL	31/07/19

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Figure 5
Zone of Visual Influence (ZVI)

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Sources: Ordnance Survey...

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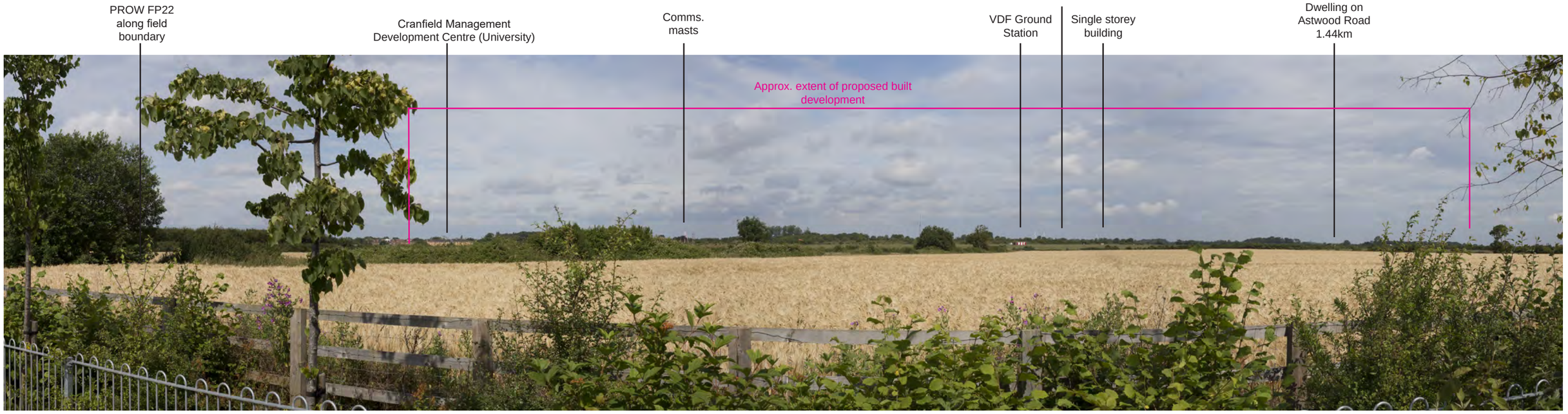

Viewpoint 1 - Play area off Eight Acres Lane, residential development on western edge of Cranfield village facing north-west into Site, 650m from site boundary

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Figure 6
Photopanel A- Viewpoint 1

Viewpoint 2 - Wharley Farm at intersection of PROW FP20, FP23 and FP41, looking west into Site, 125m from site boundary

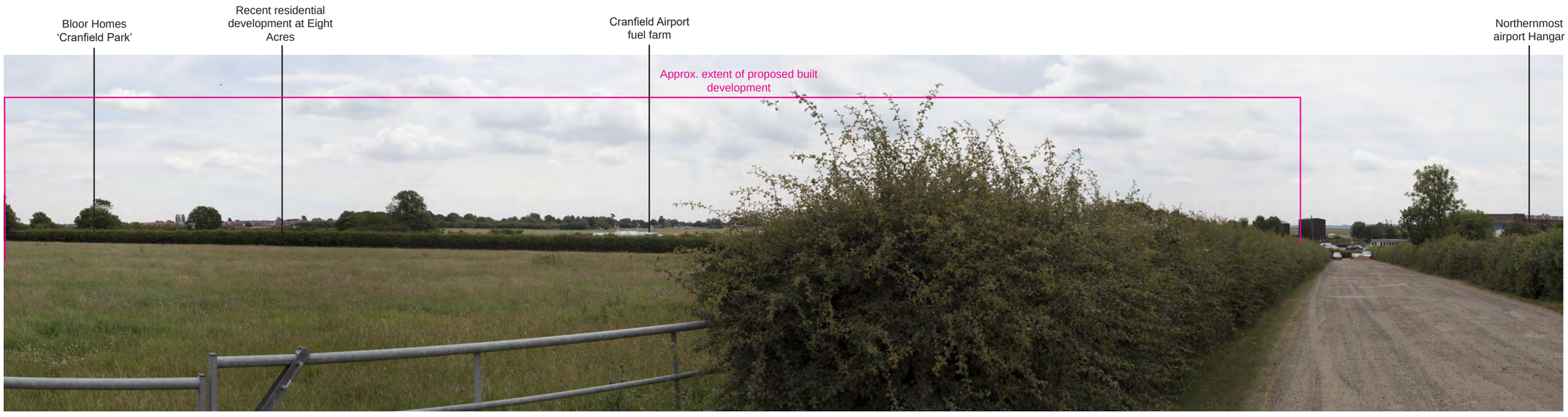

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Figure 7
Photopanel B - Viewpoint 2

Viewpoint 3 - Shire Lane near Murtland's Farm, and on intersection between Milton Keynes Circular Route (BW49) and PROW FP23, facing west towards the Site, 860m from Site boundary

continued

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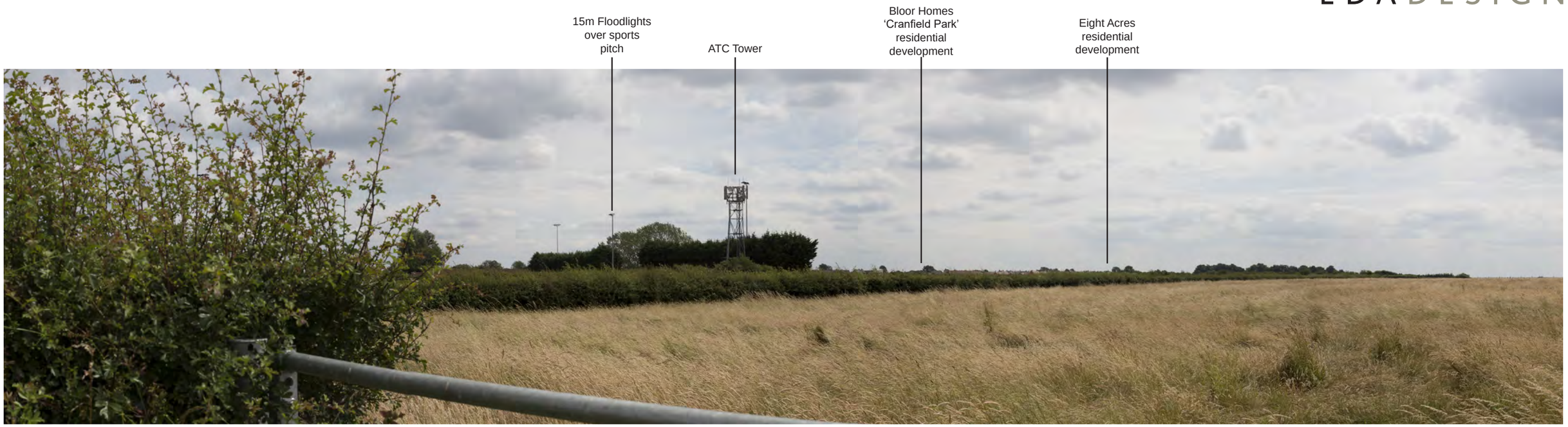
Figure 8
Photopanel C - Viewpoint 3



Viewpoint 4 – Field access off Crawley Road, facing west towards the Site, 400m from site boundary

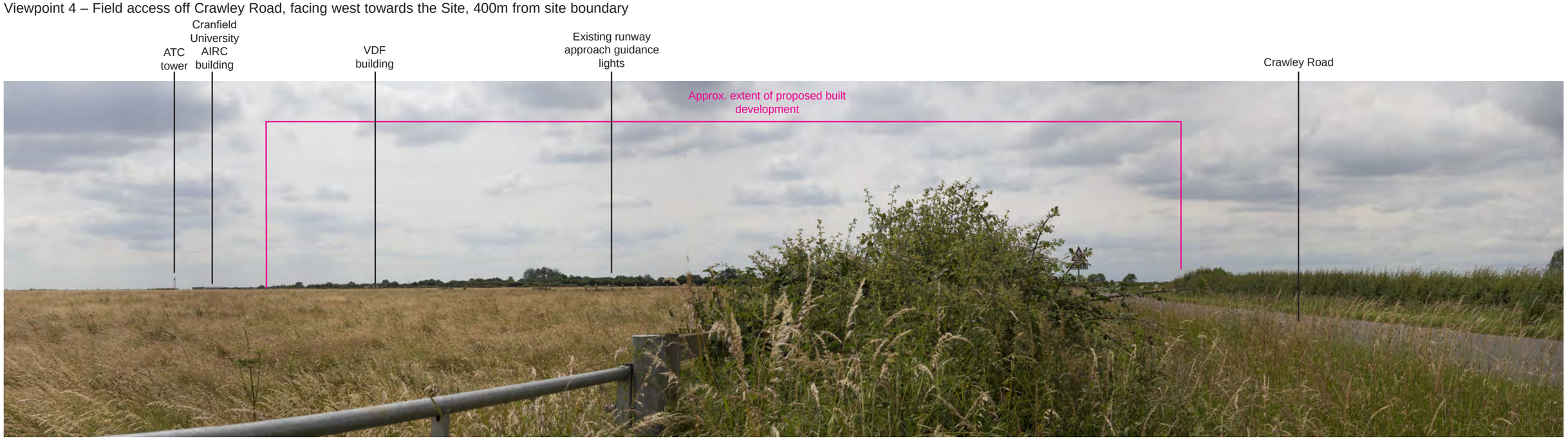


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Figure 9
Photopanel D - Viewpoint 4

Viewpoint 5 – Newlands Farm, Astwood Road looking south to site, 250m from the Site boundary

continued

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Figure 10
Photopanel E - VIewpoint 5

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Viewpoint 6 – PROW BW30 adjacent to Longcroft Spinney, looking south west to the Site, 1.71km from the Site

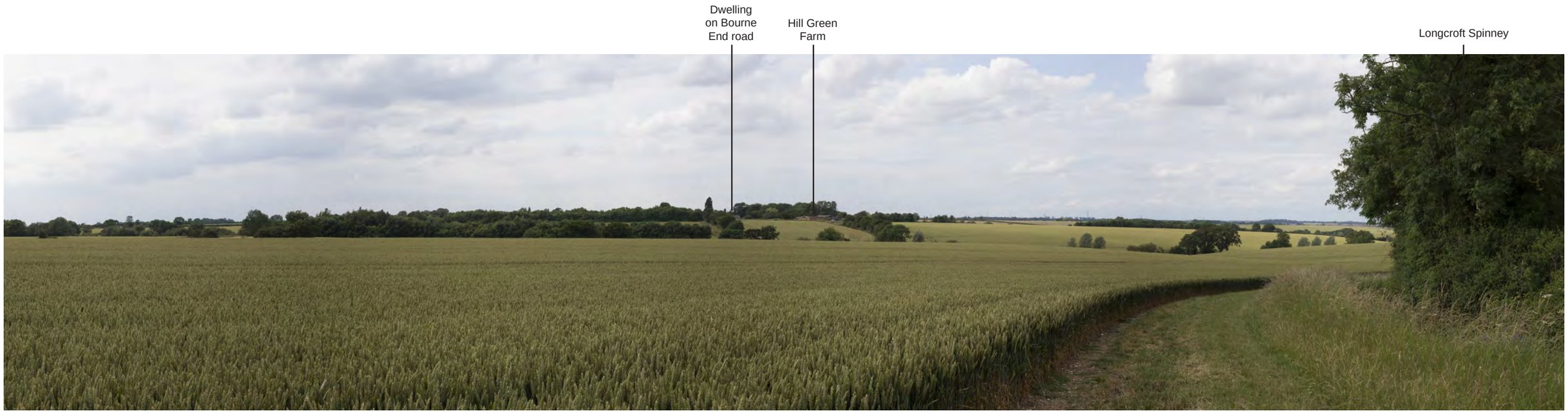

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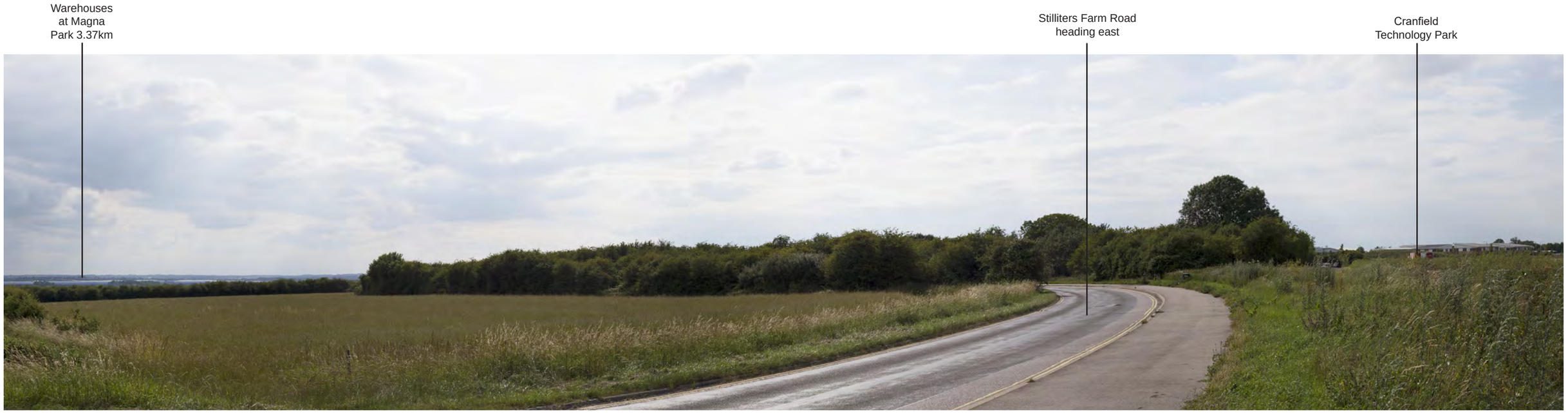
Figure 11
Photopanel F - Viewpoint 6



Viewpoint 7 – Stilliters Farm Road, south of airfield, 1.09km to Site boundary

continued

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Figure 12
Photopanel G - Viewpoint 7

Viewpoint 8 – PROW FP21 near Perry Hill Farm, looking south towards the site, 540m to Site boundary

continued

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DWG. NO. 7010_113

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Figure 13
Photopanel H - Viewpoint 8

Viewpoint 9 – Rings Wharley Farm along PROW FP22, looking west to the Site, 375m to the Site boundary

continued

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Figure 14
Photopanel I - Viewpoint 9

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Viewpoint 10 - Bourne End Road adjacent to intersection with Astwood Road, looking south west to the site, 970m from the Site boundary

continued

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PROJECT TITLE
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Figure 15
Photopanel J - Viewpoint 10

Viewpoint 11 – East End Farm, PROW FP030 near Parsons Wood, looking south to the Site, 770m to Site boundary

continued

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Figure 16
Photopanel K - Viewpoint 11

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Viewpoint 1 - Extant permission (Left)

Viewpoint 1 - Wireframe of MADG proposal (Left)

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Figure 17 - Wireframe (Left)
Viewpoint 1 - Play area off Eight Acres Lane, residential development on western edge of Cranfield village facing north-west into Site, 650m from site boundary

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Viewpoint 1 - Extant permission (Right)

Viewpoint 1 - Wireframe of MADG proposal (Right)

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STATUS	Draft	APPROVED	NL

DWG. NO. 7010_117_R

PROJECT TITLE

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Figure 17 - Wireframe (Right)
Viewpoint 1 - Play area off Eight Acres Lane, residential development on western edge of Cranfield village facing north-west into Site, 650m from site boundary

LDĀDESIGN

Viewpoint 3 - Extant permission (Left)

Viewpoint 3 - Wireframe of MADG proposal (Left)

ISSUED BY	Peterborough	t: 01733 310471	
DATE	July 2019	DRAWN	JB
SCALE@A3	NTS	CHECKED	NL
STATUS	Draft	APPROVED	NL

DWG. NO. 7010_118_L

PROJECT TITLE

BETA II
CRANFIELD

DRAWING TITLE

Figure 18 - Wireframe (Left)
Viewpoint 3 - Shire Lane near Murtland's Farm, and on intersection between Milton Keynes Boundary Walk (BW49) and PROW FP23, facing west towards the Site, 860m from Site

Viewpoint 3 - Extant permission (Right)

Viewpoint 3 - Wireframe of MADG proposal (Right)

ISSUED BY	Peterborough	t: 01733 310471	
DATE	July 2019	DRAWN	JB
SCALE@A3	NTS	CHECKED	NL
STATUS	Draft	APPROVED	NL

DWG. NO. 7010_118_R

PROJECT TITLE

BETA II
CRANFIELD

DRAWING TITLE

Figure 18 -Wireframe (Right)
Viewpoint 3 - Shire Lane near Murtland's Farm, and on intersection between Milton Keynes Boundary Walk (BW49) and PROW FP23, facing west towards the Site, 860m from Site

Viewpoint 8 - Extant permission

Viewpoint 8 - Wireframe of MADG proposal

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DATE	July 2019	DRAWN	JB
SCALE@A3	NTS	CHECKED	NL
STATUS	Draft	APPROVED	NL

DWG. NO. 7010_119

PROJECT TITLE
BETA II
CRANFIELD

DRAWING TITLE
Figure 19 - Wireframe
Viewpoint 8 – PROW FP21 near Perry Hill Farm, looking south towards the site, 540m to Site boundary

Viewpoint 11 - Extant permission

Viewpoint 11 - Wireframe of MADG proposal

ISSUED BY	Peterborough	t: 01733 310471	
DATE	July 2019	DRAWN	JB
SCALE@A3	NTS	CHECKED	NL
STATUS	Draft	APPROVED	NL

DWG. NO. 7010_120

PROJECT TITLE
BETA II
CRANFIELD

DRAWING TITLE
Figure 20 - Wireframe
Viewpoint 11 – East End Farm, PROW FP030 near Parsons Wood, looking south to the Site, 770m to Site boundary

Appendix 1. Extract from Central Bedfordshire Landscape Character Assessment 2015 'Type 1: Clay Farmland'

TYPE 1: CLAY FARMLAND

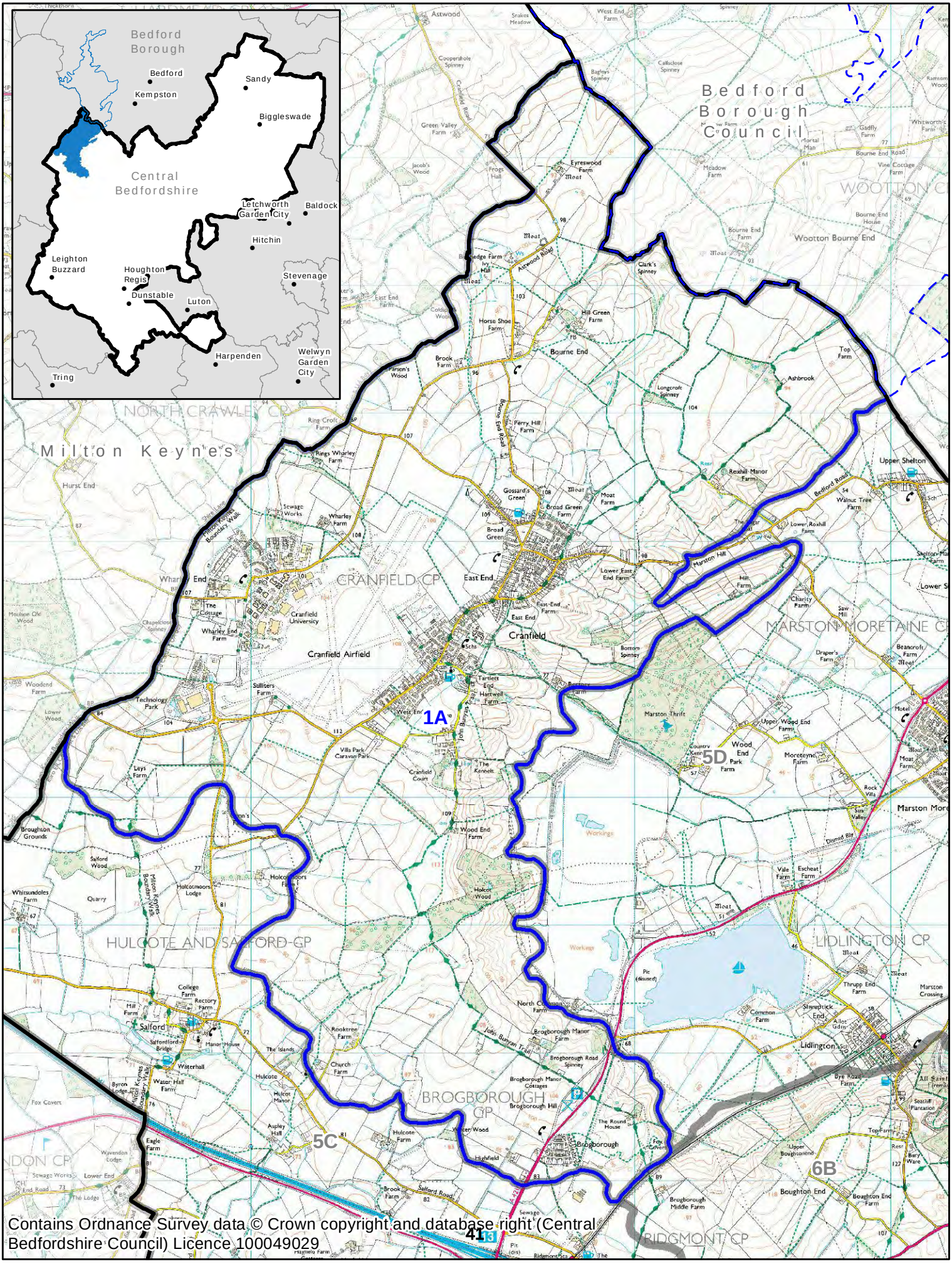
Key Characteristics

- A large scale landscape with an open and exposed character intersected by subtle wooded valleys.
- Gently undulating landform levelling out to areas of flat plateaux on highest ground.
- Underlying solid geology of Oxford Clay with extensive drift deposits of Boulder Clay and localised areas of Alluvium and Valley Gravels.
- Large scale, intensive arable crop production dominates the land cover.
- Tributaries, brooks and rivers cut through the plateaux forming a series of subtle valleys - tree-lined and a focus for settlement.
- Dispersed woodland (some ancient) – predominantly mixed and deciduous - some having significant nature conservation value and SSSI status.
- Significant hedgerow loss leaving variable and inconsistent field and roadside boundaries.
- Active and disused airfields located on areas of higher, level ground.
- Business and technology parks and new housing development frequently form a blunt interface with the open countryside.
- Water towers, village churches and former mills are strong landmark features.
- Settlement is of low density, dispersed across the landscape and predominantly of linear form.
- Green lanes of significance for recreation and wildlife

Location and Boundaries

1.1 The *Clay Farmland* landscape type occurs across two main areas within the east and west of Central Bedfordshire although the landscape type is more prevalent in Bedford Borough – refer to the companion Landscape Character Assessment (LCA) for Bedford Borough. The boundaries of the landscape type are defined by geology and topography – the drift deposits of Boulder Clay and gently undulating, elevated terrain distinguishing the landscape from the adjacent *Wooded Wolds, Limestone Valleys* and the *Clay Vales*. The key characteristics of the type extend into Bedford Borough, Cambridgeshire and Northamptonshire beyond the Central Bedfordshire boundary.

1A: Cranfield to Stagsden Clay Farmland



1A Character area 1A: Cranfield to Stagsden Clay Farmland

Location and boundaries

1A.1 The landscape character area is located in the far northwest of Central Bedfordshire. (The northern part of this lies in Bedford Borough – refer to the companion Landscape Character Assessment for Bedford Borough). Within Central Bedfordshire the character area extends from the local authority boundary in the north to the boundary with the *Mid Greensand Ridge* (6b) at Brogborough in the south. The eastern boundary runs along the base of the slopes that descend onto the lower lying areas of *North Marston Clay Vale* (5d). Part of the area is within the Forest of Marston Vale.

Summary of landscape character: Key characteristics

1A.1.1 A medium - large scale plateau landscape, an open and exposed character with long distant views.

1A.1.2 Gently rolling landform predominantly underlain by Oxford Clay, levelling out to areas of flat plateaux on highest ground such as around Cranfield Airfield which form local skylines. Significant elevation range - from 40 -117m AOD.

1A.1.3 Predominantly under arable cropping contained within large open fields but with pockets of horse paddocks - particularly associated with the settlements.

1A.1.4 A number of ancient semi-natural woodlands have been retained (such as Holcott Wood) located predominantly along the eastern boundary, on slopes falling towards the North Marston Vale. Small spinneys are frequently dispersed across the arable landscape but are of insufficient extent to produce a sense of enclosure.

1A.1.5 Strong visible presence of Cranfield Technology Park and University with its associated urban infrastructure is visible from the adjacent Clay Vales due to its elevated location – although woodland and shelterbelt planting buffers some views.

1A.1.6 Audible and visual presence of Cranfield Airfield located on an area of level plateau adjacent to the University. Large warehouses in Milton Keynes are also visible.

1A.1.7 Variable field boundaries including short flailed and gappy hedges, overgrown hedgerows, and some areas where all boundaries have been removed. Mature standard oak trees often mark old hedgerow lines.

1A.1.8 Settlement is concentrated at Cranfield – an elevated village characterised by red and buff brick housing of a mix of styles and ages. Occasional large individual farmsteads are frequently in view.

1A.1.9 Small scale rural lanes cross the landscape although extensive areas are only accessible via the rights of way network. The A421 crosses through a section of the landscape in the south, resulting in visible and audible detractions locally.

1A.1.10 Recreational routes cross the area including the Milton Keynes Boundary Walk and John Bunyan Trail - running along the ridge of the plateau where it slopes away to the *Salford - Aspley Clay Vale* (LCA 5c).

Landscape Character Description

Physical and natural landscape

1A.2 This is a medium-scale elevated landscape; rising above the adjacent low-lying Clay Vales to form a broad ridge (with a flat plateau-like top) that provides distant views to the wooded horizons of the Wooded Greensand Ridge. The landform is gently rolling, levelling out to flat plateau on highest ground.

1A.3 The higher, flatter areas correspond with the occurrence of built development at Cranfield – the airfield, technology park and university forming a focus of built form and infrastructure. This development core forms a marked contrast with the predominantly agricultural character of the landscape. Despite some buffering with planting, commercial/institutional buildings are conspicuous particularly when viewed from the adjacent lower-lying *Clay Vales*.

Biodiversity

1A.4 Farmland habitats are widespread in this area including arable field margins, hedgerows, ponds, ditches and improved grassland. There are also scattered blocks of ancient semi-natural woodland dominated by oak and ash. Unimproved grassland would have been a feature of this area in the past and small areas remains such as the species rich neutral grassland at Cranfield Manor Farm Meadow. Wetland habitats include minor tributaries of the Great Ouse, woodland and farmland ponds and field ditches.

Distant views across arable fields from higher ground to the south of Cranfield Airport. Built development in Milton Keynes is visible on the horizon

Cranfield Airfield is a visual and audible urbanising presence on an area of level plateau adjacent to Cranfield Technology Park and University.

Visual and perceptual character

1A.5 This landscape has strong skylines and big horizons. There are some urbanising influences including built development at Cranfield and views to warehouses outside the character area in Milton Keynes. Road corridors such as the A421, communications masts near Brogborough and the frequent occurrence of other 'fringe' land uses such as horse grazing, the industrial estate at Brogborough and degraded pockets of land add to this. Denuded hedges and prominent coniferous shelterbelt planting are recurring features.

Cultural pattern and historic character

1A.6 Historically this area was dominated by small irregular fields, created during the medieval period out of woodland on the Boulder Clay upland. There was a large area of common open field at the centre of the Cranfield plateau (the area later to be occupied by the airfield which was built in 1936 in anticipation of World War II), and some open fields in the Ouse tributary valleys around the village of Stagsden. The Brogborough landscape, though originally an area of small irregular

fields, was reorganised into a more regular pattern by the Bedford estate in the 19th century. The areas of former open field have been subject to significant loss of field boundaries in modern times.

1A.7 The nucleated villages of Cranfield and Stagsden are medieval in origin. They are complemented by a number of 'ends' in Stagsden and isolated medieval farmsteads around the edge of the Cranfield plateau. Many of the ends and farmsteads have surviving settlement earthworks and moated sites, of which those at Boxhedge Farm, Ivy Hall and Moat Farm (all in Cranfield) are scheduled monuments. At Park Farm, Brogborough, a medieval ringwork castle site (also scheduled) occupies a dominant position overlooking the Marston Vale to the north-east.

Settlement pattern; built character

1A.8 The character area is generally sparsely settled with scattered farmsteads and the main village of Cranfield. Cranfield, situated on the higher, flatter ground has a varied character with a mix of building materials, age and style. It is also linked to the Cranfield Technology Park and Cranfield University and large scale modern developments at the western edge of the character area.

Dispersed houses overlooking an arable field in Bourne End

Evaluation

Landscape Change

Past change	Potential Future Change
Technology and University Park development at Cranfield.	Eastward expansion of Milton Keynes extends the urban influence in views.
Development of Cranfield Airfield.	Construction of permitted housing at Cranfield; pressure for additional growth.
Post war development and suburbanisation of villages.	Potential further linear expansion of development along road corridors.
Stark coniferous shelterbelt planting sometimes associated with farmsteads.	Renewable energy – e.g. potential for visibility of wind turbines in long skyline views from this open character area.
Industrial development at Brogborough.	Potential expansion of Cranfield University and its associated technology parks.
Significant housing development at Cranfield.	

Key positive landscape features/ strategic sensitivities of the landscape

1A.1.11 Landscape pattern is provided by the remaining hedgerows and mature hedgerow trees despite their poor condition. This is vulnerable to erosion from further loss of hedgerows and hedgerow trees and lack of management.

1A.1.12 The open and exposed character with long distant views and strong skylines.

1A.1.13 Scattered spinneys and blocks of ancient woodland such as Holcott Wood.

1A.1.14 Areas of surviving small irregular fields are vulnerable to further loss due to agricultural reorganisation.

1A.1.15 Unscheduled medieval earthworks and pockets of ridge and furrow are unprotected from conversion to arable, and therefore potentially vulnerable to loss in light of changes to agricultural practice.

1A.1.16 High level of recreational access via rights of way network including Milton Keynes Boundary Walk and the John Bunyan Tail/ Sustrans Route 51 which forms a connection with the Greensand Ridge Walk.

1A.1.17 Small scale rural lanes plus large areas only accessible via rights of way.

1A.1.18 Strong rural character over much of the area, which is vulnerable to urban influence for instance the visible and audible impact of roads and large scale development.

Visual Sensitivities

1A.1.19 Local skylines created by subtle changes in topography which are vulnerable to cluttering by vertical development and notably demand for wind turbine development (e.g. views to potential turbines on skylines).

1A.1.20 Long ranging views to the wooded horizons of the *Mid Greensand Ridge* (6b) and across lower lying rural landscape of the *North Marston Vale* (5d) and *Salford – Aspley Clay Vale* (5c).

Landscape Strategy

The overall strategy for the *Cranfield to Stagsden Clay Farmland* character area is to **enhance and renew** the landscape and conserve its rural agricultural character. Enhancement should focus on opportunities to strengthen the landscape pattern to create interconnected green infrastructure networks including woodland links at Holcott Wood to Salford Wood to provide structure in the context of urban expansion on the edge of Milton Keynes, and habitat links such as new woodland, grassland and hedgerow corridors along the ridge to the north and east of the character area and the adjacent character area *5d North Marston Clay Vale* including further woodland creation to the east of Cranfield.

The Forest of Marston Vale Forest Plan should be referred to as the endorsed strategy for environmentally- and green infrastructure -led regeneration of that part of the area which falls within the Forest.

Guidelines for New Development

1A.1.21 Potential for further woodland creation - expanding and linking the existing woodland resource through woodland and hedgerow planting e.g. further woodland planting along the urban edge of Cranfield village and University/Technology Park to enhance the interface with the adjacent rural fields. Appropriate species are likely to include field maple and hazel.

1A.1.22 New planting/ hedgerow restoration and woodland planting along the edges of new development where appropriate will help to integrate it with the rural landscape.

1A.1.23 Conserve the largely rural, undeveloped character of the area e.g. conserve the character of the rural roads and limit urbanising influences – widening/kerbing and ensure that traffic management measures are sympathetic to the rural character.

1A.1.24 Retain views from elevated areas to the lower lying Clay Vales (5c, 5d) and to the *Wooded Greensand Ridge* (6b) and conserve views to undeveloped horizons.

1A.1.25 Ensure that landscape and visual effects of the eastward expansion of Milton Keynes are assessed and respected in the context of views from this open, elevated landscape. Mitigate effects of increased development in views through sensitively designed development and appropriate mitigation such as woodland planting to avoid harsh interfaces with the rural landscape.

1A.1.26 Avoid further linear expansion at Cranfield and ensure that cumulative effects of further development at Cranfield University and Technology Park and Airfield together with potential future development does not impact on the rural character and highly visible highest ground on the plateau.

1A.1.27 Monitor the introduction of large scale industrial style agricultural buildings into the landscape. Integrate new large scale buildings into the landscape with appropriate broad leaved planting.

1A.1.28 Conserve strong skylines. Avoid introducing large scale vertical features where these will detract from undeveloped skylines, key views or characterising landmarks.

Landscape Management Guidelines

1A.1.29 Ensure mid-long range views across the landscape are retained and that the historic grain of the landscape is respected.

1A.1.30 Conserve the ancient woodland blocks and spinneys e.g. Holcott Wood and apply an appropriate management strategy to enhance ecological interest e.g. reintroduce coppice management.

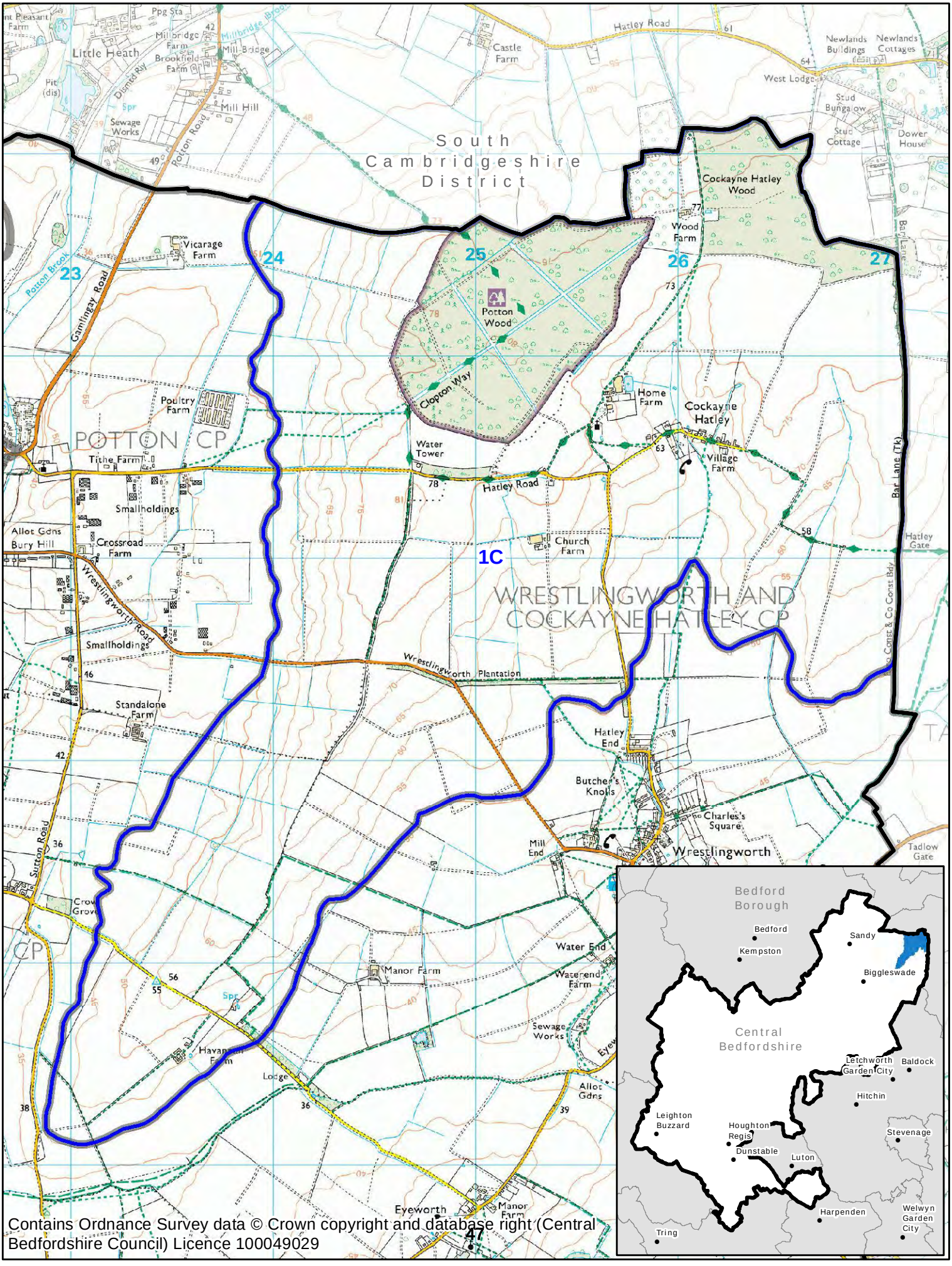
1A.1.31 Maintain and enhance surviving historic boundaries, and enhance the condition and structure of hedgerow boundaries by focussing hedgerow restoration between remaining sections so as to strengthen the landscape pattern – this is a key requirement alongside field boundaries and roads.

1A.1.32 Enhance the historic landscape setting of Brogborough Park Farm ringwork, currently isolated within former brickfields.

Also refer to the following documents:

- Bedford Borough Landscape Character Assessment: Character Area 1A: Cranfield to Stagsden Clay Farmland for the landscape character description of the area lying within Bedford Borough
- Mid Bedfordshire Green Infrastructure Strategy
- The Forest of Marston Vale

1C: Cockayne Hatley Clay Farmland



1C Cockayne Hatley Clay Farmland

Location and Boundaries

1C.1 *Cockayne Hatley Clay Farmland* character area is located at the eastern edge of Central Bedfordshire. The change in topography marking the transition to *Dunton Clay Vale* (5g) defines the western and southern edges of the area with boundaries following contours at the base of the slope down from the plateau to the north east. To the east the edge of the unitary authority forms the boundary and the clay farmland continues on into Cambridgeshire.

Summary of landscape character: Key characteristics

1C.1.1 Gentle rolling slopes rising to a low plateau founded on Gault Clay overlain by Boulder Clay.

1C.1.2 A peaceful, open, large scale landscape.

1C.1.3 Predominantly arable farmland with woodland on the plateau and shelter belts along some rural roads.

1C.1.4 Large geometric fields are bounded by hedgerows with some hedgerow trees.

1C.1.5 Hedgerows are varied in condition with some gaps; hedgerow trees are present including young trees.

1C.1.6 Substantial blocks of woodland on the level ground to the north including Potton Wood SSSI, a medieval deer park, now ancient ash-maple woodland of high biodiversity value.

1C.1.7 Dispersed and low density settlement consists of the village of Cockayne Hatley and a few scattered farmsteads, buildings materials include brick, stone and render.

1C.1.8 The church and water tower form landmarks that are highly visible in the open landscape of the slopes.

1C.1.9 A few rural roads cross the area and there is a good network of footpaths and bridleways with the Clopton Way traversing the north eastern section.

1C.1.10 Parkland and old enclosures are associated with the relict core of Cockayne Hatley village.

1C.1.11 There is a strong sense of elevation and wide, distant views from the plateau towards the southeast.

Landscape Character Description

Physical and natural landscape

1C.2 The area forms a spur of ground rising from 40m AOD to 75m AOD above the more level *Dunton* Clay *Vale* to a plateau at the north of the area. The open arable slopes form an unsettled, rural backdrop to the *Vale* and from the higher sections of the area there are panoramic views to the south east. Large blocks of woodland dominate the plateau to the north including the ancient woodland of Potton Wood. Elsewhere narrow shelter belts hug the straight rural roads bringing some enclosure to the open landscape. The large geometric fields are bounded by hedgerows in mixed condition and with some hedgerow trees including newly planted trees along roads. Orchards were formerly a feature of the area but have been lost.

Biodiversity

1C.3 The landscape is predominantly arable farmland including habitats such as arable field margins, hedgerows, ditches and improved grassland. Potton Wood SSSI is ancient woodland with rides through the wood particularly valuable in supporting neutral grassland which is rich in flora. The woodland is of wet ash-maple type and includes areas of coppiced ash, hazel and field maple with ash and oak standards. Small ponds provide further habitats.

Rural character of a minor road winding through arable fields west of the village of Cockayne Hatley. The loss of hedgerows has increased the openness of the landscape.

Visual and perceptual character

1C.4 *Cockayne Hatley Clay Farmland* character area is a peaceful, rural area with little settlement and few minor roads and tracks. From the higher sections of the area there are panoramic views to the south east.

Cultural pattern and historic character

1C.5 The Boulder Clay ridge which dominates this area is known from cropmark evidence to have been settled in prehistoric or Roman times, but was dominated by woodland into the middle ages. A medieval deer park, established in what was probably wood pasture, developed to become Potton Wood; substantial woodbanks survive, with other earthworks which may possibly be of pre-medieval origin. The northern part of the former parish of Cockayne Hatley, contains further ancient woodland, with parkland and old enclosures associated with the relict core of Cockayne Hatley village. To the south and west, the former open fields were enclosed in the 18th and 19th centuries.

Settlement pattern; built character

1C.6 Settlement within *Cockayne Hatley Clay Farmland* character area consists of the small village of Cockayne Hatley nestling into an undulation of the slope up to the plateau, plus a few scattered farmsteads. Building materials are mixed with brick, local greensand and render in evidence. St John Baptists Church, built of brown cobbles, and a water tower to the west of the village, form landmarks that are highly visible from the lower slopes of the area and from the surrounding low ground of *Dunton Clay Vale* (5g).

The small village of Cockayne Hatley

The water tower to the west of Cockayne Hatley is a prominent landmark

Evaluation

Landscape Change

Past change	Potential Future Change
Agricultural intensification leading to creation of larger arable fields and loss of grassland, ponds and ditches. Decline in active management of woodland. Loss of orchards.	Demand for further infill and small scale development around Cockayne Hatley and the isolated farmsteads which could lead to a loss of their rural character. Renewable energy developments.

Key positive landscape features/ strategic sensitivities of the landscape

1C.1.12 The surviving network of hedgerows (although gappy) and hedgerow trees which is vulnerable to further loss through lack of consistent maintenance.

1C.1.13 The woodland blocks, including ancient woodland of high biodiversity interest and shelter belts which require sustained management.

1C.1.14 The pattern of sparse dispersed settlement built of traditional materials of brick, stone and render.

1C.1.15 The isolated community of Cockayne Hatley, with some areas of surviving ancient enclosures and settlement earthworks.

1C.1.16 High level of access via public rights of way.

1C.1.17 The unified tranquil, rural nature of the landscape which is vulnerable to urban influence particularly large scale new development on its margins.

Visual Sensitivities

1C.1.18 The slope and its summit are highly visible from the lower ground to the south and west - from *Dunton Clay Vale* (5g) Cockayne Hatley Clay Farmland appears as a rural, unsettled backdrop.

1C.1.19 The water tower and church tower are landmarks on the skyline which is vulnerable to cluttering by development of tall structures.

1C.1.20 The panoramic views to the south from the plateau and upper slopes.

Landscape Strategy

The overall landscape strategy for the *Cockayne Hatley Clay Farmland* character area is to **conserve** the unified rural landscape with its small village, historic landscape features, scattered farmsteads of traditional local materials, its hedgerow network, and woodland of high biodiversity value while enhancing those elements which are in decline eg through replanting hedgerows or where there are gaps in existing hedgerows.

Guidelines for New Development

1C.1.21 Promote the use of locally appropriate species such as oak and field maple within woodlands and hedgerows and for shelter belts in preference to non-native conifers.

1C.1.22 Promote restoration/replanting of orchards.

1C.1.23 Conserve the scattered farmsteads and the village of Cockayne Hatley with their traditional building materials particularly the use of red brick, stone and render.

1C.1.24 Encourage the use of locally-sourced building materials for new development in order to integrate with traditional built development and strengthen the sense of place.

1C.1.25 Safeguard the setting of Cockayne Hatley village.

1C.1.26 Retain and enhance surviving areas of ancient enclosure.

1C.1.27 Monitor the development of structures which may lead to cluttering on the skyline of the slope up to the plateau.

Landscape Management Guidelines

1C.1.28 Conserve, enhance and restore the ancient woodlands through effective long term management to retain their historic character, ecological value and landscape setting. Promote co-operative management and habitat linkages across administrative boundaries e.g. at Potton Wood with nearby woodlands in Cambridgeshire to the north.

1C.1.29 Promote traditional woodland management techniques such as coppicing.

1C.1.30 Enhance the hedgerows by replanting and consistent management and resist development that will result in further loss/fragmentation of hedgerows.

1C.1.31 Promote restoration/replanting of orchards.

Also refer to the following documents:

- Mid Bedfordshire Green Infrastructure Strategy: Ivel Valley.

Appendix 2. Extract from Milton Keynes Landscape Character Assessment 2016 'LCT 3 Clay Plateau Farmland with Tributaries'

LCT 3 Clay Plateau Farmland with Tributaries

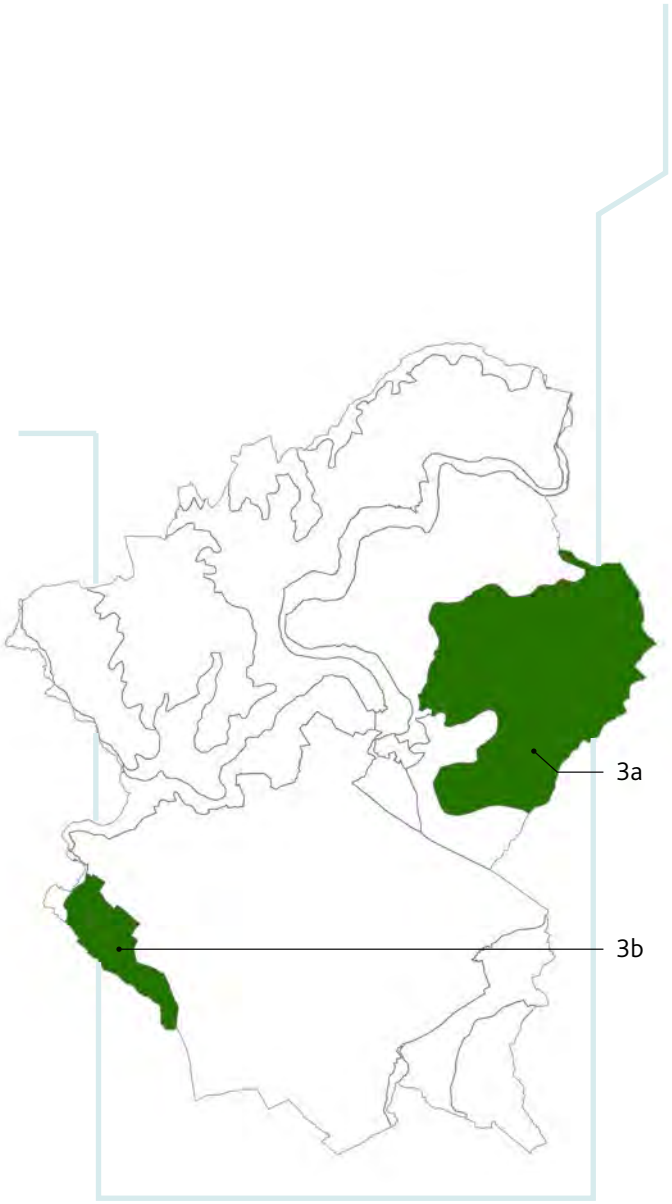
Character Areas

LCA 3a North Crawley Clay Plateau Farmland with Tributaries

LCA 3b Weald Clay Plateau Farmland with Tributaries

Key Characteristics

- Elevated clay plateau
- Incised by small tributaries creating rolling landform
- Elevation ranges from approximately 80m to 108m AOD
- Large fields predominate in LCA 3a with a higher proportion of small fields in LCA 3b
- Predominantly arable with some pasture
- Small pockets of isolated broadleaved woodlands and mature hedgerow trees
- Sparsely settled with small villages and isolated farms
- Long distance and panoramic views across open areas
- Tranquil agricultural landscape



Location and Introduction

The Clay Plateau Farmland with Tributaries LCT accords with the extensive Bedfordshire and Cambridgeshire Claylands National Character Area (NCA) which is a broad, gently undulating, lowland plateau dissected by shallow river valleys that stretches from Buckingham in the west towards the Fens NCA in the east. This is a distinctly rural LCT even in areas in close proximity to Milton Keynes. The elevated agricultural landscape is sparsely settled and settlement is generally limited to small villages and isolated farmsteads scattered across the undulating topography.

Two landscape character areas have been identified. These represent distinct areas of the Clay Plateau Farmland with Tributaries LCT to the west and to the east of Milton Keynes. The more extensive eastern character area around North Crawley (LCA 3a) occupies the plateau between the Ouse valley to the north and west, the M1 to the south and the Bedfordshire border to the east. The smaller area to the west, LCA 3b, comprises the last undeveloped rural part of the authority to the west of Milton Keynes, beyond the area allocated as the Western Expansion Area (WEA). It is an isolated plateau, which extends west into the Aylesbury Vale in Buckinghamshire.

Natural

GEOLOGY AND SOILS

This LCT is predominantly formed on clay. The soils are calcareous clayey soils that are slowly permeable and seasonally waterlogged over an underlying chalky till. Pockets of land also occur that are based on a Jurassic or Cretaceous Clay geology, usually in the vicinity of rivers or streams and the soils also tend to be calcareous clayey soils, although there may also be a loam or silt content. Around the tributary that flows through the Weald, the soils are similar, although there may be some silty loams as well, but the underlying geology has higher clay content from the Jurassic or Cretaceous period and there may be occasional landslips.

LANDFORM

The LCT is a gently undulating plateau, which is elevated above much of the surrounding landscape and generally sits above 80m AOD. The plateau surface is bisected by a number of small watercourses flowing through the area and these have created the shallow ridges and valleys, which make the undulation in the landscape more pronounced. These localised tributary valleys provide areas of enclosure, for example near Calverton and around the Chicheley Brook.

The undulating plateau sometimes rises gently to ridges that offer panoramic views across the landscape such as 'Shenley Ridge' west of Milton Keynes and along the boundary with Bedfordshire, near Cranfield University. The plateau, elevated above the surrounding landscape, provide a rural backdrop to Milton Keynes.

HYDROLOGY

The plateau surface is bisected by a number of small watercourses flowing through the area including tributaries of the River Great Ouse and smaller streams and brooks that rise up from the top of the plateau and flow into the tributaries.

LAND COVER AND LAND USE

The area comprises mixed agriculture with both arable and pasture. To the east of Milton Keynes the majority of the landscape is under arable cropping producing a combination of wheat barley and oil seed rape with some beans. There is a higher proportion of pasture found on the claylands to the west of Milton Keynes where sheep grazing is the main pastoral land use. There is a scattered pattern of small woodlands and copses across the LCT with little connectivity.

Cultural and Social

RECREATIONAL LAND USE

There is generally a good network of PRoW. The area is used by equestrians, walkers and cyclists however the heavy clays restrict access in the winter months. Long distance walks include the North Buckinghamshire Way and the Milton Keynes Boundary Walk.

SETTLEMENT

There are few villages and hamlets within this LCT, the largest being North Crawley to the east of Milton Keynes and Calverton to the west. Further settlement is confined to individual farms and isolated properties a number of which are architecturally undistinguished. There is limited 20th century development in the area.

There are number of fine buildings in the villages. The location on the clay plateau means that much of the local vernacular comprises brick and timber frame rather than the limestone more common in the Ouse valley. However, Lower Weald, which is the largest of the hamlets in the Weald Clay Plateau Farmland with Tributaries LCA 3b, contains a number of traditional limestone buildings with thatch and tile roofing.

INFRASTRUCTURE AND TRANSPORT

The LCT is generally served by a number of minor lanes which are mainly quiet. However the busy A422 and A509 pass through the area to the east of Milton Keynes. Pylons run in a broadly north south direction across the eastern side of the LCT.

ENCLOSURE

Field amalgamation in the 20th century in the North Crawley Clay Plateau Farmland with Tributaries LCA 3a, particularly around Hardmead and Hurst End, has led to a locally degraded landscape of extensive fields and intermittent hedges.

By contrast, in the Weald Clay Plateau Farmland with Tributaries LCA 3b, 18th and 19th century parliamentary enclosure dominate, although some of these fields were subsequently sub divided providing rectilinear field patterns. To the south around Shenley Dens Farm there is a stronger pattern of organic pre 18th century enclosure. The earlier enclosures have created a hedgerow structure with taller hedges and large hedgerow trees including hawthorn and elm with some mature tree rows including oak and ash.

HERITAGE

The North Crawley Clay Plateau Farmland with Tributaries LCA 3a contains a number of moated sites on the heavy clays some of which are still occupied such as Moat Farm at North Crawley. The area contains three major estates namely; Chicheley Estate, North Crawley and Moulsoe. The Grade 1 listed Chicheley Hall is an early 18th Baroque country house set within a 100 acre park.

The towered village churches across the LCT are a locally distinctive feature and include Moulsoe, Astwood, Hardmead, Chicheley and Calverton.

Within the Weald Clay Plateau Farmland with Tributaries LCA 3b a number of listed building sit within the Calverton Conservation Area including Calverton House, a Grade II listed Georgian country house within a parkland, and Calverton Manor House (Grade II*). The Grade II listed Shenley Dens Farm, on the ridge north of Oakhill Wood, is now derelict. It is of interest as part of the historic Whaddon Estate, and has a strong visual relationship with Whaddon Hall. It is part of the historic landscape to the west of Milton Keynes centred on Whaddon Chase.

Perceptual and Aesthetic

Despite the relatively close proximity to Milton Keynes this is generally a quiet and peaceful rural landscape with few visual detractors. The elevation of the plateau results in extensive views from ridges within the LCT to the surrounding areas. The plateaus, elevated above Milton Keynes to the west and the east, provide a rural backdrop to the urban areas.

LCA 3a, to the east of Milton Keynes, is an empty landscape with limited settlement. HV power cables are prominent in some locations close to the boundary with Bedfordshire. Away from the main roads it is a quiet area, except for intermittent noise from Cranfield airfield and the audible intrusion of the M1 from the western edge of the plateau.

LCA 3b, to the west of Milton Keynes, still retains a strong sense of separation from the built edge of Milton Keynes despite recent development in the WEA. The intimate setting of Calverton and its associated pasture is a distinctive feature. From higher ground, there are extensive views to the west across to Aylesbury Vale. The noise of the A5 is intrusive.

LCT 3 Character Areas

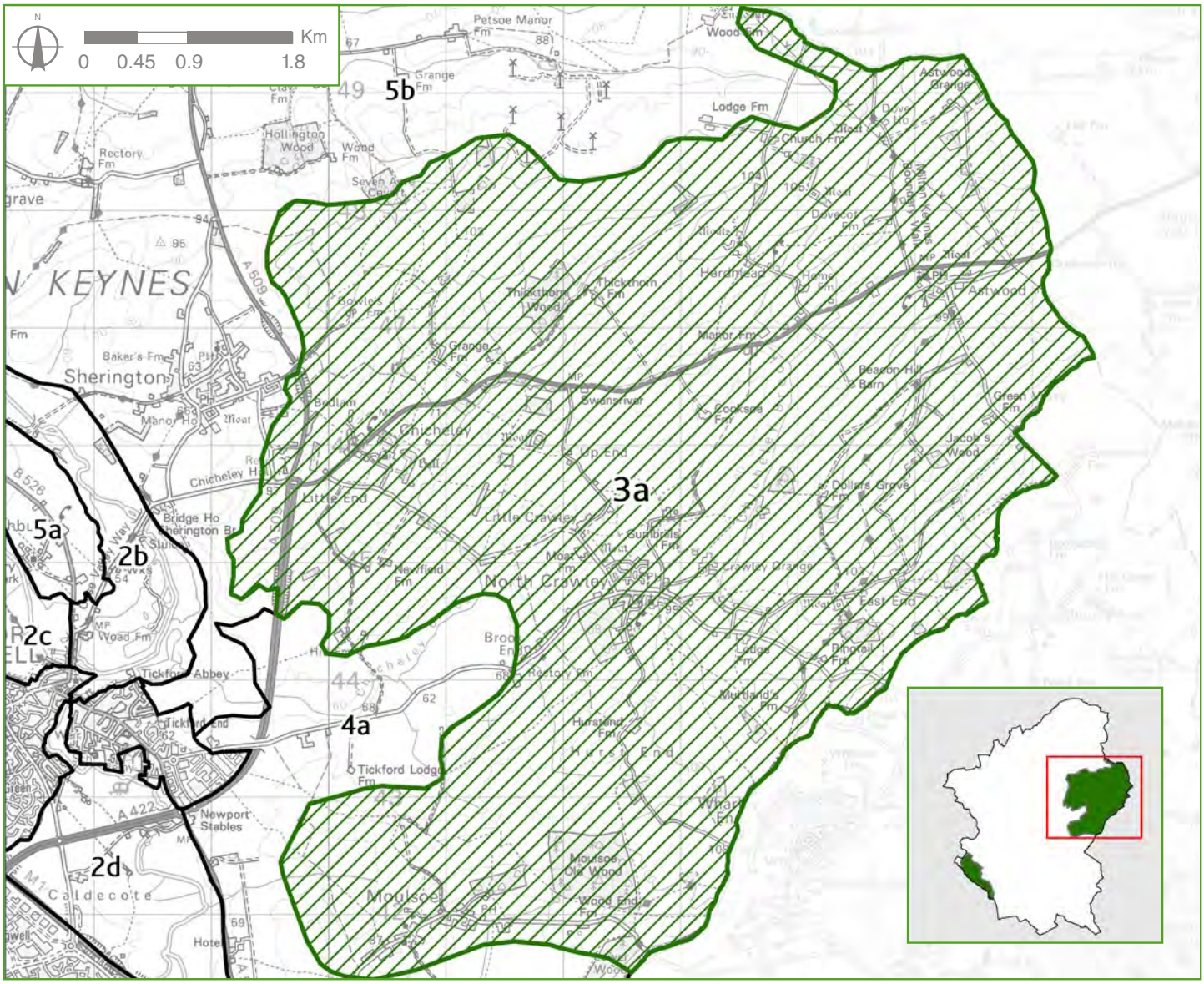
LCA 3a NORTH CRAWLEY CLAY PLATEAU FARMLAND WITH TRIBUTARIES

North Crawley Clay Plateau Farmland with Tributaries LCA 3a is a large undulating plateau bisected by small watercourses which create enclosed valleys. Most the LCA consists of large scale arable fields creating a remote empty feeling. It is a relatively isolated area, elevated above the surrounding landscape but sloping gently towards the west. Ridges offer panoramic views to the north over the Ouse Valley, west over Milton Keynes and south to the Greensand Ridge. The top of the plateau has slopes that vary between 1 in 40 and 1 in 80. The highest point at 108m AOD occurs at Wharley End close to the Bedfordshire boundary. Chicheley Brook, a tributary of the River Great Ouse is the main watercourse and flows from Cranfield towards North Crawley.

The loss of substantial numbers of elm trees from local hedgerows in the 1970s had a major impact on the landscape. Replanting has been on a modest scale, and includes plantations of poplars seen from the A422 and cricket bat willow on the Chicheley estate.

There are few villages, the largest being North Crawley. The village church at Moulsoe is a prominent landmark on the plateau. In addition there are a few 'Ends', such as Petsoe End and Little End, a settlement pattern more typical of north Bedfordshire. The largest house is Chicheley Hall (1720-25) which has early 18th century formal gardens (Grade II*).

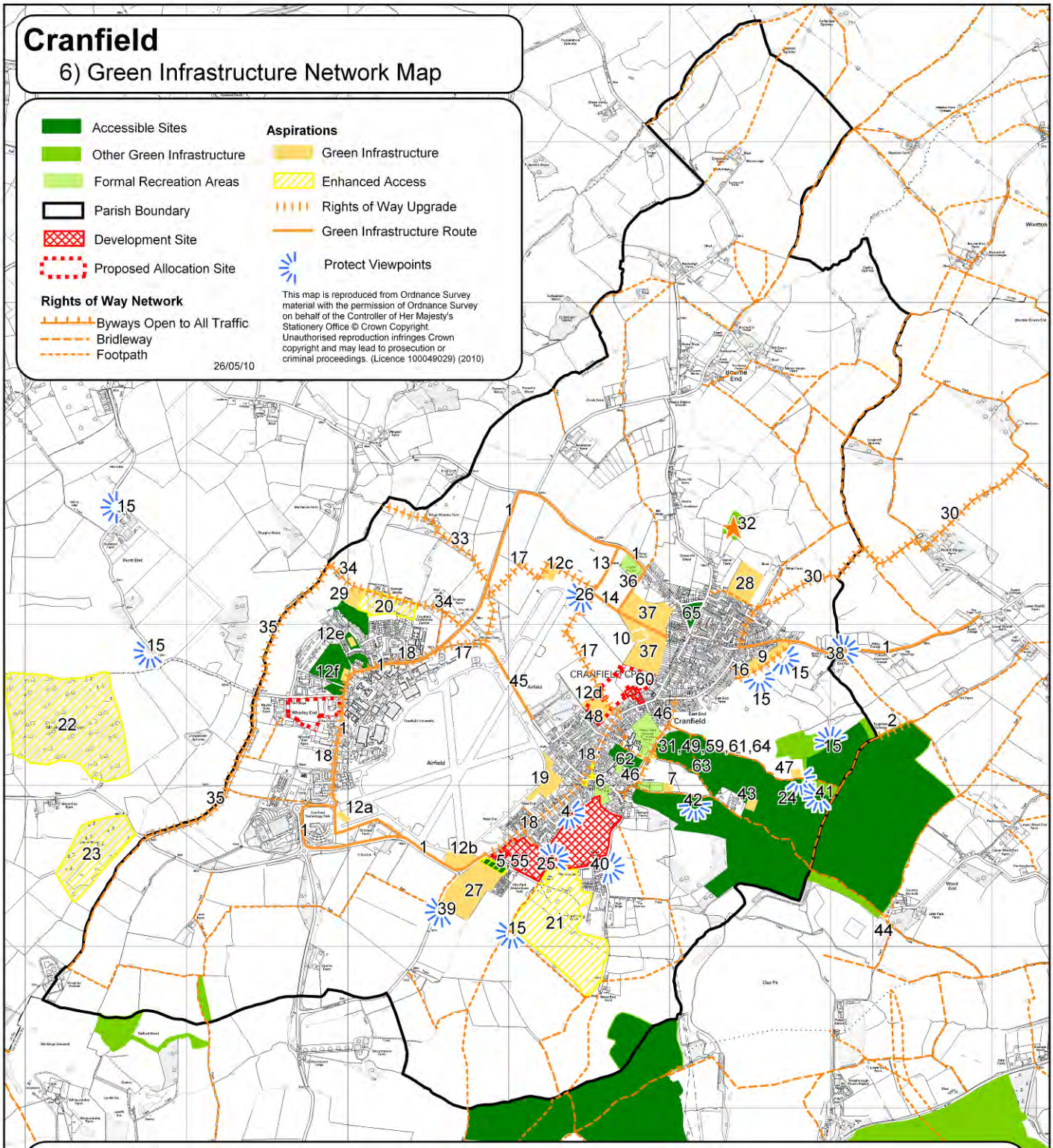
Contrasting field patterns in the area reflect the differing dates of enclosure of the three major estates, Chicheley, North Crawley and Moulsoe. The 17th century enclosure around Chicheley has resulted in more organic and species rich hedgerows than subsequent enclosure around North Crawley. There are some remnant areas of ridge and furrow for example at Newfield Spinney.



Appendix 3. Cranfield Green Infrastructure Plan 2010 'Green Infrastructure Network Map'

Cranfield

6) Green Infrastructure Network Map



Ref	Suggested Enhancement
1	Pathways and cycleways to enable access to the whole of Cranfield and University
2	Resurface footpath and remove barbed wire fence. Reported to Central Bedfordshire Council
4	Houses on south side of High Street will have their views blocked by development
5	Pocket park at Lodge Road not well used. Could be used for a multi-purpose building for pre-school, Brownies, etc. (See 55)
6	Better upkeep of village greens
7	Green burial area. Also create access to allow disabled people to see view
9	Pocket park. Linear green space. Viewpoint. Seats.
10	Green pocket park
12a-f	Green gyms
13	Cycleway spur
14	Cycleway spur
15	Magnificent views
16	Better access to footpath. Reported to Central Bedfordshire Council
17	Upgrade footpath to cycleway – surfaced; widened; no horses
18	20mph limit on through roads
19	New open land and footpath with access from High Street and Merchant Lane. Also sports field
20	Open access to woodland
21	Open access to parkland at Cranfield Court
22	Open access to woodland
23	Open access to woodland
24	View from footpath across valley to Ampthill and Lidlington
25	View towards parish church from Lodge Road to Home Farm fields
26	View southwest across airfield from northeast corner
27	Allotments (near original site)
28	Allotments at north end of village
29	Allotments at Wharley End
30	Bridleway upgraded to cycleway suitable for horses, cycles and pedestrians
31	Improve Holywell area
32	Information required about County Wildlife Site meadow
33	Path requires clearance. Reported to Central Bedfordshire Council
34	Path requires clearance. Reported to Central Bedfordshire Council
35	Path requires clearance. Reported to Central Bedfordshire Council
36	New path to new allotments

Ref	Suggested Enhancement
37	New allotments
38	View of Cardington highlands
39	View to Hulcote Farm
40	View to Marston village
41	View across vale from Rectory Fields
42	View from ridge near Marston Thrift
43	Car parking and toilets essential to enable easier access to Thrift
44	Toilets at existing Thrift car park at Wood End
45	Re-open redundant entry in Merchant Lane to access university
46	Better maintenance of bridleway at rear of village. Reported to Central Bedfordshire Council
47	Picnic site adjacent to ridge and Thrift
48	Allotments
49	Investigate and renovate the 'actual' Holywell Spring and open up access to it
51	Renew grubbed out hedges. No specific location given
52	Path/cycle ways on all roads leading out of Cranfield. (See 1)
54	Suitably placed, vandal proof seats on long stretches of footway between shops
55	Lodge Road Pocket Park should revert to allotments. Sitemore likely to be used when Home Farm dev't is complete. (See 5)
57	(There is no aspiration no. 57)
58	Improve paths for wheelchairs. No specific location given
59	Car park for Holywell Lane
60	Cut grass and brambles behind factory on Millfield Close
61	Dog poo bin required
62	Problem with dog fouling in 'Square Park'
63	Protect sledging slope on 'Plunders Hill'
64	BMX track including jumps on 'Sandy Alley' (Holywell Lane). Also clear brambles and stinging nettles
65	'Triangle Park' needs refurbishment (Goals etc.)

	Supplementary Comments
3,8,11	Aspirations relating to the land affected by the Home Farm development were considered irrelevant because a planning consent already exists
53,56	53: Village entry signs/structures. 56: Traditional design windmill between caravan park and lodge on Lodge Rd to generate electricity and as meeting venue. These aspirations, although popular were considered after some post-meeting discussion not to be green infrastructure for the purposes of this exercise
50	All new build should incorporate solar panels/pv cells

Appendix 4. Approved Drawings and Documents from extant permission CB/17/05862/OUT:

Phase 1 Full

17662/SK118J – Air Park - Masterplan (Version 7) Phase 1

17662/P015C – FBO, Offices and Ground Support Proposed Elevations

17662/P015C – Hangars 1 and 2 Proposed Elevations

17662/P021C – Typical Section Third Phase 1 Hangars and Proposed phase 1 Building Levels

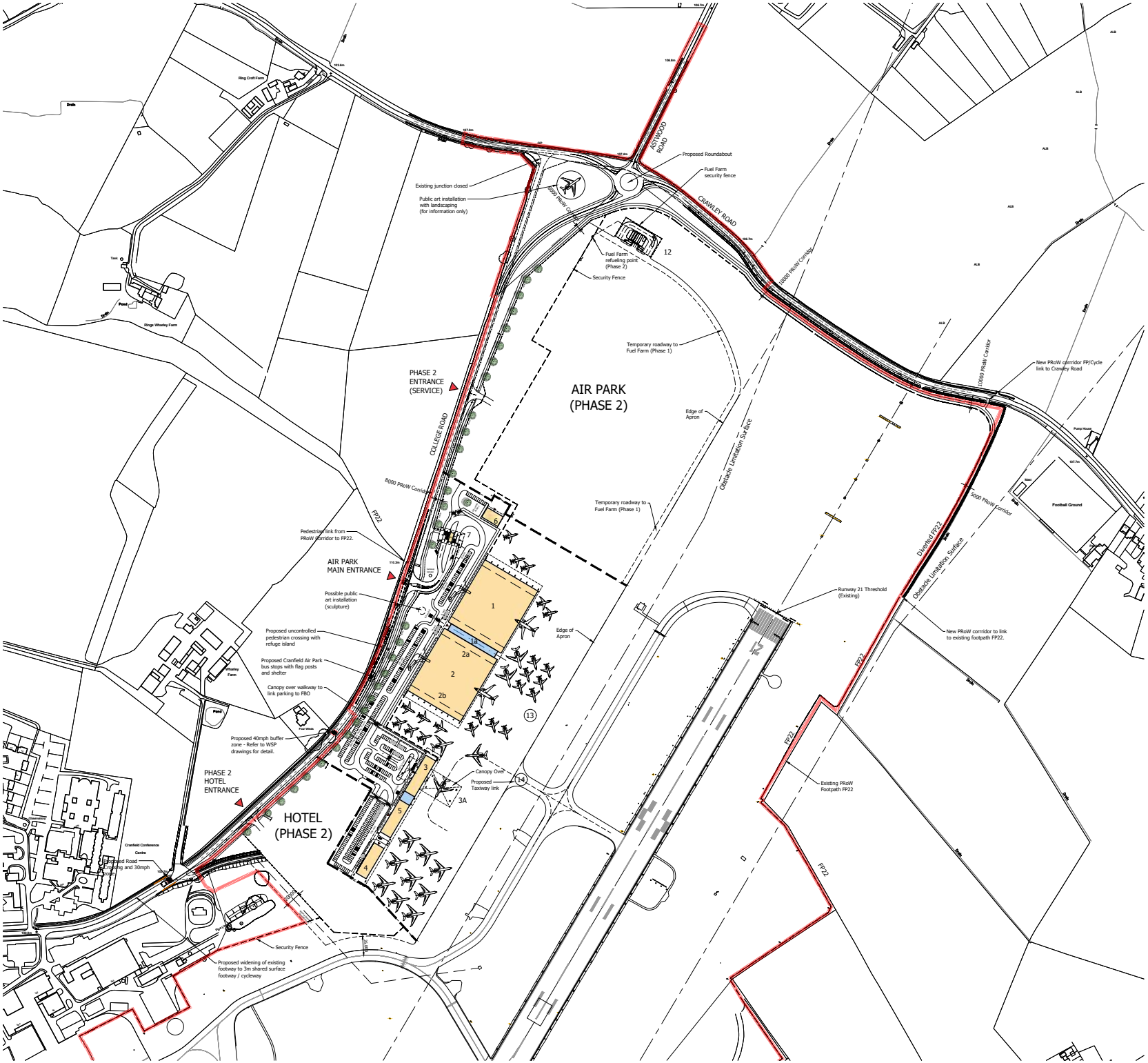
Phase 2 Outline

17662/P013K – Air Park Plan and Airside Elevation Phase 1&2 Overview

17662/P026B – Indicative Phase 2 Building Levels and Phase 1 Fuel Farm

Supporting Information

EDP4239/13a – Figure 11.6: Findings of Visual Appraisal and Photoviewpoint Locations



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Revision	Description	Drawn	Checked	Date
J	Redline updated per drwg P001K. Fuel Farm updated	SA	CW	12/12/17
H	Fuel Farm updated	SA	CW	06/12/17
G	Building schedule updated. Phase 1 boundary added.	SA	CW	04/12/17
F	Building Areas updated to GEA.	SA	CW	30/11/17
E	Biomass bldg service area & Entrance Gateway Bldg updated.	SA	CW	27/11/17
D	FBO, Office & Grnd Support footprint centralised under roof overhang.	SA	CW	22/11/17
C	Minor amendment to PH1 entrance road sweep. Cycle parking indicated.	SA	CW	21/11/17
B	Disabled parking bays indicated	SA	CW	14/11/17
A	Taxiway updated to Atkins revised layout. Road layout updated to suit swept path.	SA	CW	02/11/17

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Woods Hardwick
Architects, Engineers and Development Consultants

15-17 Goldington Road
Bedford
MK40 3NH
United Kingdom
T. +44 (0)1234 268862
F. +44 (0)1234 353034
mail@woodshardwick.com
www.woodshardwick.com

Title: Cranfield Air Park
Action Aviation

Details: Air Park - Masterplan (Version 7)
Phase 1

Scale: 1:2500@A1 Date: 23/10/2017 Drawn: SA Chk: CW

17662/SK118J

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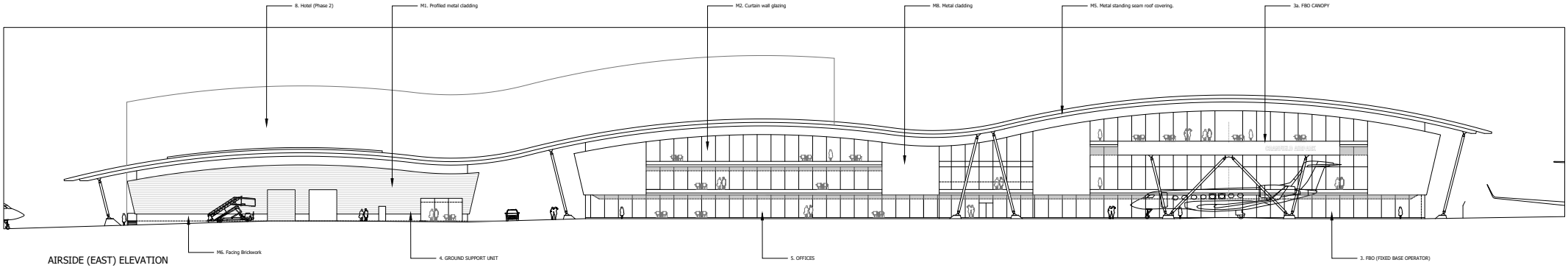
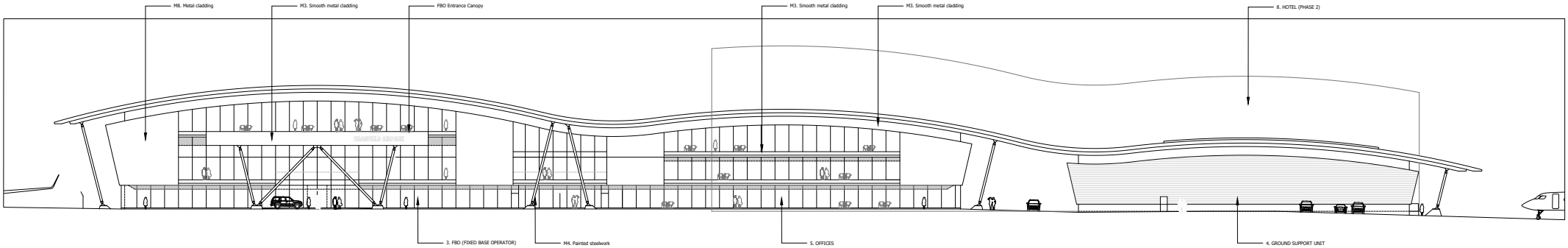
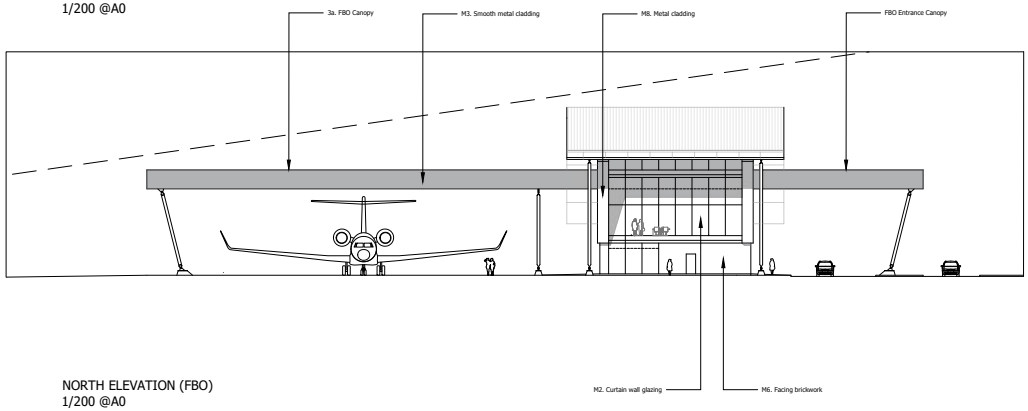


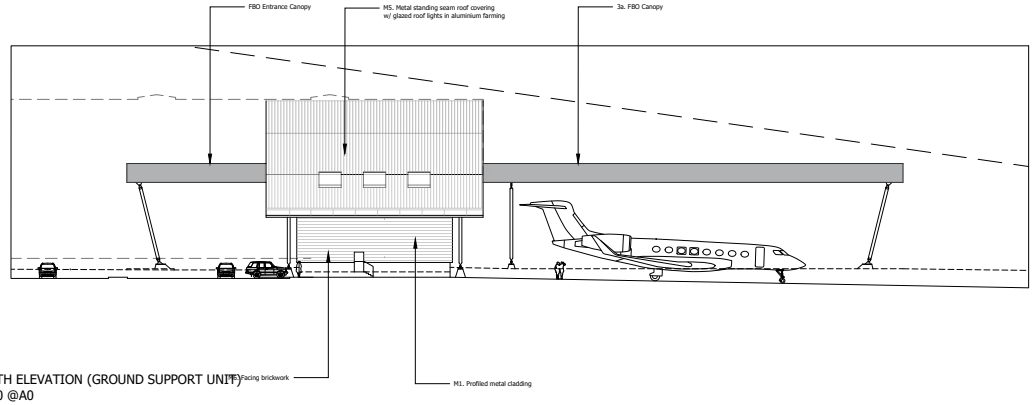
AIRSIDE (EAST) ELEVATION
1/200 @A0



LANDSIDE (WEST) ELEVATION
1/200 @A0



NORTH ELEVATION (FBO)
1/200 @A0



SOUTH ELEVATION (GROUND SUPPORT UNIT)
1/200 @A0

Revision	Description	Drawn	Checked	Date
C	Material notes added.	SA	CW	30/11/17
B	FBO, Office & Grnd Support footprint centralised under roof overhang	SA	CW	22/11/17
A	North elevation added	SA	CW	20/11/17

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Woods Hardwick
Architects, Engineers and Development Consultants
15-17 Goldington Road
Bedford
MK40 3NH
United Kingdom
T. +44 (0)1234 268802
F. +44 (0)1234 353034
mail@woodhardwick.com
www.woodhardwick.com

Title: CRANFIELD AIR PARK
ACTION AVIATION

Details: FBO, OFFICES & GROUND SUPPORT
PROPOSED ELEVATIONS

Scale 1/200@A0 Date 08/11/2017 Drawn SA Chk CW

17662 / P015C

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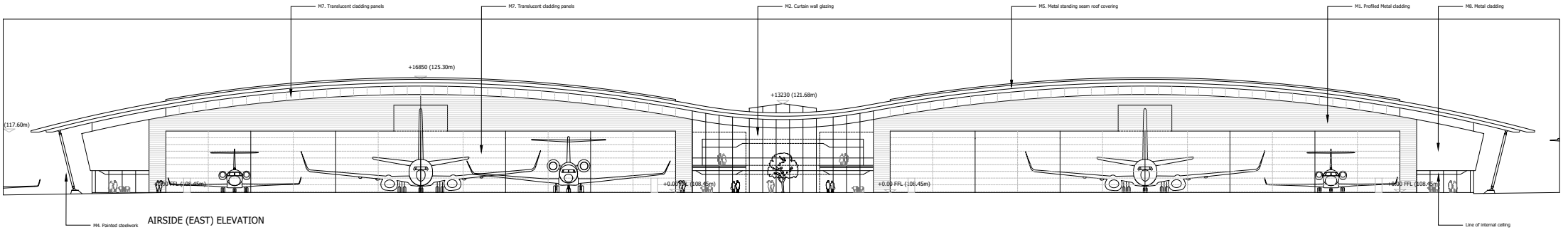
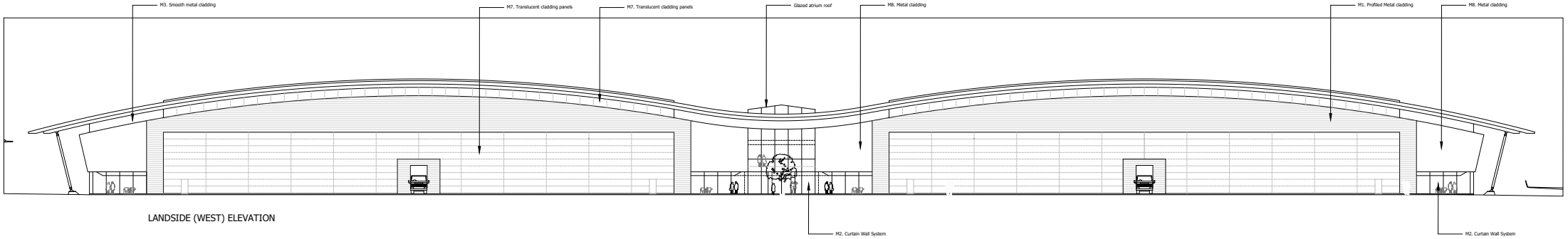
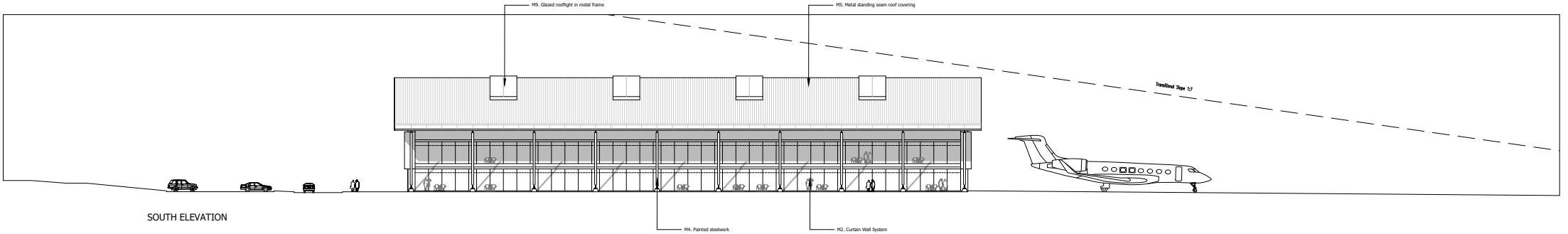


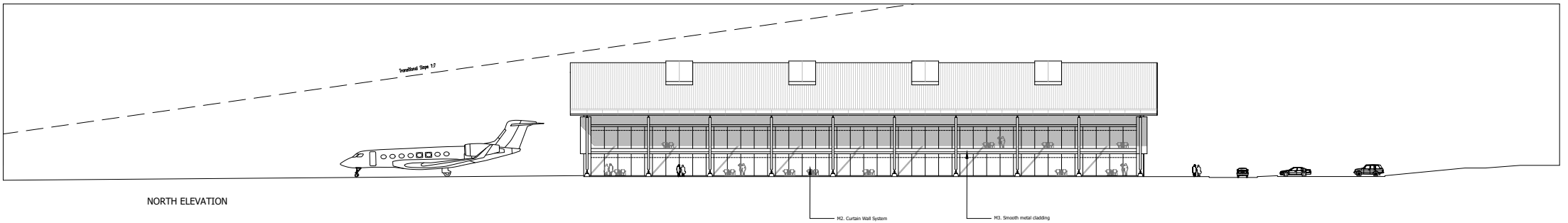
AIRSIDE (EAST) ELEVATION



LANDSIDE (WEST) ELEVATION



SOUTH ELEVATION



NORTH ELEVATION

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Revision	Description	Drawn	Checked	Date
B	Material notes added.	SA	CW	16/11/2017
A	Hangar door height amended.	SA	CW	16/11/2017

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Woods Hardwick
Architects, Engineers and Development Consultants

15-17 Goldington Road
Bedford
MK40 3NH
United Kingdom
T. +44 (0)1234 268801
F. +44 (0)1234 353034
mail@woodshardwick.com
www.woodshardwick.com

Title: CRANFIELD JET PARK
ACTION AVIATION

Details: HANGERS 1 & 2
PROPOSED ELEVATIONS

Scale: 1/200@A0 Date: 08/11/2017 Drawn: SA Chk: CW

17662 / P016B

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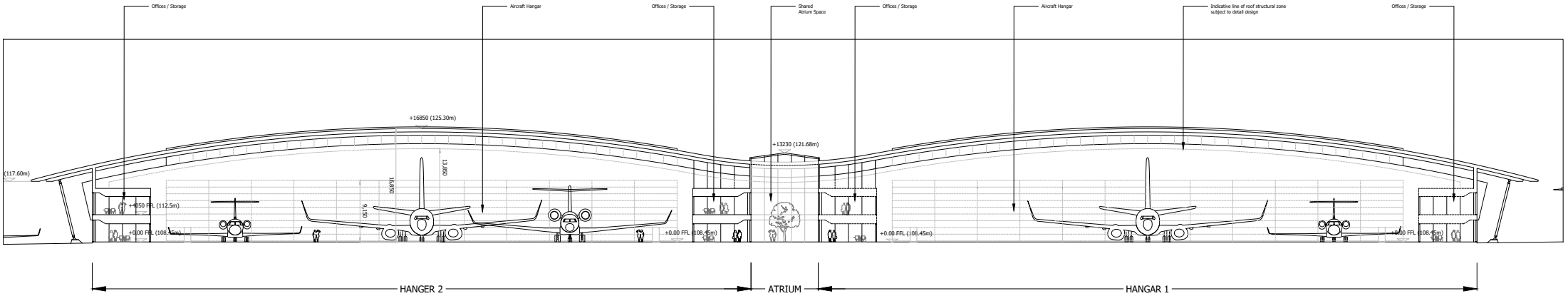
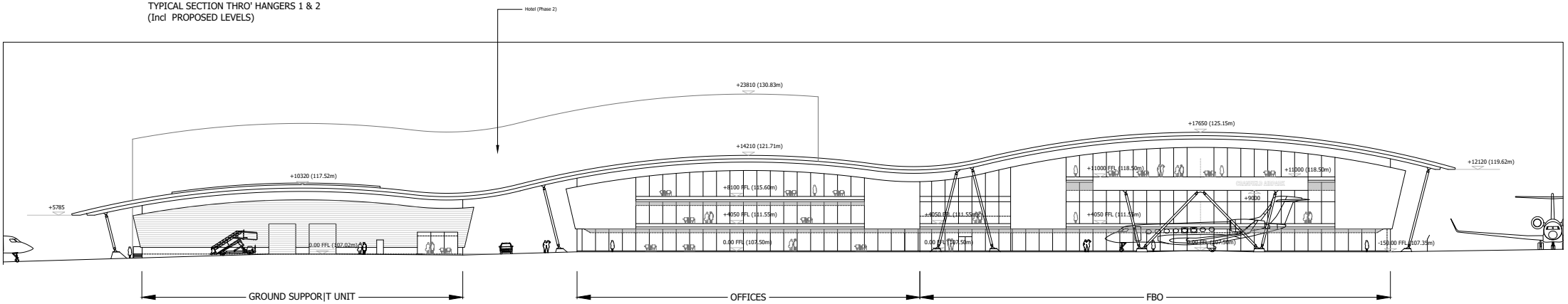
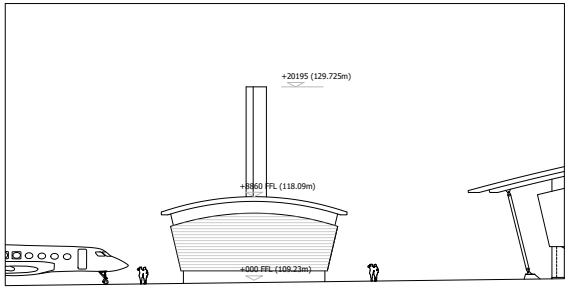


TYPICAL SECTION THRO' HANGERS 1 & 2
(Incl PROPOSED LEVELS)



FBO, OFFICES & GROUND SUPPORT
PROPOSED LEVELS



BIOMASS BUILDING
PROPOSED LEVELS

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Revision	Description	Drawn	Checked	Date
C	Hangar 1 section notes updated.	SA	CW	08/12/17
B	Minor update to notes.	SA	CW	30/11/17
A	General update.	SA	CW	29/11/17

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Woods Hardwick
Architects, Engineers and Development Consultants
15-17 Goldington Road
Bedford
MK40 3NH
United Kingdom
T. +44 (0)1234 268802
F. +44 (0)1234 353034
mail@woodshardwick.com
www.woodshardwick.com

Title: CRANFIELD JET PARK
ACTION AVIATION

Details: TYPICAL SECTION THRO PHASE 1 HANGARS & PROPOSED PHASE 1 BUILDING LEVELS

Scale: 1/200@A0 Date: 16/11/2017 Drawn: SA Chk: CW

17662 / P021C

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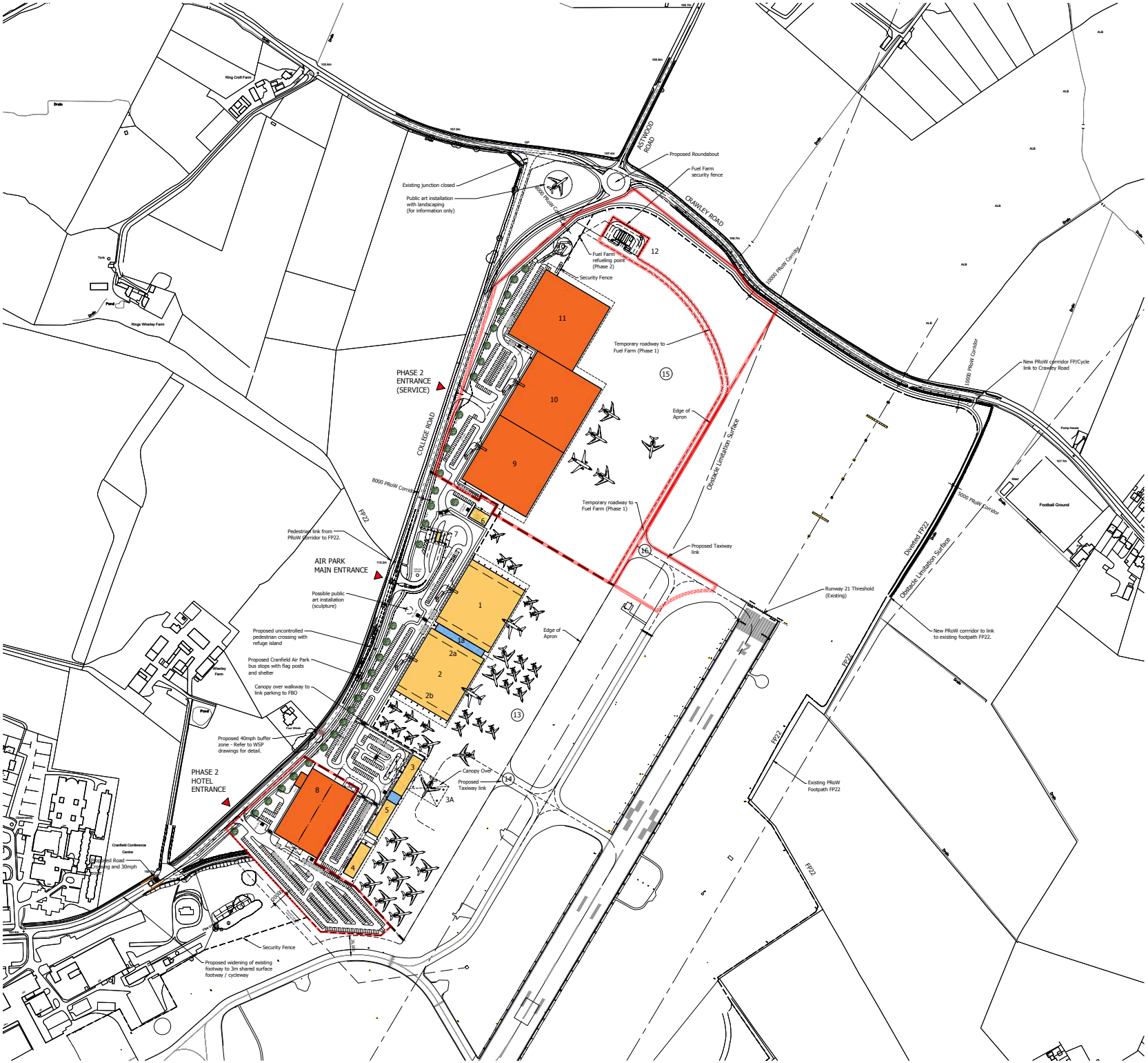

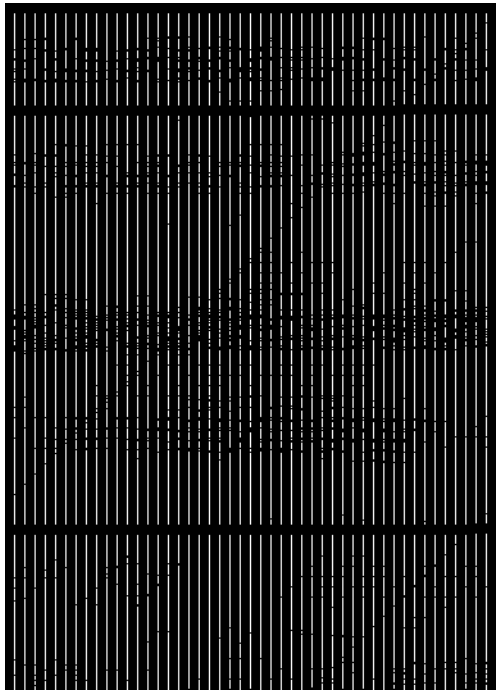

Extent of Cranfield Air Park Phase 2

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Revision	Description	Drawn	Checked	Date
K	Fuel Farm updated	SA	CW	12/12/17
J	Fuel Farm updated	SA	CW	06/12/17
H	Building schedule updated. Phase 2 boundary added.	SA	CW	04/12/17
G	Building Areas updated to GEA	SA	CW	30/11/17
F	Biomass boiler service area and Entrance Gateway bldg updated	SA	CW	27/11/17
E	FBO, Office & Grnd Support footprint centralised under roof overhang	SA	CW	22/11/17
D	Minor amendment to PH1 entrance road sweep. Cycle parking indicated.	SA	CW	21/11/17
C	Disabled parking bays indicated	SA	CW	14/11/17
B	Taxiway updated to Atkins revised layout. Road layout updated to suit swept path.	SA	CW	02/11/17
A	General update	SA	CW	31/10/17

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Woods Hardwick
Architects, Engineers and Development Consultants

15-17 Goldington Road
Bedford
MK40 3NH
United Kingdom
T. +44 (0)1234 268862
F. +44 (0)1234 353034
mail@woodshardwick.com
www.woodshardwick.com

Title: Cranfield Air Park
Action Aviation

Details: Air Park - Masterplan (Version 7)
Phase 2

Scale 1:2500@A1 Date 23/10/2017 Drawn SA Chk CW

17662/SK119K

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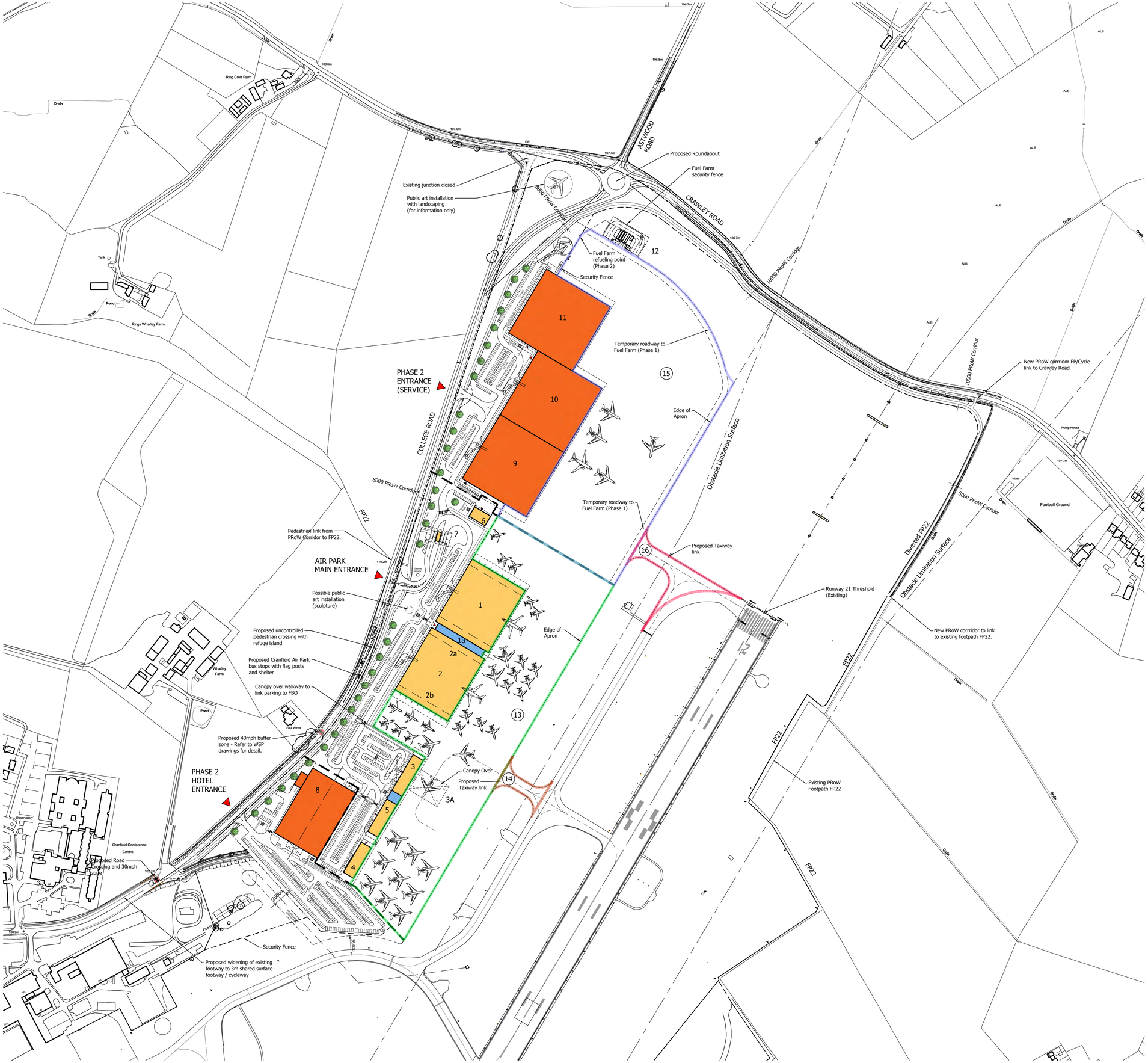

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KEY :

- 13. Airport Apron Phase 1 - 65,270m2
- 14. Taxiway Extension Phase 1 - 1,430 m2
- 15. Airport Apron Phase 2 - 70,980 m2
- 16. Taxiway Extension Phase 2 - 3,615m2

Revision	Description	Drawn	Checked	Date
B	Fuel Farm updated	SA	CW	12/12/17
A	Fuel Farm updated	SA	CW	06/12/17

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Woods Hardwick
Architects, Engineers and Development Consultants

15-17 Goldington Road
Bedford
MK40 3NH
United Kingdom
T. +44 (0)1234 268862
F. +44 (0)1234 353034
mail@woodshardwick.com
www.woodshardwick.com

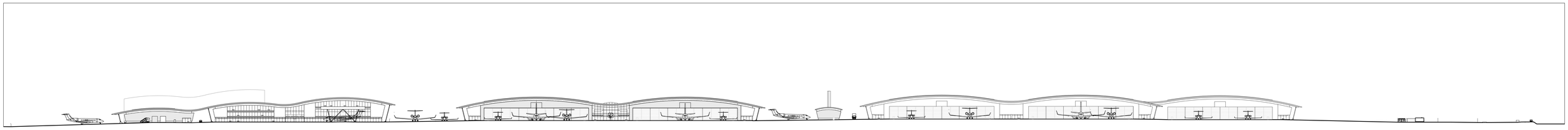
Title: Cranfield Air Park
Action Aviation

Details: Air Park - Masterplan (Version 7)
Proposed Apron & Taxiway Areas

Scale: 1:2500@A1 Date: 04/12/2017 Drawn: SA Chk: CW

17662/P030B

Please consider the environment before printing this drawing



AIRSIDE (EAST) ELEVATION OVERVIEW

AIRPARK PLAN

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Revision	Description	Drawn	Checked	Date
K	Fuel Farm elevation amended to match updated plan	SA	CW	08/01/2018
J	Fuel Farm updated	SA	CW	06/12/2017
H	Atrium noted	SA	CW	30/11/2017
G	FBO, Office & Grnd Support footprint centralised under roof overhang	SA	CW	22/11/2017
F	Extent of plan increased. Cycle parking indicated.	SA	CW	21/11/2017
E	BioMass Flue extended	SA	CW	20/11/2017
D	Hangar door heights amended to 9150	SA	CW	16/11/2017
C	Disabled parking bays indicated	SA	CW	15/11/2017
B	Update for Planning Application	SA	CW	08/11/2017
A	General Update	SA	CW	31/10/2017

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Woods Hardwick
Architects, Engineers and Development Consultants

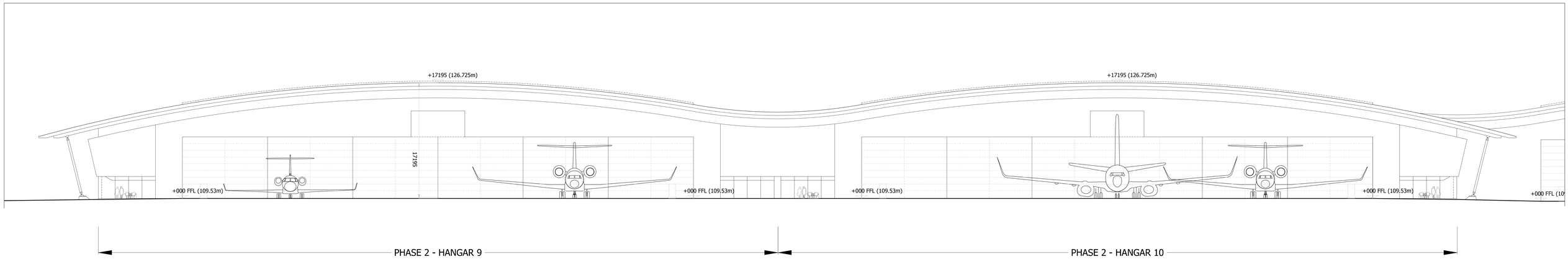
15-17 Goldington Road
Bedford
MK40 3NH
United Kingdom
T. +44 (0)1234 268862
F. +44 (0)1234 353034
mail@woodshardwick.com
www.woodshardwick.com

Title: CRANFIELD AIR PARK ACTION AVIATION

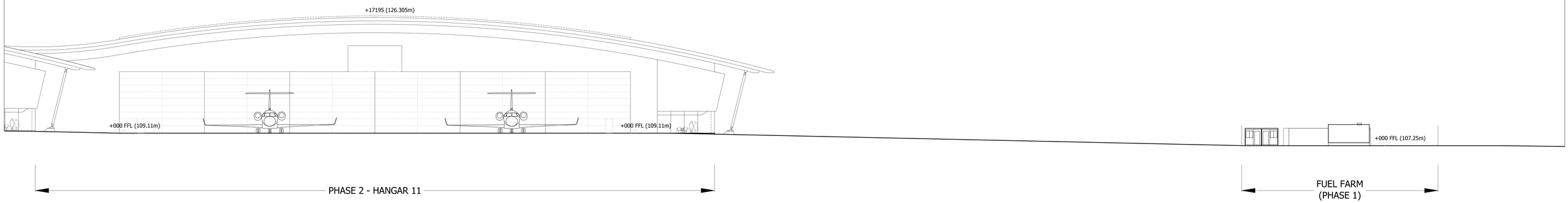
Details: AIR PARK PLAN & AIRSIDE ELEVATION PHASE 1 & 2 OVERVIEW

Scale 1/1000@A0 Date 26/10/2017 Drawn SA Chk CW

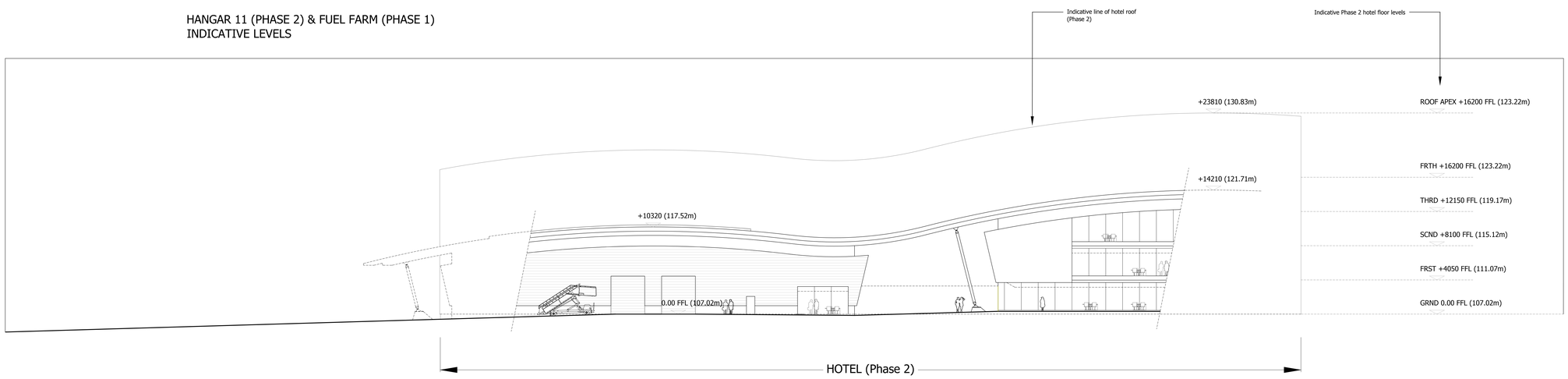
17662 / P013K



HANGERS 9 & 10 (PHASE 2)
INDICATIVE LEVELS



HANGAR 11 (PHASE 2) & FUEL FARM (PHASE 1)
INDICATIVE LEVELS



HOTEL (PHASE 2)
INDICATIVE LEVELS

Notes

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Revision	Description	Drawn	Checked	Date
B	Fuel Farm elevation updated	SA	CW	08/01/2018
A	Fuel Farm updated	SA	CW	06/12/2017

Preliminary ■ Information □ Tender □ Construction □ As Built □

Woods Hardwick
Architects, Engineers and Development Consultants

15-17 Goldington Road
Bedford
MK40 3NH
United Kingdom
T. +44 (0)1234 268862
F. +44 (0)1234 353034
mail@woodshardwick.com
www.woodshardwick.com

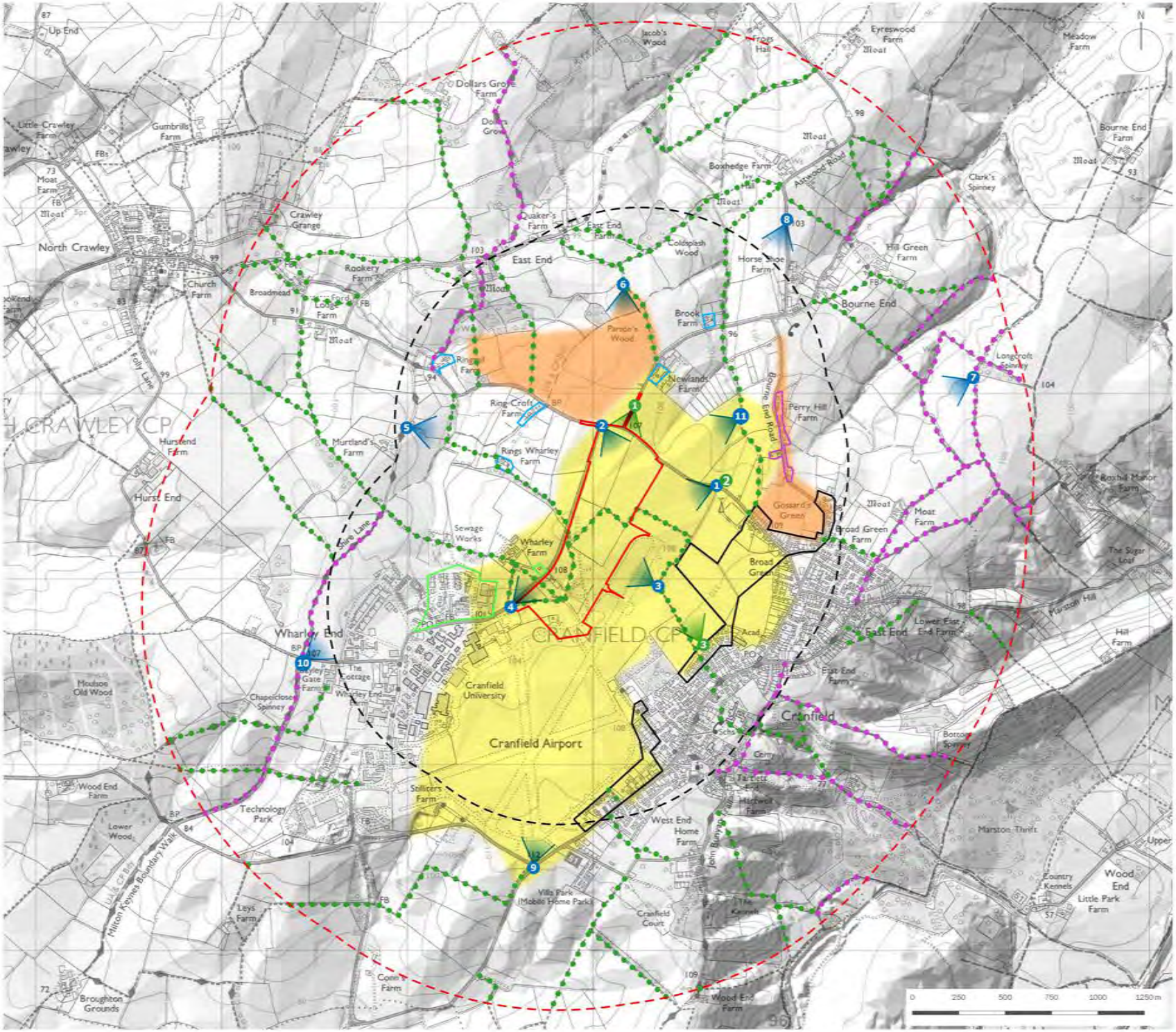
Title: CRANFIELD JET PARK
ACTION AVIATION

Details: INDICATIVE PHASE 2 BUILDING LEVELS
& PHASE 1 FUEL FARM

Scale: 1/200@A0 Date: 29/11/2017 Drawn: SA Chk: CW

17662 / P026B

Please consider the environment before printing this drawing



client
Cranfield University and London Cranfield Jet Centre Ltd

project title
Cranfield Air Park

drawing title
Figure 11.6: Findings of Visual Appraisal and Photoviewpoint Locations

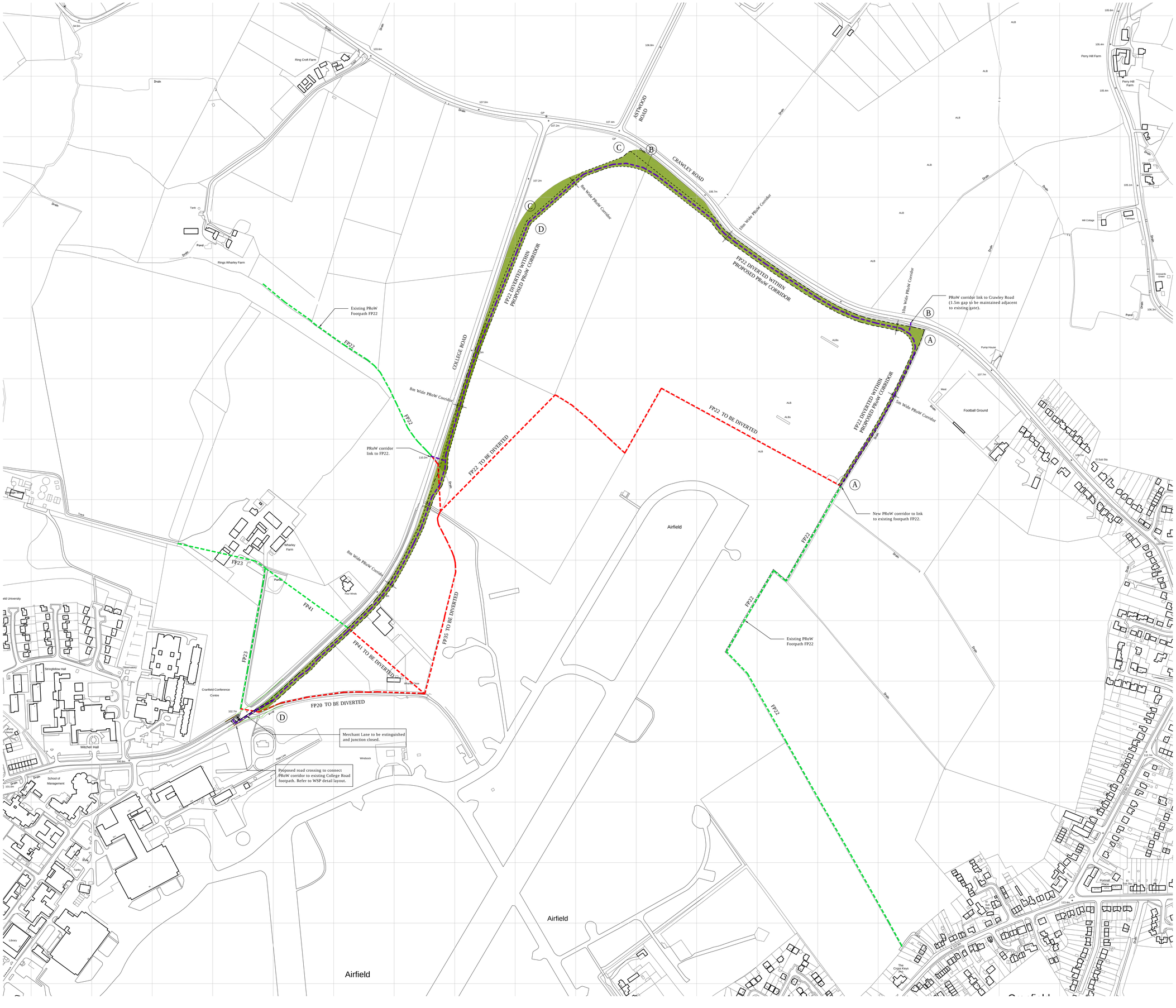
date	27 NOVEMBER 2017	drawn by	DK
drawing number	EDP4239/13a	checked	CJM
scale	1:20 000 @ A3	QA	JTF

the environmental dimension partnership
info@edp-uk.co.uk www.edp-uk.co.uk
Cirencester 01285 740427 Cardiff 02921 671900 Shrewsbury 01939 211190

Appendix 5. Drawings and Documents from extant permission CB/17/05142/FULL

17662/P007F – Footpath Diversion Extent of PROW Landscape Corridor

EDP4239_SK_CM250917_2 – PROW sketch proposals



Notes

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KEY

- Proposed extent of PRoW landscape corridor
- Route of proposed cycle/footway.
- Existing PRoW footpaths.
- Existing PRoW footpaths to be diverted.

FOR PLANNING

Revision	Description	Drawn	Checked	Date
F	FP41 noted	SA	CW	19-10-17
E	College Road amended	SA	CW	18-10-17
D	Road crossing note updated	SA	CW	18-10-17
C	Road crossing updated	SA	CW	16-10-17
B	PRoW corridor extended south to Duncan Road. Crawley Road PRoW increased to 10m	SA	CW	10-10-17
A	PRoW corridor extended south along College Road. PRoW link to Crawley Road noted.	SA	CW	02-10-17

Preliminary ☐ Information ☐ Tender ☐ Construction ☐ As Built ☐

Woods Hardwick
Architects, Engineers and Development Consultants

15-17 Goldington Road
Bedford
MK40 3NH
United Kingdom
T. +44 (0)1234 268862
F. +44 (0)1234 353034
mail@woodshardwick.com
www.woodshardwick.com

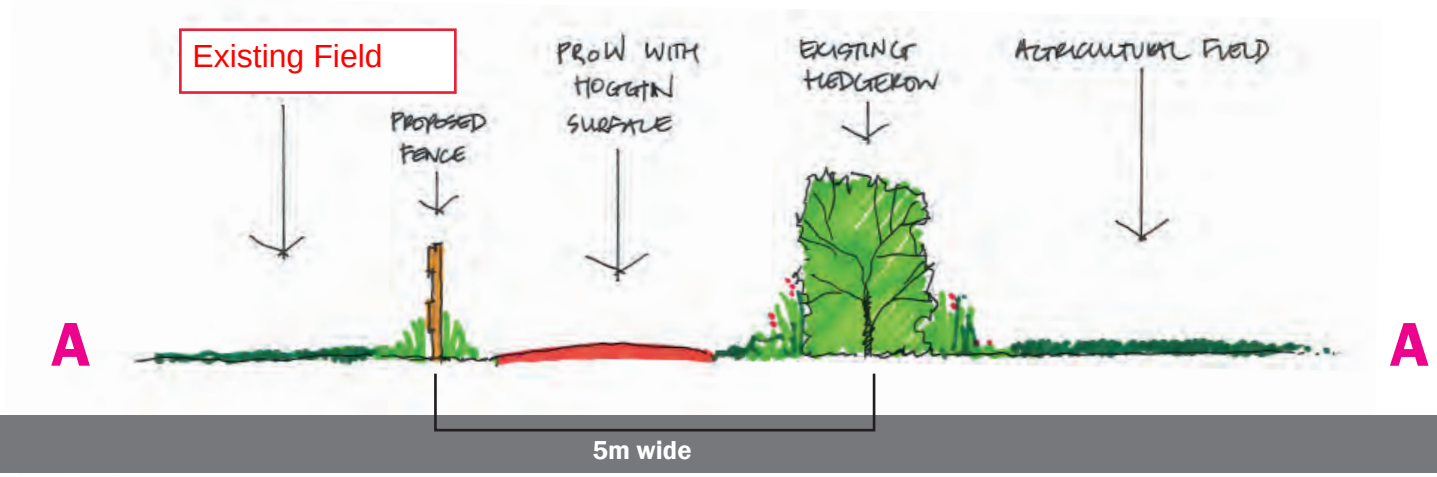
Title: Cranfield Air Park
Action Aviation

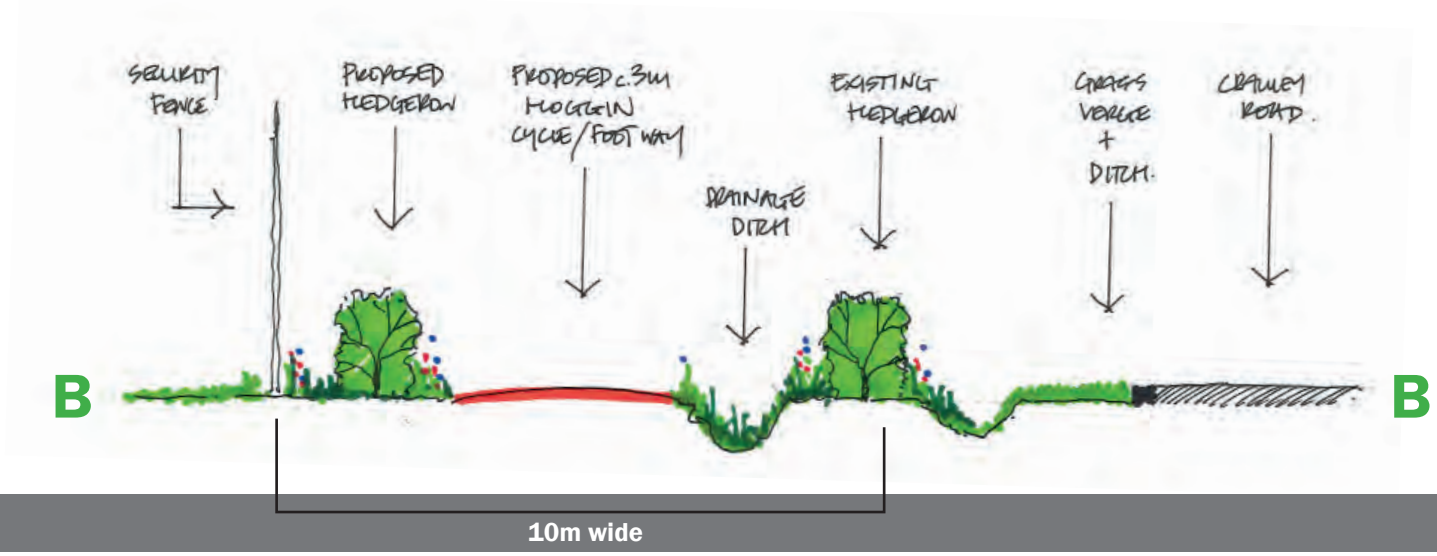
Details: Footpath Diversion
Extent of PRoW Landscape Corridor

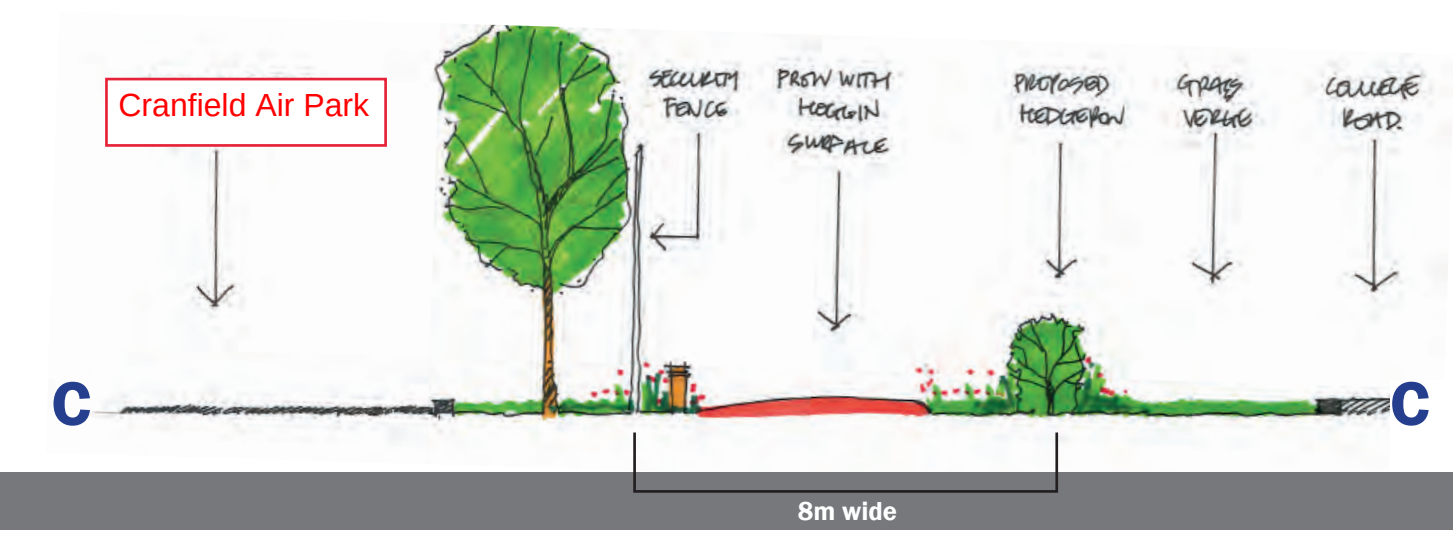
Scale 1/2000@A0 Date 28/09/2017 Drawn SA Chk CW

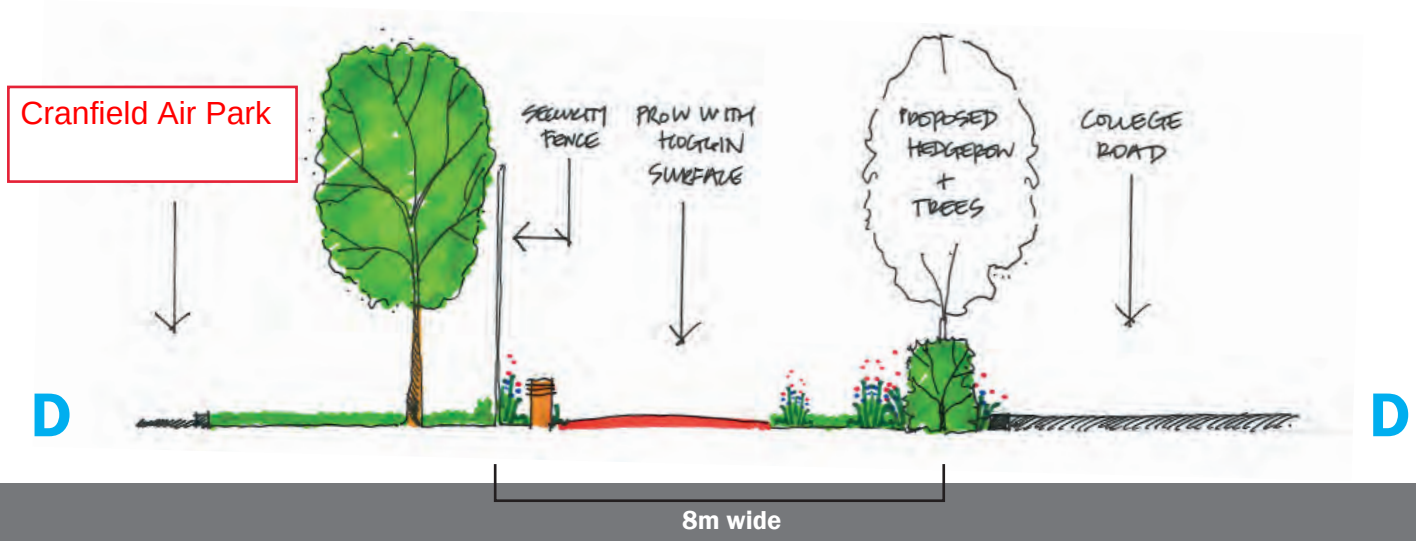
17662/P007F

Please consider the environment before printing this drawing.









edp4239_SK_CM250917_2

Appendix 6. Mott McDonald drawing '403957-MMD-CRA-XX-DR-C-0009 PRE P1 – Indicative Cranfield Masterplan – Option 3 Max'

1:5000 0 250m 500m

MOTT MACDONALD
Voyager House
30 Wellesley Road
Croydon
CR0 2AD
United Kingdom
T +44 (0)20 8774 2000
F +44 (0)20 8681 5706
W www.mottmac.com

Legend

- Code D Stand
- Code D Wash Stand
- Ground Run Pen
- Facilities Buildings 22469m²
- Taxiway Pavement
- Other Pavement 68431m²
- 21m & 26m Transitional Clearance
- Security Fence
- Proposed Site Boundary
- Main Access and Reception Area

Land Ownership

Notes

-

Private and Confidential

Disclaimer

This draft masterplan shows the scale and approximate location of the proposed development only and is subject to ongoing refinement. The layout and orientation of facilities are therefore for illustrative purposes only and will be subject to refinement of requirements with MADG.

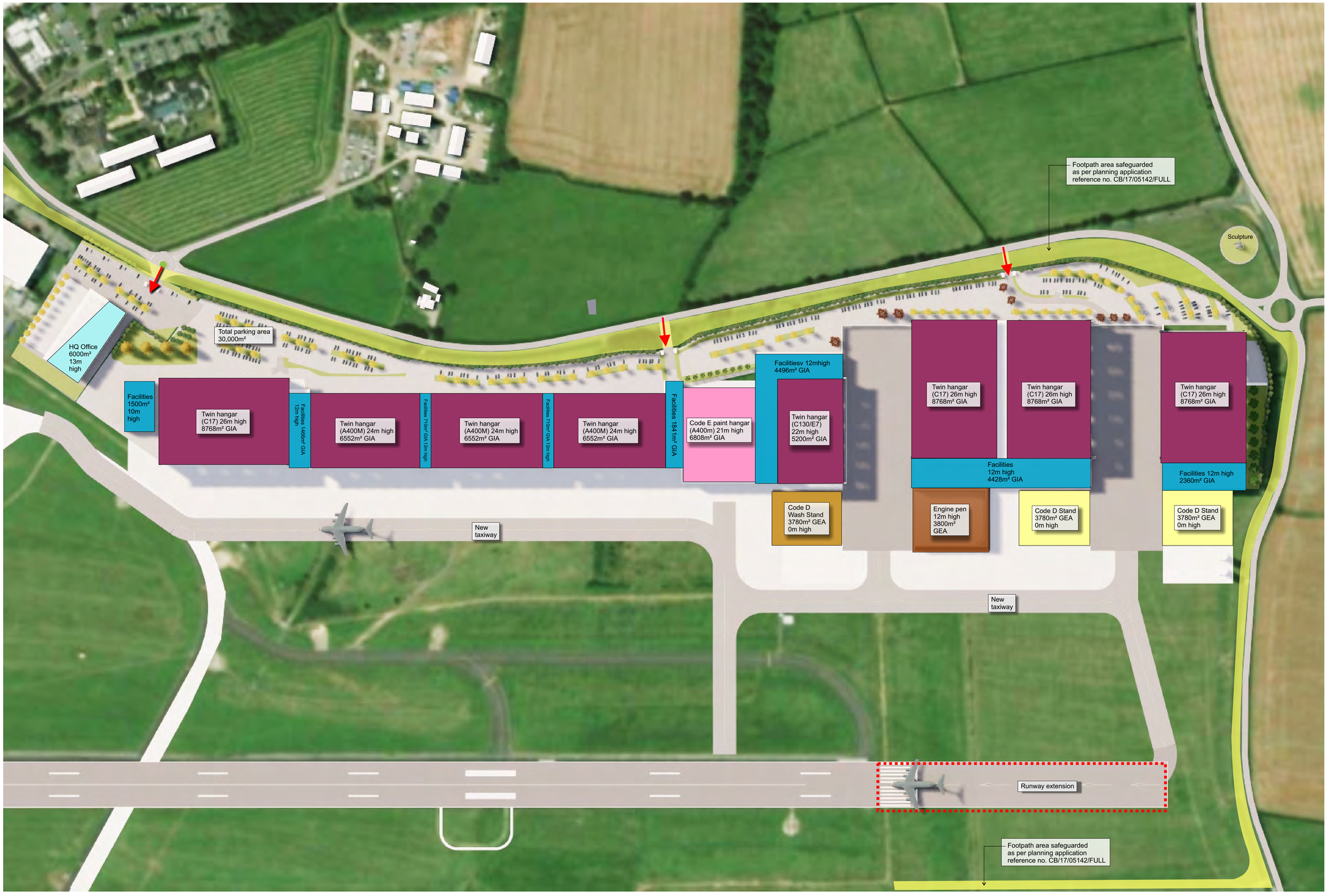
Beta II -Indicative Cranfield Masterplan - Option 3 (maximum)

403957-MMD-CRA-XX-DR-C-0009 PRE P1

C:\users\twi52783\appdata\local\projectwise\workdir\mott-gb-pw-09\dms56127\403957-MMD-CRA-XX-DR-C-0009.dwg Jul 16, 2019 - 12:29PM
TWI52783

Designed Eng check
Drawn Coordination
Dwg check Approved
Scale @ A1 1:5000 Security SEC

Appendix 7. Gebler Tooth drawing '1301-GTA-CRA-SK-107 P01 – Indicative Masterplan Cranfield Block Plan.



Private and Confidential

NOTES:

All areas quoted are GIA. For GEA the GIA figures
shall be multiplied by a factor of 1.1.

Hangars include all hangar support functions like workshops, stores, workshop offices, working space and toilets.

Areas labelled as Facilities are to include:

- Storage
- Manufacturing support
- Non-destructive testing support
- Support shop
- Engine bay workshop
- Component workshop
- Energy centre
- Fire Station

Ver	Date	Description of Change	Drn	Auth
P01	26.07.2019	Pre Planning Application	FH	DT

Key Plan

GEBLERTOOTH

1 World Business Centre | Newall Road | Hounslow | TW6 2RE

t 0208 600 2800
f 0208 600 2849

e info@geblertooth.co.uk

Client

MARSHALL AEROSPACE

Project

BETA II

Title

Indicative Masterplan
Cranfield
Block Plan

Original Scale	Drawn By	Date	Checked By	Author	Status
nts	FH	12.07.2019	SB	DT	S3

1301-GTA-CRA-SK-107

Version P01

Appendix 8. Visualisations and ZTV Studies

ZTV Studies

ZTV studies are prepared using the ESRI ArcGIS Viewshed routine. This creates a raster image that indicates the visibility (or not) of the points modelled. LDA Design undertake a ZTV study that is designed to include visual barriers from settlements and woodlands (with heights derived from NEXTMAP 25 surface mapping data). If significant deviations from these assumed heights are noted during site visits, for example young or felled areas of woodland, or recent changes to built form, the features concerned will be adjusted within the model or the adoption of a digital surface model will be used to obtain actual heights for these barriers.

The model is also designed to take into account both the curvature of the earth and light refraction, informed by the SNH guidance. LDA Design undertake all ZTV studies with observer heights of 2m.

The ZTV analysis begins at 1m from the observation feature and will work outwards in a grid of the set resolution until it reaches the end of the terrain map for the project.

For all plan production LDA Design will produce a ZTV that has a base and overlay of the 1:50,000 Ordnance Survey Raster mapping or better. The ZTV will be reproduced at a suitable scale on an A3 template to encompass the study area.

Ground model accuracy

Depending on the project and level of detail required, different height datasets may be used. Below is listed the different data products and their specifications:

Product	Distance Between Points	Vertical RMSE Error
LiDAR	50cm – 2m	up to +/- 5cm
Photogrammetrically Derived Heights	2m – 5m	up to +/- 1.5m
Ordnance Survey OS terrain 5	5 m	up to +/- 2.5m
NextMap25 DTM	25 m	+/- 2.06m
Ordnance Survey OS terrain 50	50 m	+/- 4m

Site-specific topographical survey data may also be used where available.

True View Augmented Reality Software

This software runs on an iPAD and creates a 3-dimensional model of both the landform (provided by standard terrain mapping data), and an approximate model of the development (simple block models of the correct height, located and sized to match the masterplan). Based on the viewpoint location (double-checked using GPS), a view of the proposed development is generated and superimposed on the view seen through the iPAD

camera lens, and this view can then be captured and recorded. Accurate location ensures that the model is shown at the right size and from the right angle and is fixed at the time of capturing the image and cannot be adjusted off site.

The two other aspects of accuracy are vertical (up/down) and horizontal (right/left) matching. Vertical matching is achieved using the horizon lines and terrain model provided by the 'wireline' and matching that to the terrain as seen in the view. Horizontal matching is achieved using terrain and/or marine binoculars to take a bearing to an object near the centre of the view and matching that to a 'centre line' provided by the software. This provides a 'close enough' match on site, which is then further refined using 'reference objects'. These are features which can be clearly seen in aerial photographs for accurate mapping, and in the view. A number of reference markers (usually 2-5), distributed across a view provide an effective way to ensure horizontal matching is accurate.

Allowing for the limitations of what can be achieved whilst on site, the software has the facility to adjust the vertical and horizontal matching once images have been captured and the user is back at a desk. This allows for instance, the addition of more reference objects, and adjustment of the vertical match on a larger, better quality screen to ensure it is as close as possible.

Where Ventus AR modelling has been used to further develop a visualisation into a simple photomontage, basic colour rendering may be used to differentiate walls and roofs of buildings, and screening by existing vegetation will also be shown. This is done using Adobe Photoshop.

Photo Viewpoints

Photography is undertaken using a digital SLR camera and 50mm equivalent lens. A tripod is used to take overlapping photographs which are joined together using an industry standard application to create a single panoramic image for each viewpoint. These are then saved at a fixed height and resolution to enable correct sizing when reproduced in the final images. The photographer also notes the GPS location of the viewpoint and takes bearings to visible landmarks whilst at the viewpoint.