

# Gonville & Caius

**DUXFORD: Call for Sites (2019)**



**SUPPLEMENTARY DOCUMENT**

**29 NOVEMBER 2019**



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## **1 INTRODUCTION**

1.1 Cambridge City Council and South Cambridge District Councils are embarked upon the preparation of a new Joint Greater Cambridge Local Plan.

1.2 Gonville & Caius College (University of Cambridge) (hereafter the “College”) submitted its response to the authorities “Call for Sites” in March 2019, putting forward its landholding around Duxford Village.

1.3 The College’s proposals are for a sustainable mixed-use development at Duxford comprising of an “AvTech” cluster (“AvTech” being the term used throughout this report for a high technology aviation cluster development at Duxford), alongside an extended Duxford village, to include the following key elements:

### **A new global aviation (“AvTech”) Research & Development cluster**

- 14 hectare cluster for aviation research
- Circa 110,000 sq.m of employment space (GEA)
- 1800-2400 new jobs (FTE)
- Circa £93 million to £127 million GVA

### **New Homes and associated facilities**

- 800 new homes – circa 30 hectares
- Including 320 affordable homes (i.e. 40%) with range of tenures/mixes
- Enhanced educational, medical, local services
- Commitment to “self-containment” on-site

### **Green infrastructure and enhanced biodiversity**

- new 40-hectare publicly accessible Country Park – creating enhanced biodiversity
- 50 hectares of retained agricultural land
- Network of green links/spaces throughout the development
- “Green link” connecting Imperial War Museum, Duxford and Whittlesford Parkway

1.4 The College welcomes the opportunity to submit this “Supplementary” document to its Call for Sites submission.

### **Consultations on the proposals**

1.5 Since March 2019 the College has consulted further on its proposals with Duxford Parish Council, Whittlesford Parish Council, South Cambridgeshire District Council, the Imperial War Museum, Cambridge University and a number of potential “AvTech” partners.

1.6 Some key issues have arisen during the consultations, which we address in this report. These include:

- Concern over potential coalescence and landscape impacts
- Loss of agricultural land and biodiversity
- Sustainability of proposals and movement patterns
- Viability and deliverability of proposals

**Purpose of this Supplementary**

1.7 The purpose of this “Supplementary” is not to amend the original submission in any substantive way, but rather to:

- provide further detail and evidence on the case for the College’s Duxford proposals;
- update the Joint Planning Team (JPT) as to the further work that has, and continues to be undertaken, by the College and its potential partners;
- take on board feedback from consultation to date with the local authorities and other stakeholders; and
- identify and address site assessment issues that may arise in the JPT’s review of the Duxford “Call for Sites” proposals.

1.8 As the College has continued to develop the Duxford proposals, it has expanded its consulting team to focus on the following key areas. The team currently consists of:

- York Aviation - General Aviation and Aerospace sector experts
- Allies and Morrison - Master planners, urban design, landscape
- Urban Flow - sustainable transport modes and access
- Bidwells - property advisors, viability, deliverability
- Tulley Bunting - Planning advisors

1.9 We should of course be delighted at any time to meet with the JPT team to respond to any questions it may have.

## 2 THE COLLEGE'S VISION FOR DUXFORD

- 2.1 The College considers the proposals represent an exceptional opportunity in a unique location, to deliver a compelling vision for Duxford, the wider Cambridge area and indeed the UK as a whole.
- 2.2 The vision is for a **sustainable mixed-use development**, which will deliver economic, social and environmental **benefits for Duxford village** and its residents, whilst at the same time creating a globally important Research and Development (R&D) **AvTech innovation cluster**, and contributing directly to the **delivery of the Imperial War Museum (IWM) plans** for Duxford airfield.

### The development proposals

- 2.3 The vision is therefore for a comprehensive and integrated plan framed around delivering three interrelated key aspects.
1. Developing a **globally important General Aviation and aerospace (“AvTech”) R&D based innovation cluster at Duxford**. Potential partners include IWM, Cranfield University, and the University of Cambridge’s Engineering Department. This responds to HM Government’s identification of aviation technology as a key growth sector for the UK. It also responds to the NPPF and Policy E/9 of the adopted South Cambridgeshire Local Plan (2018), which supports the growth of innovation clusters in suitable locations.
  2. **Contributing to the Imperial War Museum (IWM) objectives** to deliver its own plans to significantly extend its “offer” at IWM Duxford. This is an objective recognised and supported by South Cambridge DC in the adopted Local Plan (2018) at Policy E/7.
  3. **Delivering a sustainable, vital and viable future for an extended settlement at Duxford village**, including:
    - a wide range of social, economic and environmental benefits for the existing and extended Duxford community;
    - new homes and affordable housing to help meet the local, district wide and the housing needs of the AvTech cluster and
    - via the provision of housing on-site alongside the AvTech employment cluster, an emphasis on sustainable walking/cycling modes to increase the potential of more sustainable travel patterns, achieving the NPPF objective of allowing people to live, work and undertake day to day activities without the need to drive.

- 2.4 These three core objectives complement and contribute to each other and represent a comprehensive and sustainable strategy for Duxford that meets needs and supports the continuing growth of the Cambridge and UK economy.

#### **The College's design and development principles**

- 2.5 The College has owned land at and around Duxford for 400 years. The **College is a socially responsible and progressive landowner which takes great pride in its stewardship**. Most importantly, the College is in the special position of being able to take a long-term view of its assets, the legacy created and the returns achieved.
- 2.6 Specifically, the College would **retain the freehold of the commercial development** (i.e. AvTech) and would only contract with development partner(s) for the commercial and housing developments, which share its quality, sustainable and “socially responsible” vision for Duxford.
- 2.7 A **“social contract”** between landowner and developer(s) would include commitments to (inter alia) construction standards/techniques, environmental standards and maximising the social value of the development for locals, e.g. through local job advertisements and apprenticeship programmes.
- 2.8 The key principles embedded in the College's development and design philosophy and the evolving Duxford masterplan include:
- A **“place making”** approach to deliver a comprehensive and integrated masterplan for development, public realm and infrastructure, and the phasing throughout the site (including links to Whittlesford Parkway and IWM);
  - Achieving **sustainable mixed-use development**, including maximising over time the potential for **self-containment** on site, by co-locating employment, residential and associated social, commercial and community facilities that complement and enhance existing Duxford facilities, creating critical mass and a sustainable future for Duxford Village;
  - A full commitment to **Environmental, Social and Corporate Governance (ESG)** to ensure the scheme meets sustainable and ethical standards and impacts;
  - An exemplar in a living and working R&D community – creating the **first single dedicated focus of “AvTech” in the UK**, with unrivalled experience of General Aviation and Aerospace technologies, securing a critical mass and generating opportunities for interactions, collaborations, start-ups, and spin-offs to support innovation;
  - An emphasis on **green technologies** – construction techniques, environmental standards, commitments to ecological and landscape works intended to help to improve biodiversity, using natural resources prudently, minimise waste and pollution, and mitigate and adapting to climate change, including moving to a low and eventually a zero-carbon future, in line with the JPT objectives;

- A commitment to green and sustainable travel modes, including a **“Green Link” transit corridor**, linking IWM (under the M11 slips), Duxford and Whittlesford Parkway, initially for walking/cycling, and moving in time to include new modes of public transport;
- A **net increase in the site’s biodiversity** by provision of green routes/corridors and the creation of a 40 ha publicly accessible Country Park which will more than offset any losses from agricultural land;
- **Full stakeholder and public engagement** to help stakeholders and the community shape and “own” the plans;
- Delivering a **wide range of local benefits and positive outcomes** – economic, social and environmental for the existing villagers and the extended community , helping create greater critical mass to support the social and cultural sustainability of an extended Duxford village by enabling the development of an expanded, strong, vibrant and healthy community, including providing 800 new homes with 40% as affordable;
- As part of the overall affordable housing provision, the College supporting a **Community Land Trust (CLT)** through its landownership to meet Duxford Parish’s own affordable housing needs and
- Working with highways authorities, stakeholders, and other developers/developments, with the College playing its part in delivering required highways improvements in terms of local site access, and where required, the strategic network, including **provision of a setback line (on the College’s land) for any future widening of the A505.**

2.9 To demonstrate the College’s commitment to encouraging as much “self-containment” on site as realistically possible, the College would consider, subject to appropriate wording, planning obligations related to:

- **ensuring affordable housing provision (i.e. 320 new homes) relates to meeting local needs, and/or employees involved in the Avtech campus; and**
- **occupation of the AvTech campus is only for aviation and aerospace related activities, subject to agreed programming.**

2.10 The above principles are in accord with NPPF objectives. At section 10, we provide a site assessment “check list” of how the proposals accord with the NPPF and current development plan policies, as well as other material considerations.

### **The masterplan proposals**

2.11 No major changes have been made to the original March 2019 Call for Sites illustrative masterplan. The College has however taken the opportunity to reassess indicative configurations and aspects of the proposals, to reflect additional research and feedback from the consultations since March 2019.

2.12 Allies and Morrison have prepared an amended illustrative masterplan which is shown at Figure 1 below. It is important to emphasise the masterplan remains indicative at this stage. Key changes are described below.

**Figure 1 – Duxford illustrative “masterplan” – as amended**



### The Avtech cluster

- 2.13 As per the “Call for Sites” submission, the AvTech cluster runs south of the A505 and north of the proposed new Country Park (still circa 40 ha in extent).
- 2.14 However, AvTech is now shown to include the north western corner of the site (in the March 2019 document this was described as being suitable for a “potential future phase”). Indeed, given this site’s prominent location on the M11/A505 junction, it has potential as a first phase with its ability to act as a “front door” to the rest of the AvTech cluster.
- 2.15 The total commercial development area remains in the order of 14 ha. The total AvTech campus area is now circa 19 ha. This reflects the inclusion of the north western corner of the site, but also inclusion of four green (north-south) corridors through the Avtech cluster.
- 2.16 The four green wedges/corridors through the AvTech campus achieve further greening, biodiversity and views through to the village, linking up with the Country Park directly to the south.
- 2.17 The total quantum of employment development remains in the order of 110,000 sqm GEA. York Aviation consider there will be a greater percentage of lower density R&D based space (B1b), rather than offices (B1) or distribution space (B8).
- 2.18 Depending upon the exact business mix, the employment generated is estimated as between 1800 -2400 FTEs, as compared with the 1500 indicated in the original document, which assumed more distribution space.

### Potential A505 road widening

- 2.19 As set out at section 6, the A505 corridor is an important east-west strategic route and as such, is subject to congestion. Proposals for relieving the corridor are under study by the highways authorities.
- 2.20 The illustrative masterplan now includes a setback or “safeguarding” line between the AvTech proposals and the A505 to allow for any future road widening on the College’s owned land.

### The “Green Link”

- 2.21 An indicative alignment of the “Green Link” from Whittlesford Parkway, Duxford and onto IWM under the M11 slips is shown, through the main spine running east-west through AvTech.
- 2.22 As noted in Section 6, this is intended initially as a walking/cycling route, with the intention in time to carry public transport, potentially in the form of semi- autonomous vehicles such as light weight pods.

- 2.23 If further investigations find it difficult to deliver a public transport route under the M11 slips, then a “station” would be provided immediately the east of the M11, for passengers to walk the short distance to IWM.

#### Strategic designations

- 2.24 The proposed site does not lie within the Green Belt. However, there are other strategic designations to be considered. The amended masterplan makes clear that these designations are not impacted in any significant or adverse way.
- 2.25 Coldhams Moat is a non-designated heritage asset. The original masterplan was clear that this was located within the new Country Park and not subject to development. However, to further enhance its setting in the Country Park, residential development south of Coldhams Moat and west of Moorfield Road has been removed.
- 2.26 This also has the added benefit of ensuring no residential development is located within the designated mineral extraction area west of Moorfields Road.
- 2.27 South of Duxford village lies the Health and Safety Executive (HSE) zones that surround the Natural Gas compression facility. The original masterplan indicated this might include some 4 ha for industrial uses (not residential uses) in the outer consultation zone, but the masterplan now shows it could be equally used for open space as part of the Country Park or retained agricultural land.
- 2.28 By way of confirmation the amended masterplan would still deliver 800 new homes on approximately 30 ha delivering an average housing density of 30 dwellings per ha, in accord with Adopted Local Plan Policy H/8.
- 2.29 In addition, the Country Park would remain of at least 40 ha, with some 50 ha of agricultural land retained along the M11.

#### **Keeping the masterplan under review**

- 2.30 The College is committed to delivering what it considers is an innovative and compelling vision for Duxford.
- 2.31 However, the College also recognises that whilst considerable work has already been undertaken demonstrating the suitability and deliverability of the proposals (as set out in the original submission and this Supplementary document), given the innovative nature of the concept, the masterplan will continue to evolve over time.
- 2.32 The College has and will continue to adopt a collaborative approach, undertaking further consultations with respective parish and local authorities, the local community, other key stakeholders (such as IWM and the Department of Engineering, Cambridge University) and the emerging Avtech R&D community as potential occupiers.

- 2.33 The College will review all feedback from consultations and in the context of the emerging Greater Cambridge Local Plan, continue to develop the indicative masterplan to meet AvTech, housing, community, infrastructure, environmental, landscape and biodiversity needs.
- 2.34 In this regard, whilst keeping the masterplan under review, the College remains open to discussing and finalising the appropriate scale and nature of the proposals.



### 3 A GLOBAL “AVTECH” CLUSTER

#### What is an “AvTech” cluster?

- 3.1 The Duxford “AvTech” innovation R&D cluster will be a combination of two related business sectors: the **General Aviation (GA) and Aerospace sectors**.
- 3.2 Specifically, AvTech will enable a cluster of firms with similar interests and activities, **essentially R&D based**, to co-locate, innovate and develop hi-tech aspects of the aviation industry to be more sustainable and efficient in the future. Examples include **electric and hybrid aircraft, airborne assistance to commerce, inspection and data management from the air, delivery by air, air taxis and supporting IT for all aspects of aviation, along with training**.
- 3.3 Duxford, through the IWM, local businesses surrounding the village and those in the wider areas, already has a strong concentration of aviation related businesses.
- 3.4 There is however no one focal point dedicated to the development of the fast-growing General Aviation and Aerospace sectors in the Cambridgeshire area or indeed the UK as a whole. In short **there is a gap in the market**.
- 3.5 The College has engaged York Aviation to advise on the AvTech high technology aviation cluster at Duxford.
- 3.6 York Aviation are leading players in the aviation world, whose clients include the Department for Transport (DfT), having undertaken work which has informed the Government's General Aviation Strategy which was published in March 2015 and the Government's recent consultation on aviation in December 2018. Further details of York Aviation credentials are contained at Appendix 1.

#### General Aviation Sector

- 3.7 GA is an integral part of the UK aviation sector with more than 95% of all aircraft on the UK register engaged in GA activity. The commonly agreed definition of GA encompasses all private flying, together with all commercial flying that is neither military nor scheduled commercial air transport. This definition is consistent with that used by HM Government.
- 3.8 GA is a complex sector, encompassing a wide range of different flying activities. The sector also has a significant supporting supply chain, which includes aircraft and component manufacturers and maintenance organisations.

3.9 York Aviation's 2015 study<sup>1</sup> for the Department for Transport, estimated a total economic impact on the UK economy from activities associated with GA of around £3.0 billion of Gross Value Added.

#### The Aerospace Sector

3.10 The aerospace industry encompasses a very wide range of activity including:

- the manufacture of civilian and military aircraft, including unmanned aerial vehicles (drones), space vehicles and missiles;
- the manufacture of associated components including engines, wings, landing gear, avionics, interior components and other fittings;
- associated technological research and development;
- the maintenance, repair and overhaul of aircraft and aircraft components and
- the associated supply chains.

3.11 The main trade association for the aerospace sector is Aerospace, Defence and Security industries (ADS), which promotes the UK Aerospace, Defence and Security industries. ADS consider the UK aerospace industry is the second biggest in the world, is "hi tech", worth some £35.9 Bn (of which some £32.4 Bn is exported) and supports directly some 111,000 jobs, with many more in the supply chain.

3.12 **HM Government has shown unprecedented commitment to the aerospace sector** providing the sector with the certainty it needs to invest. The Aerospace Sector Deal of December 2018 forms part of the Government's Industrial Strategy.

3.13 The National Aerospace Research Consortium (NARC) has been created to provide the global aerospace community with a centralised point of engagement to the UK's top university aerospace research capabilities. It is to be noted that the University of Cambridge and Cranfield University are among the founding member universities<sup>2</sup>.

3.14 York Aviation consider there are clear synergies between the GA and Aerospace sectors whose customers include the military, commercial airlines, the space industry and general aviation.

#### **Support for AvTech**

3.15 The College is at a comparatively early stage with the project but has opened discussions with a number of key stakeholders and interested parties. These are summarised below.

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<sup>1</sup> Economic Value of General Aviation in the UK, York Aviation, February 2015.

<sup>2</sup> <https://www.cranfield.ac.uk/press/news-2018/leading-universities-unite-to-strengthen-uk-aerospace-sector>

#### Imperial War Museum - Duxford

- 3.16 The Imperial War Museum (IWM) has a strong link with Gonville & Caius College, from whom it originally purchased land for the airfield in 1917. Today the Duxford airfield is still surrounded on three sides (west, south and east) by land owned by the College. There is therefore significant mutual interest in developing activity that has a high degree of synergy with the IWM and the operations on the airfield.
- 3.17 IWM sees great potential in an “AvTech” cluster on the site of the proposed development adjoining Duxford village. Furthermore, Duxford/IWM is open to the development of hangar space to the west of the airfield (including land owned by Gonville & Caius College) where some AvTech testing on the airfield may be required.
- 3.18 IWM has confirmed that the proposed development would not be in conflict with its airfield operations and has written a letter of support which is included at Appendix 5.

#### Cambridge University - Department of Engineering

- 3.19 The Department of Engineering at Cambridge University is the largest department in the University with some 900 post-graduates and 400 post-doctoral research students. It is the largest integrated engineering department in the world and has significant involvement with industry, including with Boeing and Rolls Royce. The University has a particular interest in aerodynamics and aircraft propulsion systems.
- 3.20 The University is very supportive of the proposed development at Duxford and has emphasised the presence of various other hi-tech companies in the Cambridge area that may have overlaps with the aerospace sector. The Department of Engineering has written a letter of support which is included at Appendix 6.

#### Cranfield University

- 3.21 Cranfield is a leading university in aerospace studies and the only university with its own airfield. It is home to the new Aerospace Integration Research Centre (ARIC) co-funded by Airbus, Rolls Royce and the Higher Education Funding Council for England (now UK Research and Innovation and Office for Students), to integrate airframes, propulsion and other systems and technologies that will radically change the design of aircraft in the future. The University’s aerospace research focuses on bringing technologies together and demonstrating them to industry partners.
- 3.22 Cranfield has planning permission for 100,000 square metres of business space at its own airfield. Notwithstanding that, Cranfield University sees opportunities and potential in the Duxford site as a hub for entrepreneurial activity, perhaps focussed on the sub-component sector of the aerospace industry and emerging technologies.

### The General Aviation Champion

- 3.23 York Aviation has spoken to Lord Byron Davies, the Government’s GA Champion, who is familiar with Duxford Airfield and its activities. Lord Davies is highly supportive of the proposed development in so far as it may raise the profile of general aviation in the UK and support the potential development of new technology in the sector.
- 3.24 The College has consulted with the All Parliamentary Group for General Aviation who are very supportive of the proposed scheme.

### Local Businesses

- 3.25 The College has consulted with a cross section and size of businesses. These include:
- Marshalls: supportive of the concept and intend to engage with the College once their relocation plans are settled;
  - Hexcel: a substantial local employer making a range of resins (used with carbon and glass fibre) for the aviation industry. Very interested to work with the College;
  - VA Airline Training, based at Cambridge Airport and growing fast. In discussions about a longer-term new headquarters building and
  - Outfield Technologies: a new business using drones to assess crops. Also, on a rapid growth path and keen to engage with the College on the project.
- 3.26 In conclusion, whilst still at a comparatively early stage, the College has received substantial support and interest from R&D based institutions, local businesses and the Government’s General Aviation champion. It is therefore making this “Supplementary” submission on the basis there is a robust and growing case for AvTech going forward.
- 3.27 The College is continuing to discuss the proposition with interested parties and is keen to keep the planning authorities informed of progress for the Call for Sites and emerging Joint Local Plan.

### **Exceptional opportunity and unique location**

- 3.28 Duxford represents an exceptional opportunity and unique location in Cambridgeshire to develop an “AvTech” cluster.
- 3.29 Duxford already contains a number of aviation businesses at IWM and around Duxford village, and there are many other leading aviation firms in the sub region. This provides a solid economic base (e.g. skills and supply chains) and rationale from which to develop a new globally significant cluster here.

## The Location

- 3.30 Duxford sits within a growing constellation of major developments. It is within the **Oxford-Cambridge Arc**, which some have said could be ‘the UK’s Silicon Valley’ and a world-renowned centre for science, technology and innovation. However, it is also recognised that without a ‘joined-up plan’ for housing, jobs and infrastructure across the corridor, it could be left behind by its international competitors<sup>3</sup>.
- 3.31 Cambridge is also a node of the ‘**UK Innovation Corridor**’ that connects the area north from the Royal Docks in London, into Tech City, the City Fringe, Kings Cross, and the Olympic Park, up through the Lea Valley, the M11, A1 and A10, and the East Coast and West Anglia Mainline rail routes to Stevenage, Harlow and Stansted and through to Cambridge and Peterborough.
- 3.32 One example of a local and successful development is the Wellcome Trust Genome Campus, located to the south east of Duxford specialising in genomics and biodata research. We note South Cambridgeshire DC has recently resolved to grant planning permission for a major extension of the campus - subject to referral to the Secretary of State as a departure from the adopted Local Plan 2018.
- 3.33 This type of development provides a model of how a single site can bring together institutions and organisations and act as an incubator for other related businesses in a process that economists refer to as ‘agglomeration’.
- 3.34 York Aviation believe that potential exists for this type of agglomeration in the AvTech sector around Duxford, forming a key supporting link in the Oxford-Cambridge Arc.
- 3.35 Hitherto, the region around Cambridge has mainly been associated, in aviation terms, with Marshalls Aerospace at Cambridge Airport, the Imperial War Museum (IWM) at Duxford, along with world-class aerospace research at the Universities of Cambridge and nearby Cranfield.
- 3.36 The College is aware of Marshalls recent decision to leave Cambridge Airport by 2030 and the company’s ongoing consideration of alternative locations, namely Cranfield, Wyton and indeed Duxford.
- 3.37 For the avoidance of doubt, **York Aviation** confirm that based on their experience, research and consultations to date, the **prospects for an AvTech innovation cluster at Duxford are strong irrespective of any future decision by Marshalls**.
- 3.38 By way of evidence, York Aviation highlight that there is already a wide range of other AvTech and aerospace firms in the region around Cambridge (including located near to or in Duxford) and also in the wider Oxford-Cambridge Arc. York Aviation’s report (Appendix 1 – para 5.10) lists some 15 advanced GA and aerospace companies with supply chain synergies within the region that could potentially link with an AvTech cluster at Duxford.

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<sup>3</sup> See the National Infrastructure Commission Interim Report on the options to maximise the potential of the Oxford-Cambridge Arc.

- 3.39 A major further advantage of the location is the “**Duxford Brand**”. Duxford is already well known as the location of the best historic aircraft museum in Europe.
- 3.40 But Duxford is not only the location of the Imperial War Museum, it is also an operational airfield able to display aircraft in the air and maintain them on the ground. It is in this sense a unique location and one that is well-known and strongly supported by the general aviation community.
- 3.41 The Duxford brand will therefore be a significant advantage in attracting AvTech firms to the proposed development and building up an agglomeration of firms with similar interests and activities. In turn the College’s Duxford proposals will directly contribute to IWM achieving its own growth plans, most clearly by delivering a “Green Link” between IWM, Duxford and Whittlesford Parkway.

AvTech cluster- a gap in the market

- 3.42 ADS (Aerospace, Defence and Security industries) note that the UK aerospace industry is the second largest aerospace sector in the world. Yet 92% of the UK’s aerospace sector is based outside of London and the South East<sup>4</sup> and is geographically spread across the whole of the UK.
- 3.43 There are clusters of activity particularly in the South West (Bristol and South Wales for example) the Midlands (home to Rolls Royce in Derby) and the North West (with its connection to BAE Systems at Warton and Salisbury and Rolls Royce Barnoldswick).
- 3.44 Hitherto, the East of England has not been particularly prominent in the aerospace sector, although there are aircraft maintenance repair and overhaul (MRO) facilities at Stansted, Norwich, and Southend airports and, of course, there is Marshalls at Cambridge.
- 3.45 Yet most of these clusters of activity are focussed around relatively large and established firms such as BAE and Rolls Royce. There is as yet no established centre of excellence for firms developing new technologies in the general aviation sector, such as electric, hybrid, or autonomous aircraft.
- 3.46 There is therefore a **clear gap in the UK market for a clustering of R&D aviation firms that Duxford is uniquely well placed to fill.**
- 3.47 However, it is important to recognise that overseas companies are already developing new aviation technologies outside the UK. York Aviation provides two examples where new aviation technologies are being focused in Europe and the rest of the world:
- German company ‘Volocopter’ has secured a \$30 million investment from German automotive giant Daimler and has announced a multiyear partnership with the transit authority in Dubai to test its air taxis;

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<sup>4</sup> Aerospace Sector Deal, HM Government, page 7.

- Chinese company ‘eHang’, which is developing commercial drones and air taxis, has selected Lyon in France as the location for its first European R&D centre.

3.48 There is therefore a **degree of urgency** such that the UK is not be left behind in this growing global aviation innovation sector.

### **Policy Support**

3.49 Government policy – both planning and industrial - is highly supportive of developments in general aviation and aerospace. We review these below.

#### The National Planning Policy Framework (NPPF)

*(Note: all Bold type is that of the authors)*

3.50 The NPPF (Paragraph 80) seeks to build a strong, competitive economy and requires ....

*“Planning policies and decisions should help create the conditions in which businesses can invest, expand and adapt. Significant weight should be placed on the need to **support economic growth and productivity**, taking into account both local business needs and wider **opportunities for development**. The approach taken should **allow each area to build on its strengths**, counter any weaknesses and address the challenges of the future. This is particularly important where Britain can be a **global leader in driving innovation**, and in **areas with high levels of productivity**, which should be able to capitalise on their performance and potential.”*

3.51 NPPF Para 80 Footnote 40 goes on to say:

*“The **Government’s Industrial Strategy** sets out a vision to drive productivity improvements across the UK, identifies a number of Grand Challenges facing all nations, and sets out a delivery programme to make the UK a leader in four of these: artificial intelligence and big data; **clean growth; future mobility**; and catering for an ageing society. HM Government (2017) *Industrial Strategy: Building a Britain fit for the future*”.*

3.52 In respect of the four “great challenges” noted, York Aviation consider that AvTech would address clean growth, future mobility and artificial intelligence for unmanned machines (e.g. via development of electric aircraft).

3.53 NPPF Paragraph 82 also supports planning policies and decisions that ....

*“recognise and address the specific locational requirements of different sectors. This includes **making provision for clusters or networks of knowledge and data-driven, creative or high technology industries**; and for storage and distribution operations at a variety of scales and in suitably accessible locations”.*

3.54 In support of a “*prosperous rural economy*”, NPPF Paragraph 84 states that planning policies and decisions...

*“should recognise that sites to meet local business and community needs in rural areas may have to be found **adjacent to or beyond existing settlements**, and in locations that are not well served by public transport. In these circumstances it will be important to ensure that development is sensitive to its surroundings, does not have an unacceptable impact on local roads and **exploits any opportunities to make a location more sustainable** (for example by improving the scope for access on foot, by cycling or by public transport). The use of previously developed land, and **sites that are physically well-related to existing settlements, should be encouraged where suitable opportunities exist.**”*

- 3.55 Specifically, in respect to Aviation, NPPF Paragraph 104(f) states that planning policies should:

*“recognise the **importance of maintaining a national network of general aviation airfields, and their need to adapt and change over time** – taking into account their economic value in serving business, leisure, training and emergency service needs, and **the Government’s General Aviation Strategy.**”*

The South Cambridgeshire Local Plan (2018)

- 3.56 The recently adopted South Cambridgeshire Local Plan (2018) is similarly aspirational in its vision to .... ‘*demonstrate impressive and sustainable economic growth*’ (Policy S/1). It establishes a requirement for 22,000 additional jobs in the District to meet its objectively assessed employment needs over the plan period and.... ‘*to support the Cambridge Cluster and provide a diverse range of local jobs*’ (Policy S/5).

- 3.57 The Local Plan (2018) also contains two particularly relevant policies. **Policy E/7** deals with the Imperial War Museum at Duxford and states:

*“1. The **Imperial War Museum site at Duxford Airfield will be treated as a special case as a museum which is a major tourist / visitor attraction, educational and commercial facility.***

*2. Proposals will be considered with regard to the particular needs and opportunities of the site and any proposals involving the use of the estate and its facilities for museum uses or non-museum uses must be complementary to the character, vitality and sustainability of the site as a branch of the Imperial War Museum.*

*3. Details of projected increases in noise will be required with all proposals which would lead to an increase in commercial or flying activity and details concerning the scale, form and design will be required to accompany any outline planning application.”*

- 3.58 **Policy E/9** deals with the promotion of economic clusters and states:

*“Development proposals in suitable locations will be permitted which support the development of **employment clusters, drawing on the specialisms of the Cambridge area in the following sector:...**”*

3.59 A number of sectors are cited at Policy E/9 including high technology manufacturing and... ***“other locally driven clusters as they emerge”***.

3.60 As outlined here and detailed in the York Aviation report, we consider that GA and aerospace sector(s) respond positively to the Local Plan objective to promote *“locally driven clusters”*. We set out at Section 5, why we consider Duxford is a unique location and exceptional opportunity for an AvTech cluster.

3.61 In delivering economic growth, the NPPF and the Local Plan are therefore consistent in their promotion of clusters of development and networks of knowledge and data-driven industries.

#### Government’s industrial and aviation strategies

3.62 York Aviation set out in their report (Appendix 1) a number of HM Government industrial and aviation strategies. These include:

- The Aviation Policy Framework (2013)
- The General Aviation Strategy (2015)
- HM Government’s Industrial Strategy ‘Building a Britain fit for the future’ (2017)
- Aviation 2050: The Future of UK Aviation (Green paper -2018)

3.63 A new Aviation Strategy is to be published, but it is important to note that the Green Paper sets out that:

***“Innovation is key to delivering the outcomes of the Aviation Strategy. The government recognises the important role that technological advances and new business models play in economic growth, especially in industries such as aviation and aerospace. The **aviation and aerospace sectors have a record of historic success**, from the pioneering development of the jet engine in the 20th century to the cutting-edge development of new technologies. It has demonstrated its capability to lead these changes independently of government, but the **government recognises that it has a crucial role in removing barriers and creating the right environment for innovation to flourish.**”<sup>5</sup>***

3.64 The Green Paper also notes that Government has struck an Aerospace Sector Deal setting out that...

***“The government is investing £1.95 billion in aerospace R&D from 2013 to 2026. The industry has committed match funding which will bring the overall ‘pot’ to £3.9 billion. In July at the Farnborough International Airshow, the Prime Minister announced that, together with the industry, it has committed £343 million of investment for research and development projects and to boost productivity – from developing the most technologically advanced***

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<sup>5</sup> ‘Aviation 2050: the future of UK aviation’, Dec 2018, paragraph 8.1

*aircraft and creating newer more efficient engines, to the manufacture of cleaner, quieter aircraft that will help cut emissions”.*

3.65 It is also interesting to note that York Aviation comment....

*“Whilst significant technological advances will emerge from the large aerospace companies, we believe that much of the supporting technologies will derive from work **being undertaken by universities such as Cambridge and Cranfield and practically developed by small and medium sized enterprises** (such as is the currently case with some electric and hybrid aircraft). **These smaller enterprises have yet to find a location in the UK around which they can cluster, and the Duxford site presents a significant opportunity in this respect”***

#### Conclusions on policy

3.66 With regard to economic development it is considered that the Duxford AvTech proposals accord with both NPPF and Local Plan policies, as well as the Government’s wider industrial and emerging Aviation strategies.

3.67 The AvTech proposals respond to Government’s call for the support for new innovation sectors and would capitalise on Duxford’s and Cambridgeshire’s strong existing brands.

3.68 The Local Plan recognises that IWM is a special case for growth and that future innovation clusters should be supported in suitable locations.

3.69 We recognise the site identified is currently outside the Duxford settlement boundary in the adopted Local Plan, but we consider it is uniquely located for growth and an allocation in the emerging Joint Greater Cambridge Plan.

3.70 The proposals are for a mixed employment and housing development based around extending the existing Duxford settlement - as supported by NPPF housing (72) and employment (84) policies.

#### **AvTech - Key Conclusions**

3.71 It is apparent from York Aviation’s work that there is **no directly comparable facility or cluster in the UK, which AvTech is targeting**. It is an innovative concept and by definition there is not the in-depth market evidence that one would have for example for a traditional business park, or the track record of an established research campus such as the Wellcome Trust’s Genome campus.

3.72 However, as the Government’s emerging aviation strategy recognises, the aviation and aerospace sectors have a **record of historic success, innovation is the key** and to back this up Government has formulated and made funds available for an **Aerospace Sector Deal**.

3.73 It is important to recognise that overseas companies are already developing **new aviation technology centres outside the UK**. There is therefore a **degree of urgency** to develop the UK’s first AvTech campus, so the UK is not be left behind in this growing global aviation innovation sector.

3.74 A number of conclusions can be drawn from the College's discussions with interested parties and York Aviation's work, which substantiate the robust potential for an AvTech cluster at Duxford. These are:

1. The general aviation and aerospace sectors are thriving and on the **threshold of some exciting new technological developments**, in line with efforts to make aviation more sustainable and efficient in the future.
2. There is clear UK **Government support** for these new initiatives in HMG **industrial and aviation sectoral strategies**, which are also reflected in **planning policy in the NPPF and Local Plan**.
3. Whilst significant technological advances will emerge from the large aerospace companies, York Aviation consider much of the supporting technologies will derive from work being undertaken by universities such as Cambridge and Cranfield and practically developed by **small and medium sized enterprises** (such as is the currently case with some electric and hybrid aircraft).
4. In other words, the success of AvTech is **not dependent on a large "pre-let"** (although as York Aviation point out this is not to discount such a possibility at Duxford, with for example Chinese aerospace companies already investing in Europe), the underlying assumption being there will be a build-up of AvTech SME type businesses at Duxford.
5. Whilst there are other clusters of aviation businesses around the UK (Bristol, Midlands and the NW) these are based on larger dominant firms, and there is **no one cluster in the UK currently focused on the new R&D innovation GA and aerospace technologies**.
6. These SME enterprises have yet to find a location in the UK around which they can cluster and innovate and the **College's Duxford site presents a unique location and exceptional opportunity** in this respect.
7. The **IWM and Cambridge "brands" would be a significant advantage** in attracting AvTech firms and talent to the proposed development site and building up a cluster of firms with similar interests and activities.
8. The University of **Cambridge's Department of Engineering has expressed strong interest in locating research activities (R&D) at AvTech**. The College itself through its Fellows, has a significant reputation in aerospace engines (the Whittle Laboratory).
9. The **University will itself also have requirements** to accommodate its own research and teaching staff.
10. Whilst the IWM brand and presence of the airfield may be important for some businesses, it is important to note that **most AvTech related companies and**

**activities will be R&D based and do not require regular or any access to a runway.** This is evidenced by York Aviation in their review of current local AvTech related companies in their report.

11. However, in discussion **IWM has confirmed** to the College that it is **open to the use of the airfield** should some **AvTech businesses** require testing on the airfield, e.g. prototype testing.
  12. As part of its plans, IWM is also considering growth of air related businesses which do not compromise the main purpose of IWM's air shows/heritage businesses. The College is open to exploring this opportunity using its land at IWM, but it is important to note the **IWM plans are not the same as the R&D innovation firms targeted for AvTech.**
  13. There is therefore a **synergy with IWM and the AvTech proposals**, where some prototype testing may take place, but which would not compromise IWM's core activities.
  14. AvTech would be a key supporting link in the **Oxford-Cambridge Arc and the UK Innovation Corridor**. In terms of potential markets, there is already a wide range of AvTech and aerospace firms in the region around Cambridge, as well as the strong interest of the two universities of Cambridge and Cranfield and the possibility of some displaced Marshalls activity.
  15. Discussions with institutions and local businesses have demonstrated **good support for the idea of an AvTech cluster around Duxford Airfield**, and IWM and the College are keen to progress the idea.
  16. There are a **number of existing aviation businesses located close by** with skilled workforces and supply chains, as well as the university research facilities and Duxford is well located in the Cambridge sub-region and growth arcs,
- 3.75 In summary, having reviewed all existing evidence and having discussed the concept with potential interested parties, the College considers there is solid growth case for an AvTech cluster at Duxford, alongside expansion of the existing village to create a sustainable and healthy mixed-use live, work community.
- 3.76 The College is continuing to discuss and explore the opportunity with interested parties and is keen to keep the planning authorities up to date in order to inform the Call for Sites and the emerging Greater Cambridge Local Plan.

## 4 CONTRIBUTING TO IWM OBJECTIVES

4.1 There are very considerable historic links between the College and IWM. Indeed, the College originally owned the land now occupied by IWM.

4.2 IWM has its own business and masterplan for growth at Duxford Airfield. The College has been in discussion with IWM about respective plans and considers there is considerable synergy and mutual interest in appropriate and sustainable development at both sites.

4.3 **The College has been working in close consultation with IWM on these proposals for over 2 years, which have their full support.** The College is continuing to meet with IWM on a monthly basis.

4.4 We set out below how the College can significantly contribute to IWM's plans. We also set out the reasons why it is not possible or desirable to locate AvTech at IWM itself.

### **Contributing to IWM's masterplan**

4.5 The main objective of IWM's growth plans relate to expanding its aircraft heritage and air show offering for which it is internationally known. IWM is seeking to drive annual visitation up from 300,000 to 500,000 pa – making IWM Duxford one of the top ten “must do” visitor events outside London.

4.6 South Cambridgeshire DC will be aware of IWM plans, with the adopted Local Plan at Policy E/7 treating IWM Duxford as a... *“special case as a museum which is a major tourist / visitor attraction, educational and commercial facility”*.

4.7 The JPT will also be aware that IWM has begun to implement its plans, having submitted a full planning application (20 August 2019 - S/2896/19/FL) for:

*“Construction of a 168-bedroom hotel with ancillary facilities, associated access, gates, car parking (including reconfigured conference centre car parking), cycle parking and landscaping.”*

4.8 However, IWM's plans are not solely restricted to its heritage flying and visitor market. IWM is keen to attract some further aviation related businesses to the Airfield as, long as these do not compromise IWM's core flying operations and movements.

4.9 In this regard IWM has opportunities to:

- Attract aviation businesses (as distinct from the R&D innovation based firms targeted by AvTech) to IWM Duxford, focused on land to the west and north of the runway, potentially developed for hanger space and
- Provide access to AvTech businesses, some of which may need access to the airfield, e.g. for prototype testing, that would complement and not conflict with existing IWM flying operations.

4.10 The College can directly contribute to the IWM's plans in the following ways:

- IWM Duxford air shows require flying circuits over the College's land both south of the airfield and east of the M11/south of the A505. The **College's proposals would continue to allow** for this to happen with **IWM's flight paths to the east being over the proposed new Country Park;**
- The College is also offering to **protect flight path over College land** to the west of the M11;
- The College has agreed in principle with IWM the **potential use of the College's land west of the main IWM buildings** – in order for IWM's to develop hanger space to accommodate aviation businesses complementary to IWM's main heritage offering;
- The College's Duxford proposals include **delivering a major new "Green Link"** initially for cycling and walking from **Whittlesford Parkway, through the College's Duxford land, and under the M11 slip roads through to IWM Duxford** (avoiding any future hotel), to enhance sustainable transport modes and access to AvTech, Duxford and IWM;
- In due course this **"Green Link" would look to include electrically powered autonomous shuttles** (potentially POD type vehicles). If access under the M11 proves impractical for vehicles, then a "station" would terminate immediately to the east of the M11 with passengers/visitors walking through to IWM. In this way the two sites would have a direct link, separate from the M11/A505, helping minimising congestion on the A505 corridor and facilitating a clear dedicated sustainable and physical linkage between the two; and
- The **new homes** at the expanded Duxford village would also help with IWM growth, being also available for its employment growth (as well as AvTech).

4.11 There is therefore significant synergy with IWM's growth plans and the College's proposals, from both a functional and economic viewpoint.

#### **Why not AvTech at IWM?**

4.12 The College has considered whether the AvTech facility could be located at IWM, as opposed to the Duxford Village side of the M11. The College consider this is **neither operationally possible nor desirable for the following reasons:**

- The **College's concept is for a mixed-use sustainable development** where employment, housing, community, commercial and services co-locate in order to reduce unnecessary travel movements and encourage a balanced and as far as possible, self-contained community at an expanded Duxford. **Splitting the employment and residential functions would fundamentally undermine this planned sustainability concept;**

- The College’s concept accords with the NPPF sustainability principles, and in the case of both the housing and employment components, these **build on to an existing settlement (i.e. Duxford)** rather than into the open countryside, as would be the case on the IWM side of the M11.
- This view is supported by NPPF 72 which states that .... *“The supply of large numbers of new homes can often be best achieved through planning for larger scale development, such as new settlements or **significant extensions to existing villages and towns, provided they are well located and designed and supported by the necessary infrastructure and facilities.** (NB author’s bold italics)*
- In respect of supporting a competitive economy, NPPF 84 states... *“Planning policies and decisions should recognise that sites to meet local business and community needs in rural areas may have to be **found adjacent to or beyond existing settlements...**” (NB author’s bold italics)*
- The IWM masterplan does not include, envisage, nor in operational terms could it physically accommodate a development of the size or quantum (i.e. circa 110,000 sqm) of research and development AvTech space;
- The College own land (currently in agricultural use) south and west of the IWM runway. However, these **areas form a key part of IWM’s flight paths, close to the runway where aircraft are at low altitudes**, as compared with flight paths east of the M11. Locating an Avtech development at IWM would pose insuperable safety issues;
- Likewise, there is **little or no opportunity to provide residential uses at IWM**. Residential is not a complementary use and again would pose insuperable safety issues. Notwithstanding this, any residential at IWM would be distant from all existing social and community infrastructure at Duxford Village - it would be self-defeating in terms of sustainability;
- The AvTech proposals are based around R&D related companies and their “spin outs”. Many of these do not require direct or frequent access to an airfield or airside/flying space. There is therefore **no operational need for AvTech to be airside at IWM** and if there were, this would conflict with IWM’s plans for flying which is essential to their core heritage/visitation activities;
- There is **traffic congestion** both sides of the M11 on the A505 corridor. Developing AvTech to the east, the College will incorporate a “set back” road widening line to that stretch of the A505 if required. The College cannot offer this west of the M11. This is particularly important, as access opportunities west of the M11 are far poorer than east of the M11 and
- The College’s proposal to deliver a **“Green Link”** from Whittlesford Parkway through the site and onto IWM, under the M11 slipways, means the two sites are sustainably linked without the need to access the A505.

4.13 In summary, whilst the College own significant land interests to the west and south of IWM, for the reasons set out above it is not considered to be an operationally practical or safe option, nor a desirable or sustainable proposition to locate AvTech at IWM.

## 5 A SUSTAINABLE FUTURE FOR DUXFORD VILLAGE

5.1 Our proposals will deliver a sustainable, vital and viable future for an extended settlement at Duxford Village. In this section, we review the current position at Duxford and the widespread benefits that the proposals would bring for Duxford village and its community.

### **The existing context**

#### Demographics

5.2 The mid-year ONS population estimates indicate that the population of South Cambridgeshire in 2017 was 156,000 – indicating a 5.3% growth since 2011. This was lower growth than across the East of England (5.5%), but higher than across England as a whole (4.9%).

5.3 As set out in the original “Call for Sites” submission, in 2017 the population of Duxford ward was estimated to be 2,877 (ONS), but its current rate of growth is less than half that of South Cambridgeshire as a whole. Between 2011 and 2017, the population of Duxford ward grew at a rate of 0.39% per year, compared to 0.83% for South Cambridgeshire and Duxford’s rate of growth is slowing down.

5.4 However, growth in South Cambridgeshire as a whole is accelerating. The population of South Cambridgeshire is forecast to grow from 148,755 in 2011 to approximately 190,000 in 2031 – an average rate of increase of 1.25% per year.

5.5 If population growth is tapering off in Duxford, its population is also relatively aged compared to South Cambridgeshire, the East of England and England as a whole. In Duxford, 54% of the population is aged 45 and over, compared to 49.5% in England and Wales. In addition, there are fewer young adults (16-34) on average living in Duxford than Cambridgeshire or England.

5.6 We consider slowing population growth and higher age range profiles are due to factors such as lack of development land, limited housing tenure choices and reducing average household size. In line with other demographic indicators, such as the average age of its residents, it is likely that Duxford’s population will begin to decline in the coming years.

5.7 In the last 10 years, we estimate that there has been a net gain of approximately 53 dwellings in the village, typically within infill sites arranged around extended cul-de-sacs at the northern edge of the settlement.

5.8 The number of viable infill sites within the village has dwindled and at this scale of delivery it is more difficult to substantially enrich the future range of dwelling types and tenures (and associated social and community infrastructure) to sustain the next generation.

5.9 By contrast, the rate of job creation in and immediately adjacent to Duxford has far outstripped the rate of new housing supply in the area. In addition to the village itself, four existing employment areas lie adjacent to the village which employ more than 100 people

each; the largest, the aeronautics research and materials manufacturing site at the southern edge of the village, employs approximately 800 people.

- 5.10 The number of jobs supported in each of these employment sites has grown in recent years and can be expected to continue to grow in future. As a result of IWM's masterplan, day-to-day employment on the airfield is expected to grow by 34% over the next 20 years to a total of 300 FTE.
- 5.11 This means people are having to travel to work, rather than having the option of more sustainable travel/living patterns by having an extended settlement at Duxford village.

#### Civic amenity and social infrastructure

- 5.12 Duxford village currently supports a general store, two pubs, a cafe-deli, a hotel- restaurant, two beauticians, a scouting centre, as well as a number of small businesses, including a garage and funeral service.
- 5.13 The village has two recreation grounds, allotment gardens and assorted village greens. However, currently there is very little direct access to the open spaces and countryside which lie adjacent to the village.
- 5.14 The Parish Council is actively working to extend the village's community facilities, being in the advanced stages of building a new multi- purpose village hall (completion is scheduled for February 2020) and a new landscaped community garden for the benefit of residents.
- 5.15 Duxford also has a Church of England Primary School (1 form entry). We understand it currently has 11 spare places out of 240. Its catchment area extends over 12 square miles and includes the villages of Hinxton and Ickleton, as well as some residential properties in Heathfield. Sawston Village College is the closest secondary school, a little over three miles away.

#### Local affordable housing needs

- 5.16 The new Joint Plan will assess and plan for the housing needs for Cambridge City and South Cambridgeshire as a whole. However, Cambridgeshire ACRE on behalf of Duxford Parish Council, undertook a local Housing Needs Survey in 2019, having undertaken a similar survey in June 2011.
- 5.17 The 2019 survey results concluded there are 57 households on the Parish Housing Register that meet the criteria of living or having a connection with the Parish. Thirty four of these households (60 per cent) live in the parish. The Housing Needs Survey also identified seven additional households in need of affordable housing.
- 5.18 In aggregate, some 62 households were identified as being in need of affordable housing who either live in or have a local connection to Duxford. This scale of need is lower than the estimate of 98 households in the 2011 Duxford Housing Needs Survey.

### **Benefits for Duxford village**

5.19 Given the above, the likelihood is that over the next few years Duxford's population base and therefore its community and economic base could decline. There is a need to consider how these trends can be reversed by the College's proposals and the benefits that would flow to the village residents.

5.20 We summarise these under the economic, social and environmental headings.

#### Economic benefits

5.21 Given that there is no comparable geographical location in the UK with a focus on the development of new technologies in the general aviation sector, a new cluster of this type would be an innovative development that will develop over a number of years. It is therefore difficult at this early stage to be definitive of the exact form, nature and contents of the AvTech cluster.

5.22 However, York Aviation consider the "Call for Sites" proposal for around 110,000 square metres dedicated to an AvTech cluster, is a reasonable quantum of space for medium - long term planning purposes.

5.23 Potential markets for the space consist of:

- the wide range of AvTech and aerospace firms already in the sub-region around Cambridge;
- strong interest from the two aviation leading universities of Cambridge and Cranfield;
- synergy with IWM and Duxford Airfield – e.g. potential of supply chain firms either side of the M11;
- new smaller and medium sized (SME) businesses focused on GA and aerospace industries;
- possibility of attracting a major international investor. York Aviation note in this regard the interest of Chinese aerospace companies in European investment and the attractions to them of the Cambridge and Duxford "brands"; and
- the possibility of some displaced Marshalls activity – although it is important to emphasise the proposals are not in any way dependent on this.

5.24 York Aviation, Bidwells and the College have considered the nature of the AvTech accommodation and how this space might be distributed between offices, research and development facilities, light industry/manufacturing and potentially some warehousing.

5.25 It is difficult to be precise at this stage, but as noted above York Aviation expect that the majority of space will be made up of research and development facilities (B1b), possibly with some associated office space (B1a).

- 5.26 Based on the Homes & Communities Agency Employment Density Guide<sup>6</sup> for these categories of development (50 sqm (NIA)) per FTE for R&D and 12 sqm (NIA) per FTE for offices, York Aviation estimate that the proposed AvTech cluster could eventually support between **1,800 to 2,400 jobs** (above that in the “Call for Sites” submission which set out 1500 FTE jobs), with an associated **GVA impact between £93 million to £127 million**<sup>7</sup>.
- 5.27 Build-up will of course depend upon a number of factors, e.g. a major pre let would change the dynamics of the scheme and should not be discounted, but based on Bidwells’ wider knowledge of take up of other clusters around Cambridge, we have assumed a conservative build up based on SME type firms over the next 20-25 years of circa 4,000 sqm pa.
- 5.28 We recognise the proposals must be able to **offer opportunities and benefits for local people** and especially those living and in and around Duxford itself.
- 5.29 Given the expected functions on site, we would expect the jobs created to be a mixture of highly skilled, high value-added opportunities, with particular focus on advanced engineering activities, along with attendant administrative functions. We would expect the **higher skilled opportunities** to draw individuals to work in the cluster from across the UK or even further afield, but also to help retain existing talent within the area that otherwise might move away.
- 5.30 The quality of life offer around Duxford, with its rural location but proximity to Cambridge and good links into London, is expected to be a significant draw for this group, which will create demand for appropriate housing (for sale and the rented sector) in the areas around the cluster.
- 5.31 However, the associated **administrative functions** are likely to draw labour from more local sources, potentially supporting regeneration from other areas in the region by **supporting people into employment**, which will in turn boost demand for appropriate housing in the area. In this way AvTech could provide **flexible part time as well as full time employment** opportunities for local residents.
- 5.32 It will be important that employment opportunities generated by the proposed development are **advertised and promoted locally** as and when they arise. Where relatively large numbers of jobs are likely to be generated, **local jobs and careers fairs** are a proven way of raising the profile of employment opportunities at a local level.
- 5.33 It will also be important to **work with local schools and educational establishments**, especially those pursuing qualifications in STEM related subjects, to highlight potential career opportunities and strengthen links between schools and the world of work, in this case with an emphasis on aviation and aerospace.

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<sup>6</sup> Third edition, 2015.

<sup>7</sup> GVA estimates are based on latest available ONS statistics for GVA per filled job for Cambridgeshire at 2017 prices.

- 5.34 Addressing STEM shortages is a key part of the government’s policy agenda and is mentioned specifically in the Government’s recent aviation consultation in relation to addressing skills gaps that impact the aviation and aerospace sectors.
- 5.35 We consider there will be **significant local employment opportunities** for the following reasons:
- Whilst R&D based, AvTech will accommodate incubation, “spin out” businesses, on site manufacturing (e.g. prototypes); service and administrative flexible job opportunities for locals;
  - Construction and maintenance jobs through the build out of the proposals
  - Increased supply chain
  - Increased in-work training opportunities
  - Local apprenticeship programmes
  - Home working
- 5.36 Specifically, the College will be a **socially responsible landowner and promoter** of development and through its retention of the AvTech commercial interest, as well as through planning obligations, would commit to ensuring **local apprenticeship programmes** and opportunities are provided.
- 5.37 The additional GVA associated with AvTech is estimated at circa £93 million to £127 million. The 800 new homes would generate in the order of 2000 new residents which will also help underpin the local economy by supporting local (day to day) convenience retail, leisure, hospitality and community facilities in the village;
- 5.38 This is consistent with Paragraph 83 (a) and (d) of the NPPF which states planning policies and decisions should enable:
- a) the **sustainable growth and expansion of all types of business in rural areas**, both through conversion of existing buildings and well-designed new buildings;*
- d) the **retention and development of accessible local services and community facilities**, such as local shops, meeting places, sports venues, open space, cultural buildings, public houses and places of worship.*
- Social benefits**
- 5.39 The College’s Duxford proposals would see a phased introduction of **800 new homes** (for sale and rent) extending the existing village, with a housing mix in line with the latest Strategic Housing Market Assessment and market requirements.

- 5.40 This would increase the village population to a figure of the order of 5000 residents, creating a balanced community in an enlarged village, ensuring its long-term vitality and viability.
- 5.41 The **design of dwellings** would acknowledge the rise in home working and shared working spaces and the need to provide homes that allow for this, i.e. homes that are flexible and more accessible with good digital infrastructure.
- 5.42 Respecting current local plan policy, 5% of these homes should be built to Building Regulations M4(2) (**accessible and adaptable dwellings**) standards (Policy H/9). Dwellings should be provided at least to meet the Government’s nationally described space standard (or those set out in any successor document) (Policy H/12).
- 5.43 In respect of Affordable Housing, the adopted Local Plan Policy H/10 targets 40% of homes on residential developments over 11 dwellings to be provided as affordable homes, subject to viability testing and the 40% target does not make the proposals unviable in the light of changing market conditions, individual site circumstances and development costs.
- 5.44 The College’s proposal and the underlying indicative viability testing (as set out at Section 9) assumes a **policy compliant 40% affordable housing**. Provided within walking/cycling distance of the AvTech proposals, this will allow those working at AvTech (and the existing employment sites around the village including IWM), the opportunity of living in affordable housing nearby, reducing the need for unnecessary travel, thus delivering a truly sustainable development.
- 5.45 We recognise that the site is not currently allocated by the Local Plan for housing. However, as set out in this “Supplementary” report, we consider there is an exceptional opportunity in a unique location for the AvTech proposal and the addition of 800 new homes co-located and based around the existing village. This accords with NNPf (para 72) policies that encourage:
- “The **supply of large numbers of new homes can often be best achieved through planning for larger scale development, such as new settlements or significant extensions to existing villages and towns, provided they are well located and designed, and supported by the necessary infrastructure and facilities”***
- 5.46 The **new housing will help meet three main needs:**
- the **AvTech proposals** - providing accommodation for those employed at the new R&D facility and in so facilitating recruitment and enriching its sense of place, as a living and working R&D community.
  - meeting **local needs**; and
  - wider **district needs** - as assessed by the local planning authorities.
- 5.47 As part of the overall affordable housing provision, the College would work with/help establish a **Community Land Trust (CLT)** and provide sufficient land into the CLT to help deliver local affordable housing needs for those qualifying on the Parish Council Housing

Register. At present we understand there are 62 households recognised by the Parish Council as “qualifying” for affordable housing in the Village.

5.48 The College would also look to embrace keyworker homes, co-housing developments, custom and self-build opportunities and lifetime homes.

5.49 A critical challenge for recruitment and retention at AvTech is that **Cambridgeshire is one of the most expensive places** to live in the country outside London. The local housing market is also difficult to access for those coming from overseas, either as short-term visiting workers or those relocating long-term, often with their families.

5.50 In this regard, the College would consider, subject to appropriate wording, a **planning obligation** to ensure **affordable housing provision (i.e. 40% of new homes) relates to meeting local needs, and/or employees involved in the Avtech campus.**

5.51 The delivery of housing on the site would also contribute to the sustainability of the existing village. This provision, therefore, directly aligns with the objectives of Policy S/2, ‘Objectives of the Local Plan’, to

*‘provide land for housing in sustainable locations that meets local needs and aspirations, and gives choice about type, size, tenure and cost’.*

5.52 The Local Plan expects all housing development to include or contribute services and facilities of an appropriate scale and range to meet the needs of the development (Policy SC/4), and the Local Plan expects account to be taken of **capacity at existing local facilities** when assessing the level of need and considering the timing of delivery of such services (Policy SC/4). Key services should be provided within early phases (during which interim facilities may be required).

5.53 The services and facilities envisaged by the College would include:

- An extension to the existing Duxford Church of England Primary or a new on-site **primary school** (to comply with the requirements of the educational authorities, and/or the ambition of the community they serve);
- On site **Pre-school/nursery** provision;
- Contribution to off-site **secondary school** provision;
- There is no current **health provision** at Duxford. The nearest facility is 3 miles away at Sawston Medical Centre (part of Granta Medical Practice group). This is a large 10 GP centre that runs a range of health services. A pharmacy is located on site. We understand Sawston has physical capacity within the existing building to offer additional services / expand its patient list should demand arise.
- As such a full GP practice may not be supported at Duxford but given the expanded village community the College would work with the Duxford Parish Council and the

relevant providers to assess and provide appropriate local provision (e.g. potential for a **satellite service**) for the new expanded village.

- The Parish Council is already developing new Duxford Village **community facilities**, but the College would work with them and other stakeholders to consider additional required facilities e.g. fitness centre, cultural uses, sports provision. A fitness centre could contribute to the broader strategic objectives of the development in terms of placemaking, creating an exemplary place, and supporting broader health objectives

#### Social value

- 5.54 The College as landowner would retain the freehold commercial interest in AvTech and partner with socially aware development partners for all aspects of the proposals. The College will also retain the rest of its land holding at Duxford. Through its landownership and through its design led planning approach, the College will ensure there are substantial environmental and sustainability benefits.
- 5.55 When partnering with development partners, the College would insist on a “**social contract**” that would maximise local job opportunities, early and local advertising, support for educational programmes (especially STEM) through the construction and permanent phases of development.

#### Environment and well being

- 5.56 These benefits will include:
- The proposals will be comprehensively designed and implemented through a **design led approach** with masterplan and design codes accompanying relevant planning applications, so that there would be an exemplar in “**place making**” helping repair the urban fabric of earlier 1970s onward schemes around the core village;
  - Adoption of latest design and construction techniques committing to delivering homes and commercial development built to the **highest and latest environmental standards**;
  - An on-site **energy centre** meeting the JPT’s expectations in relation to energy, which seek to permit proposals to generate energy from renewable and carbon sources;
  - Commitment to the objective of moving to a **low and eventually a zero-carbon development** through adoption of latest construction, on site energy provision, and carbon neutral infrastructure such as electric cars with EV charging point provisions;
  - New development to contribute towards the provision of infrastructure suitable to enable the delivery of **high-speed broadband** services;
  - Creation of new habitat and natural areas, **enhancing overall biodiversity** by provision of the green network through the site and provision of a **40-ha country park**, creating a publicly accessible open space for recreational activities and
  - Creation of a new network of green infrastructure and links throughout the site, upgrading of walking and cycling routes in and around the village and **including a Green Link to Whittlesford Parkway, under the M11 to IWM and to Duxford village.**

### New Country Park

- 5.57 The proposal includes a new publicly accessible 40 ha Country Park. This will enable everyone living and working in the area to enjoy access to the landscape that surrounds Duxford, that is currently inaccessible.
- 5.58 The Country Park will be delivered as an integral part of the development and will be secured and managed for the long term for the direct benefit of Duxford residents.
- 5.59 The College will work with the Parish Council and the local community to establish a scheme for the park to ensure it meets local expectations, facilities and requirements, provides the appropriate green links, whilst at the same time creating new habitats and natural areas, and preserving and enhancing biodiversity, as well as local heritage features.
- 5.60 The College confirms that it will retain the freehold of the Country Park and commit to fund its future maintenance for the benefit of residents

### **Conclusions**

- 5.61 The College's proposals would deliver substantial benefits for Duxford village, its existing residents and the new community. The extended village will be a sustainable community with additional facilities and services, as well as all the economic, social and environmental benefits as set out above.



## 6 A SUSTAINABLE MOVEMENT STRATEGY

- 6.1 At the heart of the College's proposals for Duxford is a sustainable transport strategy that seeks to maximise the use of sustainable modes of transport and deliver as much "self-containment" as possible.

### Policy Context

- 6.2 To promote sustainable transport, the NPPF (Paragraph 102) requires *"transport to be considered from an early stage in development proposals to ensure any potential impacts can be assessed and addressed"*.
- 6.3 NPPF Paragraph 103 seeks to locate *'significant development'* in *'locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes'*, taking into account the fact that *'opportunities to maximise sustainable transport solutions will vary between urban and rural areas'*.
- 6.4 The NPPF recognises that some developments may be required in locations that are not well served by public transport. In these circumstances they should not have an unacceptable impact on local roads and should exploit opportunities to make a location more sustainable (NPPF Paragraph 84).
- 6.5 Local Plan Policy TI/2 ('Planning for Sustainable Travel') requires development to be located and designed to reduce the need to travel, particularly by car, and to promote sustainable travel appropriate to its location. It states that planning permission will only be granted for developments likely to give rise to travel demands *'where the site has (or will attain) sufficient integration and accessibility by walking, cycling or public and community transport'*.

### Current position

- 6.6 Urban Flow has been commissioned to assess current conditions and optimise the most sustainable approach to movement and access for the proposals. Their report is attached at Appendix 2 and key aspects are summarised below.
- 6.7 With the M11 lying along its western boundary, M11 junction 10 (J10) at its the north-western extent and the major A505 east-west strategic route to the north, the site is very well connected in terms of road access.
- 6.8 More locally, Hunts Road and Moorfield Road provide access to Duxford and destinations further southwards including Saffron Walden. Some 2.5 kms to the east, the A1301 north-south route provides access to Cambridge to the north and the A11 / M11 to the south.
- 6.9 The A505 corridor is an important east-west strategic route and as such, is subject to congestion. Proposals for relieving the corridor are under study by the highways authorities and include consideration of that section east of M11/J10 fronted by the site. We understand the study's final findings will be reported in summer 2020.

- 6.10 The Duxford site also benefits from its proximity to Whittlesford Parkway, only some 2km along the A505 to the east. Its identification as a pilot Rural Travel Hub recognises its key future role in contributing to supporting growth in the surrounding area.

#### **Providing for development related movement**

- 6.11 The proposals are designed to encourage people to stay local. However, at least in the short term the majority of movements, will be made by car. In order to assess the broad scale of that movement, Urban Flow's transport planners have made initial estimates based on available movement generation data and relevant research of sustainable community developments.
- 6.12 The movement generation assessment has adopted a conservative trip internalisation factor of 20%, that is some 20% of residents' trips to employment will lie within the proposed site i.e. AvTech-related, the remaining 80% will leave the site to work elsewhere. Over time, the ambition would be to grow the proportion of travel within the site significantly as the employment destination becomes fully established in its own right, with new joiners choosing to live within walking / cycling distance of their workplace.
- 6.13 There are good reasons to believe the 20% is conservative and will grow over time. The AvTech proposals are not the same as a traditional commercial business park or retail development but are for an innovative and specialised R&D facility with different travel patterns.
- 6.14 As well as drawing skilled employees from the Cambridgeshire area (who may be expected to have existing homes and therefore inclined to drive to the new AvTech), AvTech is expected to also draw employment from around the UK and indeed internationally, which will need housing locally. The proposals will be designed to attract such employees to live and work locally because of the quality of the environment, the ability to walk/cycle to work, and the facilities of the expanded Duxford Village (including an additional 800 homes).
- 6.15 In addition, AvTech will need local workers that may already have a home in or near Duxford and once again the proposal will be designed to maximise their ability to walk/cycle or use public transport to work (e.g. through the proposed "Green Link" to Whittlesford parkway).
- 6.16 By way of comparison Urban Flow has reviewed the degree of internalisation envisaged by the North Uttlesford Garden Community (NUGC). This is a much larger development (5000 homes and estimated 4364 jobs) and as such the potential for self-containment would be expected to be higher. By way of comparison NUGC has proposed an aspirational objective to achieve 35% internalisation of daily trips.
- 6.17 To demonstrate the College's commitment to encouraging as much "self-containment" on site as realistically possible, the College would consider, subject to appropriate wording, planning obligations related to:
- Ensuring affordable housing provision (i.e. 320 new homes) relates to meeting local needs, and/or employees involved in the Avtech campus; and

- occupation of the AvTech campus is only for aviation and aerospace related activities, subject to agreed programming.

6.18 It is therefore the case that the degree of “self-containment” could be higher than 20% in early years and will grow as the development matures.

6.19 However, it is also important to note that the NPPF at Para 72 emphasises the need to take a realistic view of self-containment or internalisation, stating:

*“The supply of large numbers of new homes can often be best achieved through planning for larger scale development, such as new settlements or **significant extensions to existing villages and towns**, .....b) ensure that their size and location will support a sustainable community, with sufficient access to services and employment opportunities within the development itself (**without expecting an unrealistic level of self-containment**), or in larger towns to which there is good access;”*

6.20 Similarly, the ambition at Duxford is to improve significantly on the area’s car travel estimated mode share of 75%, reducing downward to a significantly more sustainable 60%. As described elsewhere, there are a number of initiatives, for example the Whittlesford Parkway improvements and the prospect of a mass transit link to Cambridge, which aim to deliver significant sustainable transport mode take-up.

#### **Local access**

6.21 In terms of local access, the flows accessing the site are forecast to be in the order of 525 vehicles per hour, i.e. entry and exit movements combined, during peak morning / evening hour periods. To put that in context, such movements are similar to a single out of town superstore building for example.

6.22 The type of site access junction appropriate for traffic flows of this scale would be a roundabout, perhaps similar to the present Hunts Road roundabout. There is ample site frontage within the site for this form of access junction and at a suitable distance east of the Hunts Road roundabout and west of the A1301 junction.

#### **Strategic network**

6.23 Looking more widely at traffic generation, the A505 is known to be congested at peak periods and the A505 Corridor Improvement Feasibility Study of January 2018 looked specifically at how this may be addressed. Final study findings are awaited.

6.24 The College’s Duxford site offers the benefit of a substantial A505 frontage meaning that it can, in principle, contribute to widening improvements relatively straightforwardly, as well as providing for a high standard of site access. This should be expected to make a meaningful contribution to highway capacity on this c. 1-kilometre long stretch of the A505.

6.25 In this context, the indicative masterplan at Figure 1 shows a “setback” line for this purpose. The A505 Corridor Improvement Feasibility Study of January 2018 also considered that new

bridges would be needed (e.g. over the railway). These lie to the east of the College's land, i.e. outside its control.

- 6.26 As individual and collective development proposals emerge, then strategic responses will be needed, whether in terms of substantial highway interventions such as M11/J9 improvement, or in the provision of sustainable travel services and facilities such as that offered by Whittlesford Parkway.
- 6.27 Two developments are particularly relevant to the College's Duxford proposal: North Uttlesford Garden Village and Wellcome Trust Genome Campus expansion. Both are relatively nearby, and both have had the benefit of substantial technical study on traffic impact in the area.
- 6.28 In summary, the College would play its part in what is a wider strategic movements issue of existing congestion, problems with J9 of the M11 and the impact of cumulative developments such as the extension to Genome (consented - subject to referral the Secretary of State) the North Uttlesford Garden Community (in consultation) and the consented expansion to Chesterford Research Park.

#### **Future transport initiatives**

- 6.29 The present and future development context is exciting with a number of factors including advances in movement technology, the healthy living agenda and environmental action combining to offer the prospect of truly sustainable living.
- 6.30 As the Urban Flow reports sets out, that prospect and opportunity has been recognised by various interested parties proposing significant developments in recent years, as well as the relevant planning authorities.
- 6.31 The Urban Flow report considers those future non-infrastructure initiatives that actively encourage transport mode-shift, from those emanating from the general arrangement of developments, to those initiatives that through organisation and/or the application of technology, are intended to promote sustainable travel behaviours.
- 6.32 Of particular importance to the College's Duxford proposal is the proposed "Green Link" through the site from Whittlesford Parkway and onto IWM. This link is envisaged first as a walking/cycle route (as indicated on Figure 1 of the indicative masterplan), but in time could accommodate new forms of public transport.
- 6.33 This link would form a key part of the College's infrastructure provision for its proposals and would make a substantial contribution not only to AvTech and Duxford Village, but also IWM's growth plans.
- 6.34 The College is already exploring these new forms of transit, with one concept being PRT (Personal Rapid Transport) or Ultra (Urban Light Transit). One example in the UK are the PODs used at Heathrow T5 business park.

## **7 COALESCENCE AND LANDSCAPE**

7.1 South Cambridgeshire DC in its response to the College's 2012 "Call for Sites" submission, noted that the proposals might result in the coalescence of villages and create an adverse landscape impact.

7.2 Allies and Morrison has undertaken additional analysis on these issues which is reported at Appendix 3.

### **Coalescence**

7.3 Allies and Morrison has reviewed the history of the local area. The Duxford settlement's historical form is directly related to its topography, positioned on the edge of the River Cam which runs through a gap in a line of low chalk hills just to the south and land ownership patterns.

7.4 Highway interventions have eroded the open aspect of the land around the village and incremental residential and industrial development to the north of Duxford village has more recently filled the gap along the A505 between Whittlesford Bridge and Duxford village. The effect of these developments has progressively reduced the perceived separation between Whittlesford Bridge and Duxford to the point that there is little practical distinction.

7.5 The comprehensive nature of the College's proposals would allow for a greater mix of uses (including employment, affordable housing, education, culture, retail, community) to be incorporated into the new village fabric compared to the recent piecemeal, parcel-by-parcel development which has tended to produce isolated sites with singular uses. Development is only proposed where the "open countryside" aspect has already been eroded by modern infrastructure and fringe developments.

7.6 Allies and Morrison conclude that the proposals would preserve clear expanses of open countryside between neighbouring settlements and create more positive and defensible boundaries to the countryside which will continue to bound Duxford on all sides.

7.7 These would be defined by the Green Belt to the north, M11 and IWM flight circuits to the west, the River Cam Valley flood zones/designated landscape corridor to the east and HSE consultation zones and existing gas mains to the south.

7.8 The proposed new development would therefore be seen to sit within a 'contained' zone between these regions, with open land of no less than 500m between the expanded Duxford and each of its nearest neighbouring main settlements.

7.9 In summary the proposal would not lead to any additional coalescence of existing settlements.

### **Landscape impact and views**

- 7.10 The Tower of St John's Church, Duxford is a C13 stone tower (Grade I listing) with a lead spire visible from certain aspects north of village.
- 7.11 There are long views from the A505 east of J10 and from the public footpath from Whittlesford village to Duxford village taking in Pepperton Hill south of Grange Road and, further west, Therfield Hill.
- 7.12 In particular the amended indicative masterplan at figure 1 shows four green corridors through the AvTech proposals which will preserve viewing corridors.
- 7.13 These views would be further preserved/enhanced by shaping the form of development to frame vistas and by the low height of development proposed (total height less than 10m above ground level, i.e. 2-2.5 storeys). This is consistent with the Duxford Aerodrome Safeguarding area, which covers the whole of the proposed development, limits buildings in general to no more than 10m in height above ground level, minimising impact on views and ensuring that the scale of new development will be in keeping with existing buildings.

## 8 AGRICULTURAL LAND AND BIODIVERSITY

### Planning policy

8.1 In terms of agricultural land, the NPPF identifies the best most versatile (BMV) land as that Graded 1, 2 and 3a. The land is considered to be the most flexible, productive and efficient in response to inputs and which can best deliver future crops for food and non-food uses

8.2 The NPPF does not prohibit development on areas of land grades considered to be BMV but urges the wider setting and importance of the sites to be considered on an individual basis. NPPF 171 Footnote 53 states:

*“Where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality.”*

8.3 The Local Plan resists the irreversible loss of Grades 1, 2 and 3a agricultural land as a result of development proposals, unless such land is allocated by the Local Plan for development or the need for the development and sustainability considerations sufficiently override the need to protect land of agricultural value (Policy NH/3).

### Justification for the loss of agricultural land

8.4 The proposal would result in the loss of land currently in agricultural use, of approximately 89 hectares, of which approximately 49 hectares would be mixed-use development, including open spaces, and approximately 40 hectares of country park. A 50-ha agricultural and landscape buffer would be retained along the eastern side of the M11.

### Agricultural Land Classification

8.5 A provisional series of Agricultural Land Classification maps were produced on an Ordnance Survey base at a scale of One Inch to One Mile in the period of 1967 – 1974. The broad scale nature of these maps mean they are generally not sufficiently accurate for use in assessment of individual fields or development sites and as such should only be used as a guide.

8.6 The Agricultural Land Classification maps indicate that the site is entirely Grade 2, which is the norm for the wider area East of England as indicated by the ALC plans.

8.7 As far as we are aware the most up to date and detailed soil analysis of the local Duxford area was carried out in respect of approximately 12.365 hectares (30.55 acres), at Junction 10 of the M11 (i.e. the north western corner of the College’s proposals).

8.8 When surveyed in November 2016 , and combined with evidence from a desk top study, the site was shown to have four distinct soil types, which was found to comprise approximately only 13% Grade 2 land, with the remaining 87% classified as Grade 3a. Whilst the full area of agricultural land covered by the proposal has not been surveyed, this would suggest the wider area is also most likely to be Grade 3a.

8.9 The proposed development would mean a loss of the “Best and Most Versatile land” at a national level. However, it is located in an area where a significant proportion of the agricultural land is of equal or higher quality.

8.10 As such, any alternative location in the local area which could be identified for this form of development ( it should be emphasised we do not consider there is an alternative site, given the uniqueness of the site proposals at this location), is likely to have an equal or greater impact on food production at a local and national level. Removing the land from agricultural use in favour of development therefore accords more with paragraph 171 (footnote 53) regarding development on BMV land.

#### Mitigation

8.11 In addition, the College would mitigate the impacts of the development on the soil using widely adopted soil mitigation techniques for the stripping, storing and re-use of soils.

#### Specialist Agricultural Research

8.12 The College is in detailed discussions for the use of the College’s remaining agricultural land at Duxford for crop trial and research.

8.13 This will make significant contributions to the productivity of agricultural and farming within the UK.

#### Locational need and exceptional opportunity

8.14 As this “Supplementary” report sets out there is a locational need for the proposed development which makes the loss of this land unavoidable in order to achieve the needs and objectives of the proposed development.

8.15 On this basis, notwithstanding the loss of BMV land, it is considered that the unique location and exceptional opportunity for AvTech, should override the need to protect this agricultural land.

#### **Enhancing Biodiversity**

##### Policy

8.16 Paragraph 170 of the NPPF sets out that:

*‘Planning policies and decisions should contribute to and enhance the natural and local environment by:*

*a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);*

*b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services - including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland’.*

- 8.17 Local Plan Policy HQ/1 also requires development proposals to.... *‘Include high quality landscaping and public spaces that integrate the development with its surroundings, having a clear definition between public and private space which provide opportunities for... biodiversity’.*
- 8.18 Local Plan Policy NH/4 states that new development.... *‘must aim to maintain, enhance, restore or add to biodiversity’* and should take opportunities to achieve a net biodiversity gain.

#### The College’s Proposals

- 8.19 The proposals include extensive new green infrastructure measures that are intended to contribute to a variety of functions, including the creation of a high-quality environment that will contribute to the amenity and wellbeing of its users and will support biodiversity.
- 8.20 The large new Country Park offers the opportunity to enhance the biodiversity of over 40 hectares of land over the monoculture of the existing arable land, as well as opening up improved and new biodiverse habitat corridors between the Cam Valley and local chalklands landscapes.
- 8.21 This landscape character of this area is representative of the Chalk Hills landscape ecology of Chalk Hill, thin soils, and modern agriculture.
- 8.22 Over time this area of South Cambridgeshire has suffered from the field expansions typical of modern agriculture. Hedgerows have been removed and those that remain, can be “gappy”. The intention is to reverse this recent decline in habitat and to positively increase habitat and biodiversity of the site through the delivery of the Country Park, open spaces and noise attenuation buffers to major roads.
- 8.23 Existing hedgerows and veteran trees will be retained, enhanced, and will drive the ‘landscape first’ approach to site planning. Joined-up areas will be set aside as Nature Preserves creating species links to the River Cam Valley. As the design process progresses, ecological surveys will be undertaken and the masterplan developed around their findings.
- 8.24 Consideration will be given to the proximity of the airfield and any impacts on local ecology or visa-versa.
- 8.25 Duxford would have been surrounded by small paddocks and fields prior to previous residential expansion. The indicative masterplan intends to retain the positive characteristic of an agricultural community by retaining fields to the east and south of the village. The hedgerows and natural systems within bounding these fields will be enhanced in line with the overall bio-diversity strategy.

### Flood and air quality

- 8.26 The proposals lie within Flood Zone 1. Flood storage within the River Cam Valley floodplain will not be adversely affected. The development proposals will adhere to the most advanced sustainable drainage and 'Sponge City' principles which manage stormwater run-off rates beyond those of the greenfield site today.
- 8.27 The design of streets, spaces and the Country Park will be led by the attenuation and absorption of stormwater within the thin, free draining soils.
- 8.28 Wet meadows, enhanced field drains and a network of ponds will embrace the wider Chalk Hill landscape character and that of the wider fens.
- 8.29 Given the proximity to the M11 and A505, air quality and carbon sequestration are key objectives within the landscape planning for the site. A 'carbon forestry' program can be introduced for the Country Park and the surrounding landscape buffers where fast-growing trees which maximize carbon sequestration can be planted and managed. In addition, tree species such as lime or larch can be planted as species who best capture airborne particulates and absorb NOX which are the key elements of air pollution.

## 9 VIABILITY AND DELIVERABILITY

- 9.1 The NPPF (2019), NPPF Glossary and the NPPG set out how local authorities should assess housing and employment land for plan making purposes. The NPPF Paragraph 67 states...

*“planning policies should identify a sufficient supply and mix of sites, taking into account their availability, suitability and likely economic viability”*

- 9.2 The NPPF Glossary also makes a distinction between sites which are considered **deliverable** (broadly achievable with a realistic prospect that housing will be delivered on the site within five years) and those that are considered **developable** (suitable locations for housing development with a reasonable prospect that they will be available and could be viably developed at the point envisaged).
- 9.3 At this early stage the College has not engaged with potential developers or investment partners as to the proposals. However, as well as York Aviation advising on the AvTech element, the College has engaged Cambridge based Bidwells to advise on likely economic viability of the proposals, utilising their in depth market experience of the area. Bidwells report is set out at Appendix 4.

### **Availability**

- 9.4 The site is currently used for agricultural purposes and is under the ownership of a single landowner, i.e. Gonville and Caius College (University of Cambridge). It is therefore available for development - subject to a planning allocation/permission - and the termination of some short-term agricultural tenancies.

### **Economic viability**

- 9.5 The principle of viability is that development must be capable of generating a residual land value which is at least equal to the value of the site in its current use, otherwise a rational landowner will not release their land for development and development will therefore not happen.
- 9.6 In the event that the residual land value of the development scheme is greater or equal to the Viability Benchmark Value (“VBV”), the scheme can be assessed as viable. If the land value of the development scheme is lower than VBV the scheme could be considered unviable and the amount of planning gain payments or affordable housing reduced to make the scheme viable.
- 9.7 The approach to determining the VBV is set out in Paragraph 15 of National Planning Policy Guidance (“NPPG”) on Viability (Paragraph 15: Paragraph 015 Reference ID: 10-015-20190509).
- 9.8 The site is currently used for agricultural purposes. According to Bidwells, agricultural land values in the area surrounding Cambridge are circa £25,000 per hectare in value. Planning guidance recognises that with a comparatively low current use value compared to

development value, agricultural landowners are unlikely to make land available for development unless a many-fold increase in agricultural value is received when the land is sold for development.

- 9.9 Bidwells note that historically, ranges of between 10 times and 20 times agricultural value have been considered reasonable as the “threshold” at which an agricultural landowner will make land available for development. These assumptions are reflected in the evidence bases prepared by local planning authorities in support of their Local Plans.
- 9.10 Of most relevance in this regard is the report produced by Dixon Searle Partnership (“DSP”) for Cambridge City Council and South Cambridgeshire District Council in October 2015 (as referenced by Bidwells at Appendix 4) which identified a threshold land value of £370,000 per hectare as a benchmark level at which a rational landowner would be prepared to release land.
- 9.11 For the purpose of Bidwells report, the above threshold land value has been index-linked to the Land Registry’s House Price Index to model the change in land values from 2015 to present-day, giving a present-day value of £387,800 per hectare.
- 9.12 This gives a threshold land value of £32,575,200 across the total 84ha of the site, which is made up of the research campus, residential and country park.
- 9.13 A **high-level indicative land value appraisal** has been undertaken by Bidwells, based upon the assumptions detailed in their report as set out Appendix 4. Land values for the residential and research campus parcels have been separated for the purpose of valuation.
- 9.14 Bidwells note that the **resulting land value which has been calculated to be in excess of the threshold land value of £32,575,200**. The development appraisal has been sensitivity tested to ensure that the proposal remains viable across various scenarios based on assumptions that can be reasonably made with the information currently available.
- 9.15 CIL is not chargeable on the proposed development, but allowance is made for infrastructure and S106 contributions (as set out in Bidwells report at appendix 4). We have referred to the benefits to Duxford village at paragraph 5.53, which we anticipate will be funded through the S106.
- 9.16 As the scheme progresses, greater detail and certainty will be available as to the specifics of the proposals and as such economic viability will continue to be monitored.

### **Achievability**

- 9.17 In terms of achievability, AvTech is an innovative technology cluster. As such there are no directly comparable clusters on which to forecast build out rates.
- 9.18 AvTech build out rates will be influenced by a variety of factors, e.g. whether there is a significant pre let at some point in development. However, based on Bidwells market

knowledge of R&D type facilities in the Cambridge sub-region, a conservative build out of 20-25 years has been adopted (circa 4,000 sqm pa), which reflects occupation by SME type firms.

- 9.19 A conservative residential delivery has also been modelled. This is in part not to “race ahead” of the commercial AvTech build out rate and therefore to maximise the opportunity to achieve self-containment on site.
- 9.20 The residential trajectory is based on the adoption of the Joint Greater Cambridgeshire Local Plan in 2023 (as per the Local Development Scheme) as year 0, with the first dwellings being delivered in Year 3 (2026/2027).
- Years 0-5 to deliver 150 dwellings
  - Years 6-10 to deliver 520 dwellings
  - Years 11-16 to deliver 130 dwellings
- 9.21 Bidwells note that DSP’s Viability Update 2015 assumes delivery rates to be 120 -150 dwellings per year on strategic sites based on information provided by the Council, although delivery of 220 - 250 dwellings per annum has been observed on strategic sites within the District.
- 9.22 There is therefore the potential for considerably quicker delivery of the residential than currently modelled. This will be kept under review. For example, as York Aviation point out, the prospect of a major pre let on AvTech cannot be ruled out and this would significantly speed its build out.

### **Conclusions**

- 9.23 The initial key conclusions on availability and achievement are:
- the site is owned freehold by the College and subject to planning and short-term agricultural tenancies, is **available** for development;
  - at this early stage the proposals are **likely to be economically viable**, sufficient to incentivise the College as landowner to release land for development;
  - early phases of development are considered **deliverable within 5 years** of an allocation, given there is a strong market for housing and good emerging evidence for the AvTech R&D facilities; and
  - the full site is considered **developable** over the medium to longer terms.
- 9.24 It is emphasised that the masterplan proposals are still at an early stage and the College will keep viability under review.



## 10 SUITABILITY - SITE ASSESSMENT CHECK LIST

- 10.1 Our understanding from the JPT is that at present there is no specific assessment methodology by which the JPT will undertake the Call for Sites assessment.
- 10.2 Without wishing to prejudge the JPT's assessment criteria or methodology, the College and its consultant team have reviewed site suitability and assessment issues that might arise and set out below our initial thoughts on these.
- 10.3 This is in the spirit of wishing to be of assistance to the JPT's assessment. That said, we would wish to reserve the right to make additional submissions to any questions or clarifications the JPT may have following its assessment.
- 10.4 By way of background our planning advisors (Tulley Bunting), master planners (Allies and Morrison), access team (Urban Flow), and property team (Bidwells) have had regard to a number of sources to identify potential questions/issues and our initial response to these. These include:
- Accordance with the NPPF (2019)
  - Housing and employment site assessment criteria as set out in the NPPG
  - Accordance with the adopted South Cambridgeshire Local Plan (2018)
  - Evolving themes from the Issues and Options (Joint Plan)
  - Review of the reasons for refusal for the Jardines application
  - South Cambridgeshire DC response to the College's 2012 Call for Sites
  - The team's wider experience of Call for Sites assessments in other circumstances; and
  - Lastly, but not least, consultation with Duxford Parish and South Cambridgeshire DC and other stakeholders.
- 10.5 We consider the potential site assessment issues and how we will address/mitigate any significant impacts in the table below.

issue	Comment	Call for site proposals	NPPF compliance
Strategic designations	Site is south of A505 and not in Green Belt	The proposals lie outside the Green Belt and on the southern side of the A505 which forms a definitive physical barrier which	The proposal does not require any release from the Green Belt nor adversely impact on it. The proposal accords with the NPPF.

	<p>Mineral extraction safeguarding area</p> <p>Natural gas compressor station to south of Duxford.</p>	<p>would prevent any growth into the Green Belt</p> <p>In the original masterplan a small part of the proposals west of Moorfield Road fell within a Mineral Safeguarding Area (Sand and Gravel) for residential uses.</p> <p>In the original masterplan industrial uses were proposed in the outer HSE consultation zone south of Duxford Village and east of Hunts</p>	<p>In the amended masterplan, the residential area has now been removed from the Minerals Safeguarding area. In addition, this provides additional setting for Coldhams Moat, which lies in the proposed Country Park.</p> <p>In the amended masterplan the area within the outer HSE CZ is now for open space, Country Park or retained agricultural uses.</p>
Local Plan (2018)	<p>Policy S/7 deals with "Development Frameworks" and states outside such frameworks only sites allocated in neighborhood plans will be supported.</p> <p>Policy E/7 supports IWM as a special case in promoting its visitor and commercial plans</p> <p>Policy E/9 supports development clusters, including locally driven clusters which are yet to emerge.</p> <p>Policy S/10 identifies Duxford as a "Group Village" where "Group villages are... "generally less sustainable locations for new development than Rural Centres and Minor Rural Centres, having fewer services and facilities allowing only some of the basic day-to-day requirements of their residents to be met without the need to travel outside the village".</p>	<p>Re Policy S/7, the College's proposals are based on obtaining an allocation in the emerging Greater Cambridge Local Plan</p>	<p>The recently adopted local plan has two particularly relevant policies (E/7 and E/9) which we consider support the College's Call for Sites proposals.</p> <p>The proposals are in accord with NPPF 80 which states: "Significant weight should be placed on the need to support economic growth.... The approach taken should allow each area to build on its strength.... This is particularly important where Britain can be a global leader in driving innovation",</p> <p>NPPF 104(f) also states that planning policies should:</p> <p><i>"recognise the importance of maintaining a national network of general aviation airfields, and their need to adapt and change over time – taking into account their economic value in serving business, leisure, training and emergency service needs, and the Government's General Aviation Strategy."</i></p> <p>The College's proposal would increase the size of the village (to approximately 5000 residents) and enhance its ability for self-containment in terms of increased local expenditure for convenience and service-related activities</p>
Heritage	<p>Coldhams Moat is a heritage asset including pre-historic and Roman activity. In NPPF terms it is not a "designated asset"</p> <p>The central part of Duxford Village is designated CA and contains some 31 listed buildings including</p>	<p>The Masterplan avoids and respects Coldhams Manor with no buildings proposed within the former Coldhams Manor and moated site to west.</p> <p>Rather the masterplan seeks to "reveal" these assets for future</p>	<p>Whilst not a designated asset in terms of NPPF 194, the proposals will lead to no harm, but rather and enhanced setting to the Coldhams Moat asset.</p> <p>The Coldhams Moat asset lies within the proposed Country Park.</p>

	<p>two Grade 1 buildings and a scheduled ancient monument.</p> <p>Duxford Airfield is also a designated CA</p>	<p>study and enjoyment as they are located within the proposed Country park.</p>	<p>In the amended masterplan, the residential area to the south has now been removed from the Minerals Safeguarding area. This provides a further improved setting for Coldhams Moat.</p> <p>Proposals will fully respect it and will improve upon the setting of Coldhams Manor. NPPF 197 is not engaged.</p> <p>Full archeological studies and detailed design with the input of heritage specialist including County Archeological Service will be undertaken following the Call for Sites process</p> <p>The proposed development does not adjoin the defined conservation area (which is 200 m to the south) and is at distance from listed buildings and the scheduled ancient monument.</p> <p>The scale of development proposed is in line with, or lower than, general existing building heights in both conservation areas.</p>
Public Rights of way (PRW)	<p>There are two PRW across site</p>	<p>The form of development avoids the need to divert or stop-up existing public rights of way. The development will create better accesses to existing rights of way, as well as introducing new public access and rights of way to and through the local landscape, and the addition of a large new (including AvTech) publicly accessible Country park.</p>	<p>The proposals are in accord with NPPF 98</p>
Biodiversity	<p>Part of the Chalklands habitat area, but the open land is currently used for arable farming land with consequent low biodiversity capacity</p>	<p>Habitat surveys would be undertaken at next stage. Proposals will show how biodiversity value has been protected and adequately integrated into the design. In particular the large new Country park offers the opportunity to enhance the biodiversity of 40 hectares of land over the monoculture of the existing arable land, as well as opening up improved and new biodiverse habitat corridors between the Cam valley and local chalklands landscapes.</p>	<p>The proposal accords with NPPF 170, enhancing and indeed providing net gains to the biodiversity of the area.</p>
Agricultural land	<p>The proposal would result in the loss of approximately 89 hectares of agricultural land</p>	<p>Recent field surveys (2016) of agricultural land within the proposal area (north west areas) reveal the land to be</p>	<p>In terms of NPPF 171, given the majority of land is most likely to be Grade 3a, and most surrounding land is Grade 2 or 3a, then there is</p>

	<p>Of this approximately 49 hectares would be for mixed-use development, including open spaces, and approximately 40 hectares of country park.</p> <p>50 ha of agricultural land is retained</p>	<p>overwhelmingly Grade 3a (87%) – not Grade 2. Grade 1, 2, 3a are considered Best Most Versatile land according to the NPPF Glossary.</p> <p>Much of the wider agricultural land in Cambridge and east of England is Grade 2</p> <p>The proposal will utilise well know mitigation measures to retain and recycle soils.</p> <p>The College and NIAB have agreed for NIAB to use the remaining College agricultural land for agricultural trials to increase productivity which should develop net gains to farm productivity</p>	<p>little opportunity to use areas of poorer quality. The proposal would therefore accord with NPPF 171 (footnote 53)</p> <p>We consider the Duxford location to be unique so there is no other suitable location. It is considered that the public benefits associated with the delivery of the AvTech cluster, helping facilitate the IWM growth plans, meeting housing needs and enhanced social infrastructure, demonstrate that the loss of agricultural land is necessary in this location and accords with NPPF 171(53) and current Local Plan policy NH/3</p> <p>Mitigation measures will be employed and NIAB trials will enhance overall agricultural productivity</p>
Air Quality	Development is located close to an AQMA	Extensive and detailed air quality assessments will be required to assess the cumulative undertaken of this and other proposed developments within the locality on air quality along. The proposal will be based on a Low Emission Strategy. This will include green infrastructure, EV points, pedestrian/cycle routes, low carbon construction, green corridor for sustainable transport modes from Whittlesford through the site, Village and to Duxford airfield. Moreover, the proposal will seek to maximise the degree of self-containment based on walking/cycling form new houses to new business uses	<p>The proposal will accord with NPPF 103, 170(e) and 181. In particular it will help create a good degree of self-containment, given the numbers of new homes (800) and FTE workers likely to be generated (1800-2400) by AvTech, are in broad equilibrium.</p> <p>Additional local expenditure will help maintain and improve local convenience shopping and services, reducing trip generation.</p>
Noise	Noise levels are currently largely generated from the A505 to the north and M11to the west	The proposals and associated landscaping offer a significant opportunity to mitigate existing noise impacts from existing strategic road infrastructure within the existing settlement and within open spaces adjacent to the village to the west and north, by shaping the landform, vegetation and development in a comprehensive manner.	The proposal would accord with NPPF 170(e)
Land contamination	Development land is primarily in agricultural use, though past military use will require assessment	Risk assessment of land potentially affected by contamination, or ground stability and slope stability reports to be undertaken post Call for Sites.	Proposal would accord with NPPF 178 and 179, i.e. any contamination issues, the responsibility for securing a safe development rests with the developer and/or landowner

Flood risk	Is the development within a flood risk area?	<p>The eastern edge of Duxford village lies within the EA Flood risk Zones 2 and 3 of The River Cam. However, the masterplan proposal lies wholly within the EA's Flood Zone 1, i.e. where there is a "Low Probability" with land having a less than 1 in 1,000 annual probability of river flooding.</p>	<p>The masterplan proposals area lies with EA Flood Zone 1. No development is proposed outside this zone. Development of the type proposed is therefore considered appropriate.</p> <p>Given the site area is more than 1 ha, a site-specific flood risk assessment would be undertaken following the Call for Sites process, in the context of the local authority Strategic Flood risk assessment and NPPF 163.</p>
<p>Townscape, landscape, views, coalescence?</p>	<p>Impact on setting of heritage assets?</p> <p>Avoiding coalescence of villages?</p> <p>Potential visual impact?</p>	<p>The masterplan locates development where the "open countryside" aspect of the site has been most eroded by modern infrastructural and development interventions</p> <p>The proposals would preserve clear expanses of open countryside between neighbouring settlements and create more positive and defensible boundaries to the countryside which will continue to bound Duxford on all sides. These would be defined by the greenbelt to the north, IWM flight circuits and M11 to the west, Cam valley flood zones/designated landscape corridor to the east, and HSE consultation zones to the south.</p> <p>Highway interventions have eroded the open aspect of the land around the village and incremental residential and industrial development to the north of Duxford village has more recently filled the gap along the A505 between Whittlesford Bridge and Duxford village. The effect of these developments has progressively reduced the perceived separation between Whittlesford Bridge and Duxford to the point that there is little practical distinction.</p> <p>The form of the proposals, location and heights of all buildings would be considered to minimise visual and environmental impacts on the landscape and townscape.</p> <p>The Tower of St John's Church, Duxford (Grade I) is visible from certain aspects north of village.</p> <p>Long views from the A505 east of J10 and from the public footpath from Whittlesford village to</p>	<p>The proposals represent significant development in a semi-rural and agricultural area.</p> <p>However, none of the land falls within that defined at NPPF11 (b)(ii) (Footnote 6) as assets of "particular importance".</p> <p>The proposal accords with NPPF 72 responding to "significant extensions to existing villages" – where they are well located, designed, and supported by necessary infrastructure and services – as this is.</p> <p>The proposal also accords with NPPF 84 concerning promotion of the economy in rural areas noting "... Planning policies and decisions should recognise that sites to meet local business and community needs in rural areas may have to be found adjacent to or beyond existing settlements",</p> <p>it is considered that the public benefits of the proposals significantly outweigh any harm to landscape, views and townscape.</p> <p>The proposal would not lead to any "coalescence" of villages and settlements – rather it would enhance them by clearer definition of boundaries.</p>

		Duxford village take in Pepperton Hill south of Grange Road and, further west, Therfield Hill. These views would be preserved and enhanced by shaping the form of development to frame vistas and by the low height of development proposed (total height less than 10m above ground level, i.e. 2-2.5 storeys). Four green wedges have been included in the AvTech development to create views and route through to the Village.	
Doubling size of Duxford and meeting housing needs	Would this “dilute” the historical character of Duxford Village?	<p>The historic character of Duxford Village is represented by its CA and listed buildings. This historic core has been surrounded by later post war residential development phases.</p> <p>The proposals do not at any point about the historic core, are low rise and will have no adverse impact on the historic core.</p> <p>Indeed, the proposal will help better define the settlement boundary creating a modern high-quality edge to the settlement.</p>	<p>The proposal accords with NPPF 72 responding to “<i>significant extensions to existing villages</i>” – where they are well located, designed, and supported by necessary infrastructure and services – as this is.</p> <p>The proposal also accords with NPPF 84 concerning promotion of the economy in rural areas noting “...” <i>Planning policies and decisions should recognise that sites to meet local business and community needs in rural areas may have to be found adjacent to or beyond existing settlements</i>”,</p>
Access and Highways	<p>Local access</p> <p>A505 congestion</p> <p>Impact on M11</p> <p>Green travel modes</p>	<p>The proposal will look to create as much internalisation as possible on the site, via sustainable travel modes and provision of on-site facilities, building on the existing village.</p> <p>It is recognised there is congestion on the A505, in part created by the limits of J9 of the M11.</p> <p>The proposal will deliver a “green link” promote sustainable transport modes (walking, cycling, greater/easier access from/to Whittlesford Parkway, IWM and Duxford, to potentially include in the longer term semi-autonomous electric vehicles.</p> <p>The proposal will include enhanced local access to the site (such as an additional roundabout on the A505)</p>	<p>The proposal is supported by Local Plan policies E/7 and E/9.</p> <p>The College would make a major contribution to sustainable travel modes from Whittlesford, Duxford and IWM by delivering a new “green link” through the site.</p> <p>The College will play its part in addressing wider strategic network issues - recognising there are other larger developments such as Genome extensions and Uttlesford garden community which are having cumulative impacts on the network. In this context a “set back” line is provided on the College’s land for any required future widening of the A505</p> <p>The College would also ensure its proposals are in accord with all relevant national policies and in particular NPPF 104, 109 (which states development should only be prevented where impacts on</p>

			the network would be “severe”), and 110.
School capacity	School/educational requirements for 800 new homes?	<p>The College would work with the educational authorities and local schools (Duxford CoE primary) to establish required provision taking on board existing school rolls and capacities.</p> <p>The masterplan assumes provision for a new equivalent/extended primary school and nursery provision (on-site) and a contribution to off-site secondary provision.</p>	<p>The proposal will accord with education authority requirements and NPPF 94 that requires ....</p> <p><i>“sufficient choice of school places is available to meet the needs of existing and new communities”</i></p>
Healthy community	There are currently no medical facilities in Duxford Village, the nearest GP hub being Sawston.	We would liaise with relevant health authorities (and others) to establish the best means of delivering improved local health, fitness, social and cultural facilities for all sections of the extended Duxford Village community. This might for example include a “satellite” health centre or fitness facilities.	Accord with NPPF 92
Utilities	Limitation on current capacities? New development will ensure that there is adequate capacity for all required utilities.	An assessment was put forward in the 2012 Call for Sites which showed adequate provision can be made for utilities with necessary reinforcement and new infrastructure. This will be updated following the call for site process. All necessary services can and will be provided.	The College will submit a new assessment to ensure adequate provision can be made for all utilities with necessary reinforcement and new infrastructure.
Site Available?	<p>The “Call for Sites” site is owned by Gonville and Caius College.</p> <p>Apart from the need to terminate agricultural tenancies the site is available for development and no other site assembly is needed.</p> <p>The proposal for a Green Link route from Whittlesford Parkway through the development site to IWM Duxford will require the permission of Highway authorities and potentially Network Rail depending on access route to the parkway.</p>	The College will work with all stakeholders (including IWM, highways authorities, agricultural tenants) in an open and transparent way.	The proposal would deliver in the order of 150 of the 800 new homes within a 5 year period following an allocation within the development plan and thus accord with the NPPF glossary of definition for land which is “deliverable” and “available”.
Site Suitable?	The proposal will extend Duxford village, create a globally significant AvTech innovation cluster, and contribute directly to the IWM masterplan for growth	Duxford village and the surrounding land is well located, the Call for Sites site proposal is uniquely placed to help facilitate IWM growth and for the growth of an AvTech cluster.	Complies with NPPF 72 and 84 and Local Plan policies E/7 and E/9.

		The proposal will be well designed, with excellent infrastructure provision and extend an existing settlement maximising sustainability benefits and creating a mixed, balanced work, live, play and healthy community.	
Site Viable?	Are proposals likely to be economically viable?	<p>Bidwells has reviewed likely economic viability against NPPG guidance and the LPA's 2015 Viability Study.</p> <p>This shows the Residential Land Value of the proposals to be in excess of the Viability Benchmark Land Value (BLV), assuming policy compliant 40% AH, taking into account all reasonable s106 and abnormal development costs.</p> <p>Viability to be kept under review</p>	The proposal is likely to be economically viable in accord with the NPPF (67) NPPG guidance on determining a "benchmark" land value, above which a landowner would be incentivised to release land.
Site Deliverable?	<p>Would the proposal be considered deliverable within the terms of the NPPF, with housing, social infrastructure be delivered early on?</p> <p>Is there market demand?</p>	<p>The site is considered a suitable location for development. Assuming a planning allocation in the new Joint development Plan (year 0), early phases of development of homes (150 in years 3-5), and social and community infrastructure are deliverable.</p> <p>Bidwells considers there is strong demand for market and affordable housing and has used its local property experience and comparable information for the residential and commercial uses.</p> <p>The College and York Aviation has demonstrated there is good emerging interest (from a variety of sources including Cambridge University Engineering Department)) for an AvTech cluster at Duxford.</p> <p>The College considers it is too early to engage with investors and developers. Should the proposal reach the next stage in the Joint Local plan process, the College would undertake a soft market testing of the proposals.</p>	In NPPF terms (i.e. Para 67 and Annex 2 glossary) early phases of the proposal are considered to be deliverable, early sites would be available for housing, the location is available for development subject to an allocation in the development plan, and is achievable with a realistic prospect that initial units housing will be delivered on the site within five years.
Site developable?	Is the site developable for later periods of the Plan?	The site is considered a suitable location for further phases of development in years 5-15 years of the plan	In NPPF terms (i.e. Para 67 and Annex 2 glossary) later deliverable phases of development would take place in years 5-15

Special case?	Does Duxford offer an exceptional opportunity in a unique location?	The College and York Aviation's work and discussions has demonstrated that there is good emerging interest for an AvTech R&D cluster at Duxford. It is considered there is a once in a lifetime opportunity to develop a globally significant AvTech innovation cluster at Duxford. In addition, the College's ability to directly contribute to IWM meeting its growth plans, means this is an exceptional opportunity in a unique location and within the College's ownership an available, viable and deliverable proposition.	We consider there is strong evidence base and special circumstances that make the College's proposal a special case in the Call for Sites process.
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Gonville & Caius College

29 November 2019

# Gonville & Caius

**DUXFORD: Call for Sites (2019)**



**APPENDIX 1**

**YORK AVIATION**

**A review of the potential of a site at Duxford**






A Review of the Potential of a Site at Duxford



Gonville & Caius College Cambridge  
November 2019

 **York Aviation**



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# 1. Introduction

## Background and Purpose of this Report

- 1.1. York Aviation was approached by Gonville and Caius College Cambridge in July 2019 to prepare a report on the potential for general aviation and aerospace technology related development on a site adjoining Duxford village and close to Duxford Airfield<sup>1</sup>. The proposed development site is owned by the College and has been put forward by the College in the recent ‘call for sites’ (2019) by the local planning authorities.
- 1.2. This report presents a high-level assessment of the market potential for such a development and how the proposed location could offer a unique opportunity for a new innovation cluster benefiting South Cambridge, the Cambridgeshire sub-region, and the UK as a whole.

## York Aviation

- 1.3. York Aviation is a specialist air transport consultancy focussing on airport planning, demand forecasting, strategy, operation and management. We offer a broad range of services to airports, airlines, governments, economic development organisations, and other parties with an interest in air transport. Our team is a mixture of experienced air transport professionals and economists.
- 1.4. York Aviation has wide experience in general aviation (GA), having been commissioned in 2014 by the Department for Transport (DfT) to undertake a study into the economic value of GA in the UK, which informed the Government’s General Aviation Strategy published in March 2015. In January 2018 we were appointed by the DfT to undertake a study concerning the identification and characteristics of a strategic network of GA aerodromes in the UK. Our final report was published alongside the Government’s recent consultation on aviation in December 2018. We have also undertaken studies at numerous general aviation airfields around the UK including Gloucestershire Airport, the UK’s busiest GA airfield, and Farnborough Airport, one of the UK’s premier business aviation airports.

## Structure of this Report

- 1.5. We have structured the remainder of this report as follows:
  - ➔ Section 2: provides background on the proposed development site and Duxford Airfield;
  - ➔ Section 3: sets out the current position of the General Aviation and Aerospace Sectors in the UK;
  - ➔ Section 4: outlines the views of several consultees;
  - ➔ Section 5: sets out the potential advantages of the South Cambridge location and Duxford;
  - ➔ Section 6: outlines the form and nature of the potential ‘AvTech’ cluster;
  - ➔ Section 7: draws some conclusions.

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<sup>1</sup> ‘Duxford Airfield’ is a licensed trademark of Imperial War Museums.

## 2. The Site and Duxford Airfield

### The Site

- 2.1. Cambridge City Council and South Cambridgeshire District Council are in the process of preparing a new joint Greater Cambridgeshire Local Plan, as set out in the adopted Greater Cambridge Local Development Scheme. As part of this process, a 'call for sites' exercise is being conducted to inform site allocations in the new Local Plan.
- 2.2. Imperial War Museum Duxford (IWM) and Gonville & Caius College Cambridge (G&C) are working together to scope the benefits of a sustainable mixed-use development to the east of the M11, which will include homes, jobs, open space and new services and facilities. The new jobs will be largely within a proposed centre of excellence for UK general aviation and aerospace research and development, building on the existing group of companies around IWM and the wider science and technology cluster around Cambridge. Further detail of the proposed development site is set out in Gonville & Caius College initial submission in response to the call for sites.
- 2.3. The proposed development site lies to the south-east of Junction 10 of the M11 and to the north of Duxford village. It is therefore physically separated from Duxford Airfield and the IWM by the motorway, although in close proximity to it. IWM has its own plan for growth at Duxford and we set out below how the two proposals could complement and link with each other.

**Figure 2.1: Duxford Airfield and the Proposed Site**



Source: Google Earth

### Duxford Airfield

- 2.4. Duxford Airfield has an illustrious history: it was originally built during the First World War but was an important fighter base during the Second World War hosting the first Spitfire squadron and playing a key role during the Battle of Britain. The airfield continued to be used by the RAF until the early 1960s, but then ceased military operations. Cambridgeshire County Council joined with the Imperial War Museum and the Duxford Aviation Society in 1977 to make the airfield one of the best locations in the world for aviation museums and heritage, hosting an extensive collection of historic aircraft and exhibits along with a regular world-renowned air show.

- 2.5. The airfield is now licensed, owned and operated by the Imperial War Museum (IWM) and is also used by the general aviation community, subject to prior permission. It is an active base for the operation and maintenance of vintage aircraft and for initial flight training in light aircraft.
- 2.6. The main runway was shortened when the M11 motorway was constructed but is still 1,503 metres in total length (although the usable length is 1,199 metres, making it a 'Code 2' runway under ICAO definitions<sup>2</sup>) and there is a parallel grass runway of 880 metres length. The airfield is situated in an area of Class G 'uncontrolled' airspace, which means that pilots are free to fly in the airspace without permission from an air traffic control unit on a 'see and avoid' basis. However, the airfield issues specific instructions for pilots joining the circuit to arrive at or depart from the airfield in order to avoid conflict with other traffic and overflying noise-sensitive areas. The airfield is also relatively close to controlled airspace, which pilots cannot enter without specific permission from an air traffic control unit.
- 2.7. It should be noted that we have not been asked to assess in this report the implications of the proposed development for the operation of the airfield in terms of safeguarding areas around the airfield or flight paths, although we understand that an assessment has been carried out on this in conjunction with Duxford Airfield and found no detriment to the operation of the airfield.
- 2.8. We understand that IWM has its own plans to grow the Duxford museums and other businesses at the airfield. This includes growing the number of visitors to 500,000 per annum making it one of the top ten 'must do' visitor attractions outside London. As part of this plan, IWM has recently applied for planning permission to build a new four-star hotel near the Airspace Hangar by J11 of the M11.
- 2.9. We explain the position of Duxford Airfield with regard to the proposed development in more detail in Section 4 of this report.

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<sup>2</sup> The International Civil Aviation Organisation. The runway 'code' number would be relevant in assessing the protected surfaces and areas around the runway.

### 3. The General Aviation and Aerospace Sectors in the UK

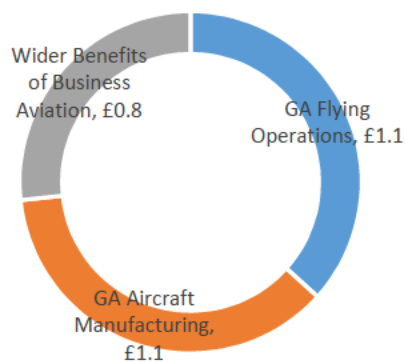
#### Introduction

- 3.1. In this section we provide an overview of the General Aviation (GA) and Aerospace sectors in the UK, given that these two sectors are likely to provide the most opportunity for the proposed development at Duxford.

#### The General Aviation Sector

- 3.2. GA is an integral part of the UK aviation sector with more than 95% of all aircraft on the UK register engaged in GA activity. The commonly agreed definition of general aviation encompasses all private flying, together with all commercial flying that is neither military nor scheduled commercial air transport. This definition is consistent with that used by Government.
- 3.3. GA is a complex sector, encompassing a wide range of different flying activities. These range from business jets through to pleasure flying of light aircraft and helicopters, but also include activities such as gliding, microlights, hot air balloons, parachuting, model aircraft flying, hang gliding and emergency service flying activities. The sector also has a significant supporting supply chain, which includes aircraft and component manufacturers and maintenance organisations.
- 3.4. In our 2015 study<sup>3</sup> for the Department for Transport we estimated a total economic impact on the UK economy from activities associated with GA of around £3.0 billion of Gross Value Added. impact on the UK. This was made up of an economic footprint from GA flying operations of £1.1 billion; the export component of GA manufacturing of around £1.1 billion; the additional wider benefits deriving from the use of business aviation of at least £0.8 billion. We noted that while this figure should be regarded with some caution, we believe it provides a reasonable representation of the magnitude of the total impact of GA activities on the UK economy.
- 3.5. We also noted that the core driver of GA's economic impact was business aviation<sup>4</sup> activities. Around £0.6 billion of the impact from flying operations came from business aviation aircraft and all of the wider economic impacts identified (£0.8 billion). The manufacture of business jets and associated parts made up the majority of impact from GA manufacturing.

Figure 3.1: The Economic Impact of GA in the UK in 2015



<sup>3</sup> Economic Value of General Aviation in the UK, York Aviation, February 2015.

<sup>4</sup> Business Aviation in this context refers to air transport for business purposes by privately hired or owned aircraft not operating to a schedule, such as air taxis and corporate aircraft.

3.6. In our 2018 study<sup>5</sup> for the Department for Transport we updated these estimates of economic impact<sup>6</sup> and found that the quantum of economic impact was broadly the same as before, although the impact of business aviation had grown slightly in real terms, while the impact of GA flying operations had slightly declined.

### The Aerospace Sector

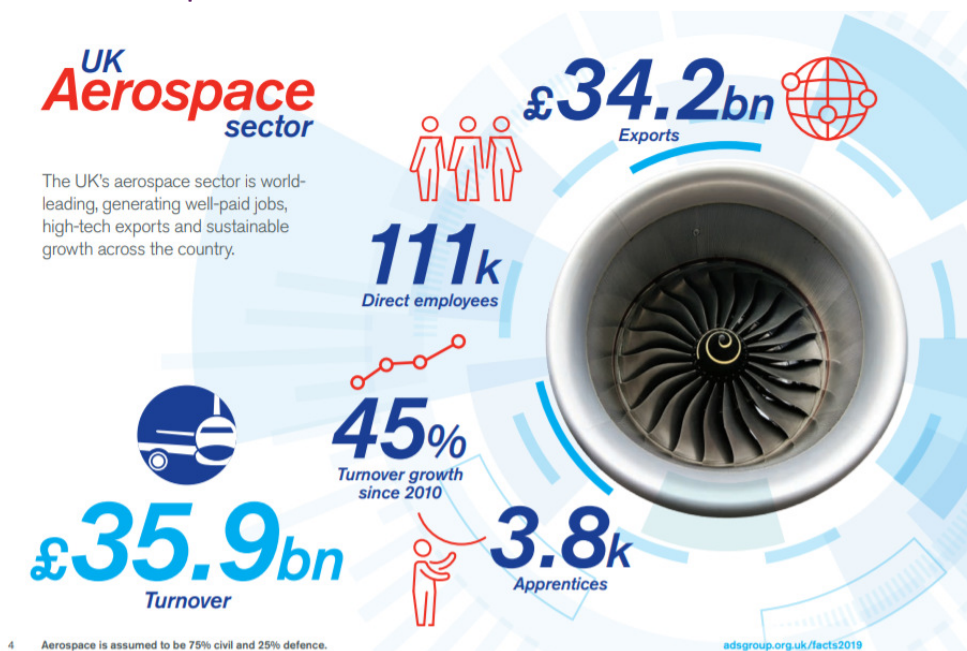
3.7. The aerospace industry potentially encompasses a very wide range of activity including:

- ➔ the manufacture of civilian and military aircraft, including unmanned aerial vehicles (drones), space vehicles, and missiles;
- ➔ the manufacture of associated components including engines, wings, landing gear, avionics, interior components and other fittings;
- ➔ associated technological research and development;
- ➔ the maintenance, repair and overhaul of aircraft and aircraft components;
- ➔ the associated supply chains.

3.8. The aerospace industry is sometimes defined as a sub-sector of the advanced engineering sector, whereas the aviation industry is seen generally as a sub-sector of the transport industry. However, there are clear synergies between the two sectors whose customers include the military, commercial airlines, the space industry, and general aviation.

3.9. The main trade association for the aerospace sector is ADS, which promotes the UK Aerospace, Defence and Security industries. We reproduce below an extract from ADS 2019 facts and figures publication which demonstrates the scale of the UK aerospace industry, which is the second largest aerospace sector in the world.

Figure 3.3: The UK Aerospace Sector



Source: ADS 2019 Facts & Figures

<sup>5</sup> Research into a Strategic Network of General Aviation Aerodromes, York Aviation, October 2018.

<sup>6</sup> For reasons explained in the report we had to use a somewhat different methodology to produce the update.

- 3.10. The Aerospace Growth Partnership is a strategic partnership between Government and industry established in 2010 to secure the future of the UK aerospace industry for the next 20 years and beyond. Government has shown unprecedented commitment to the aerospace sector providing the sector with the certainty it needs to invest.
- 3.11. The Aerospace Sector Deal of December 2018 forms part of the Government’s Industrial Strategy and includes:
- up to £125m Government investment in a Future Flight Challenge to develop new technology such as electric aircraft and urban air vehicles (which we refer to later in this section);
  - the creation of the UK Aerospace Research Consortium (see below), which brings together universities and research institutes to better coordinate and collaborate on technology and capability challenges;
  - National Aerospace Technology Exploitation Programme (NATEP), an established programme that will receive £13.7m funding from Government for further rounds, with £10m industry funding; and
  - SC21 Competitiveness & Growth, a supply chain productivity programme that will receive £10m funding from each of industry and Government.
- 3.12. The National Aerospace Research Consortium (NARC) has been created to provide the global aerospace community with a centralised point of engagement to the UK’s top university aerospace research capabilities. NARC will align itself with the Aerospace Technology Institute’s established four technology pillars (Aircraft of the Future; Future Propulsion; Smart, Connected and Electric Aircraft of the Future; and Aero Structures of the Future), with an additional National Airborne Test stream. The University of Cambridge and Cranfield University are among the founding member universities<sup>7</sup>.

### The UK Space Sector

- 3.13. The Government’s Green Paper ‘Aviation 2050: The Future of UK Aviation’ of December 2018 makes reference to the growing opportunities for the UK space sector and the overlap with space and aviation technologies.

*“Commercial spaceflight could be a reality by 2050 and the UK wants to play a key role through the development of horizontal and vertical spaceports. These will provide facilities for lucrative satellite launches, as well as the development of our nascent space tourism industry. This is expected to bring significant crossover benefits between space and aviation, spearheading new aircraft design and aerospace technology. The Space Innovation and Growth Strategy (SIGS) set the goal of growing the UK space sector to £40 billion of annual turnover by 2030, representing 10% of the global market, and to grow UK space-related exports to £25 billion by 2030.”<sup>8</sup>*

- 3.14. A recent report by London Economics on the size and health of the UK Space Industry notes that in terms of the segment-level income, East of England leads space manufacturing, while London dominates other segments<sup>9</sup>.

### Emerging Technologies

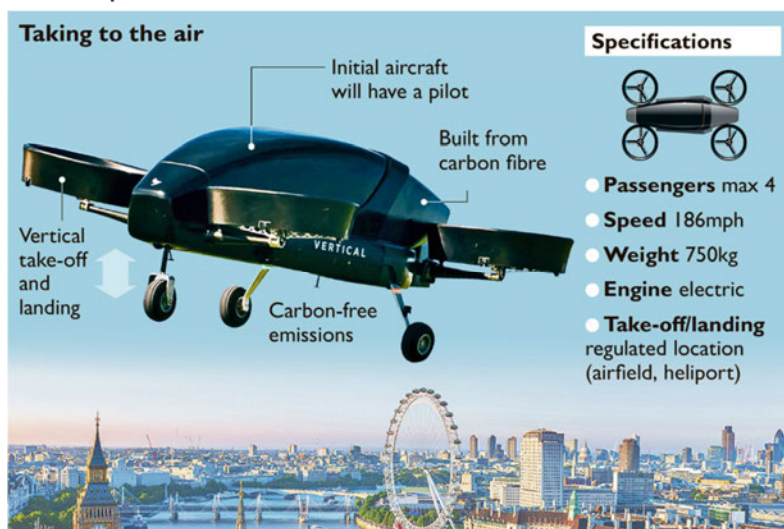
- 3.15. The work of NARC referenced above is clearly aimed at research and development into aircraft of the future and within a relatively short time frame we are likely to see a whole new sector of passenger carrying hybrid and electric aircraft, many of which will have vertical take-off capabilities (electric Vertical Take Off and Landing or e-VTOL) and will be far quieter and more environmentally friendly than current aircraft.

<sup>7</sup> <https://www.cranfield.ac.uk/press/news-2018/leading-universities-unite-to-strengthen-uk-aerospace-sector>

<sup>8</sup> Aviation 2050: The Future of UK Aviation, HM Government, paragraph 1.31.

<sup>9</sup> Size & Health of the UK Space Industry 2018 – Summary Report, London Economics, page 21.

Figure 2.3: Air Taxi Concept



Source: 'The Times'

3.16. Emerging eVTOL technology includes the concept of 'flying taxis' which is already at a stage of prototype testing. German start-up company 'Lilium' aims to have a fleet of five-seat aircraft, capable of operating with a pilot or autonomously, flying in cities worldwide by 2025, providing a pay-per-ride service that will be emission-free, five times faster than a car, and produce less noise than a motorbike. 'Vertical Aerospace', a UK start-up based in Bristol, has become the first company in the UK to build and test an eVTOL aircraft. And Rolls Royce unveiled its own eVTOL prototype at the 2018 Farnborough Airshow.

3.17. Overseas companies are also developing new technologies:

- ➔ German company 'Volocopter' has secured a \$30 million investment from German automotive giant Daimler and has announced a multiyear partnership with the transit authority in Dubai to test its air taxis;
- ➔ Chinese company 'eHang', which is developing commercial drones and air taxis, has selected Lyon in France as the location for its first European R&D centre.

3.18. Morgan Stanley have said it expects the air taxi market to be worth \$1.5tn a year by 2040, with passenger traffic comprising \$851bn of that<sup>10</sup>.

3.19. We are also aware of a new kind of light sports aircraft known as the 'e-Go' which was developed by an Italian designer working with a Cambridge company and first test flown in 2013. We understand that the company now developing the aircraft is GioCAS Aeronautical Consultancy<sup>11</sup>, also located in Cambridge, although the current status of the company and design/production of the aircraft is unclear.

3.20. In July 2018 the Government announced<sup>12</sup> that it intended for the UK to be at forefront of next revolution in electric and hybrid planes and that £343 million of government and industry investment would be devoted to research and development and productivity improvements to transform the future of civil aerospace. From the total investment, £255 million will go towards 18 new research and technology projects, including the development of cleaner and greener hybrid aircraft. To support small and medium-sized companies, £68 million of the funding will be made available to increase research and development opportunities, with £20 million to drive improvements in long-term productivity across the sector.

<sup>10</sup> <https://www.morganstanley.com/ideas/autonomous-aircraft>

<sup>11</sup> See <https://giocas.eu/>

<sup>12</sup> <https://www.gov.uk/government/news/lift-off-for-electric-planes-new-funding-for-green-revolution-in-uk-civil-aerospace>

- 3.21. The use of hybrid air vehicles may become more prevalent and the Airlander project<sup>13</sup> is a good example of this; the Airlander 10 aircraft, which combines features of aeroplanes, helicopters and airships with the latest innovations in materials, is now being developed for commercial purposes, such as freight, remote access, aid distribution, advertising, surveillance, communications and luxury passenger transport;
- 3.22. The commercial drones sector is increasingly being used for numerous business purposes including (inter alia):
- building and site inspections;
  - pipeline and pylon inspections;
  - emergency services surveillance and detection;
  - agricultural inspection to help increase crop production and monitor crop growth;
  - the transport of goods, including medical supplies.
- 3.23. A recent report by PwC<sup>14</sup> has estimated that, by 2030, there could be a £42bn increase in UK gross domestic product from drone activity, 76,000 drones operating in the UK's skies, 628,000 jobs in the drone economy, and £16bn in net cost savings to the UK economy.
- 3.24. We note that Amazon has made Cambridge the home of a Development Centre with 400 employees dedicated to research for products from Amazon's AI-assistant 'Alexa' to the new field of Prime Air drone deliveries. Amazon are quoted as saying:
- "One the reasons we do a lot of the Prime Air team work in Cambridge is that we signed the Pathfinder agreement with the Civil Aviation Authority, which allows us to test drones and real customer deliveries,"*
- "When picking a site for a development centre you have to start with where you find the world's best scientists, engineers and technologists. But it also has to be somewhere that people want to come and live. Cambridge is a fabulous town where people want to live and work."*<sup>15</sup>
- 3.25. We also understand that there has been interest shown in the site by an agri-tech start-up company based in Cambridge, which is building systems to help fruit growers be more productive, more sustainable, and more environmentally friendly, including the use of data gathered from drone surveys.

## Government Policy

- 3.26. Government policy is highly supportive of developments in general aviation and aerospace as we outline below.

### The National Planning Policy Framework

- 3.27. The most recent update to the National Planning Policy Framework (NPPF) was published in February 2019 and sets out the government's planning policies for England and how these are expected to be applied.
- 3.28. Paragraph 80 of the NPPF states:

*"Planning policies and decisions should help create the conditions in which businesses can invest, expand and adapt. Significant weight should be placed on the need to support economic growth and productivity, taking into account both local business needs and wider opportunities for development. The approach taken should allow each area to build on its strengths, counter any weaknesses and address the challenges of the future. This is particularly important where Britain can be a global leader in driving innovation, and in areas with high levels of productivity, which should be able to capitalise on their performance and potential."*

<sup>13</sup> <https://www.hybridairvehicles.com/>

<sup>14</sup> Skies Without Limits, PwC, 2018.

<sup>15</sup> <https://www.theguardian.com/technology/2017/nov/11/amazon-uk-development-centre-cambridge-new-offices-alexa-prime-air-drone-deliveries>

3.29. Paragraph 80 also references in a footnote the Government’s Industrial Strategy of 2017 ‘Building a Britain fit for the future’, which we address below.

3.30. Paragraph 104f of the revised Framework also states that planning policies should:

*“recognise the importance of maintaining a national network of general aviation airfields, and their need to adapt and change over time – taking into account their economic value in serving business, leisure, training and emergency service needs, and the Government’s General Aviation Strategy.”*

#### **HM Government’s Industrial Strategy ‘Building a Britain fit for the future’ (2017)**

3.31. The Government’s Industrial Strategy sets out a vision to drive productivity improvements across the UK, identifies a number of Grand Challenges facing all nations, and sets out a delivery programme to make the UK a leader in four of these: artificial intelligence and big data; clean growth; future mobility; and catering for an ageing society. The proposed development would be relevant to clean growth and future mobility, in terms of addressing new aircraft technologies.

3.32. We referred earlier in this section to the Aerospace Sector Deal, which forms part of the Industrial Strategy:

*“The UK government is backing the aerospace sector and its strengths in productivity and innovation to secure a share of the growing global market. The Aerospace Growth Partnership (AGP), a strategic partnership between the government and industry, is focused on helping shape and influence a business environment that tackles barriers to growth, boosts exports and grows high value jobs for the UK aerospace sector.”<sup>16</sup>*

#### **The South Cambridgeshire Local Plan (2018)**

3.33. The recently adopted Local Plan contains two particularly relevant policies. Policy E/7 deals with the Imperial War Museum at Duxford and states:

*“1. The Imperial War Museum site at Duxford Airfield will be treated as a special case as a museum which is a major tourist / visitor attraction, educational and commercial facility.*

*2. Proposals will be considered with regard to the particular needs and opportunities of the site and any proposals involving the use of the estate and its facilities for museum uses or non-museum uses must be complementary to the character, vitality and sustainability of the site as a branch of the Imperial War Museum.*

*3. Details of projected increases in noise will be required with all proposals which would lead to an increase in commercial or flying activity and details concerning the scale, form and design will be required to accompany any outline planning application.”*

3.34. Policy E/9 deals with the promotion of clusters and states:

*“Development proposals in suitable locations will be permitted which support the development of employment clusters, drawing on the specialisms of the Cambridge area in the following sectors:”*

3.35. A number of sectors are cited at Policy E/9 including high technology manufacturing and “other locally driven clusters as they emerge”. As set out in this report, we believe that the GA and aerospace sector(s) are precisely one of such “emerging” locally driven clusters that the Local Plan has in mind and that the Duxford location is a unique location and opportunity for growth of a new cluster focused on general aviation and aerospace.

<sup>16</sup> Industrial Strategy, page 193.

### The Aviation Policy Framework (2013)

- 3.36. The Government published its Aviation Policy Framework (APF) in March 2013. At the time of writing this is still current Government policy, although an updated aviation policy is currently going through a consultation process (see below). The current policy explicitly recognises the value of the GA sector:

*“The business and general aviation (GA) is important to the UK. Its contribution to the economy has been estimated at £1.4 billion per annum. The sector delivers vital services, including search and rescue, mail delivery, life-saving (organ) transport, law enforcement, aerial survey and environmental protection flights, as well as underpinning the training of future pilots, ground-based aircraft engineers and technicians. The sector also covers a wide range of activities, from corporate business jets and commercial helicopter operations through to recreational flying in small private aircraft, including gliders. A Civil Aviation Authority (CAA)-initiated and chaired strategic review of the sector has acknowledged its growing economic importance, particularly for the British and European manufacturing industry.”<sup>17</sup>*

- 3.37. Similar recognition is given to the UK aerospace industry:

*“The UK aerospace industry is a key part of our advanced manufacturing sector, contributing towards rebalancing the economy to become less dependent on financial services. The UK has the second biggest aerospace industry in the world in terms of turnover and is one of only a few countries involved in the design, development, manufacture and maintenance of the full range of aircraft products. The sector has an annual turnover of around £24 billion of which 70% is exported. It directly employs around 100,000 highly skilled workers and supports many more jobs indirectly.”<sup>18</sup>*

### The General Aviation Strategy (2015)

- 3.38. The Government published its General Aviation Strategy in March 2015, the first time such a specific government strategy relating to the GA sector had been published. The strategy details the government’s vision for the general aviation sector as follows:

*“The Government’s vision is of the UK being the best place in the world for GA as a flourishing, wealth generating and job producing sector of the economy.”<sup>19</sup>*

- 3.39. This strategy was informed by a study into the economic value of general aviation, referred to earlier in this section. A number of aims were also set out covering a wide range of issues including (inter alia) support for reduced levels of regulation in general aviation; cooperation between government, regulatory bodies, and sector representative organisations; and a recognition of the importance of a network of GA airfields supporting the sector.

### ‘Aviation 2050: The Future of UK Aviation’ (2018)

- 3.40. The Government has set out its intention to publish a new Aviation Strategy, which will set out the direction of the Government’s policy towards the industry to 2050 and beyond. Following a series of consultations, the Government published a Green Paper in December 2018 – ‘Aviation 2050: the Future of UK Aviation’ – which forms the final stage of consultation before the new Aviation Strategy is expected to be published in the latter part of 2019.

- 3.41. The Green Paper devotes a chapter to “supporting General Aviation” and another to “encouraging innovation and new technology”. With regard to the latter it notes that:

*“Innovation is key to delivering the outcomes of the Aviation Strategy. The government recognises the important role that technological advances and new business models play in economic growth, especially in industries such as aviation and aerospace. The aviation and aerospace sectors have a record of historic success, from the pioneering development of the jet engine in the 20th century to the cutting-edge development of new technologies. It has*

<sup>17</sup> Aviation Policy Framework, 2013, paragraph 1.12.

<sup>18</sup> Ibid, paragraph 1.10.

<sup>19</sup> General Aviation Strategy, page 8.

*demonstrated its capability to lead these changes independently of government, but the government recognises that it has a crucial role in removing barriers and creating the right environment for innovation to flourish.”<sup>20</sup>*

- 3.42. The Green Paper then sets out some of the main areas of opportunity for innovation in aviation (some of which we have highlighted above) including automation and drones, electrification, and digitalisation. The Green Paper goes on to note that it has struck an Aerospace Sector Deal (which we referred to earlier in this section):

*“The government is investing £1.95 billion in aerospace R&D from 2013 to 2026. The industry has committed match funding which will bring the overall ‘pot’ to £3.9 billion. In July at the Farnborough International Airshow, the Prime Minister announced that, together with the industry, it has committed £343 million of investment for research and development projects and to boost productivity – from developing the most technologically advanced aircraft and creating newer more efficient engines, to the manufacture of cleaner, quieter aircraft that will help cut emissions.”<sup>21</sup>*

### **The Future of Flight Challenge**

- 3.43. In August 2019 the Prime Minister announced<sup>22</sup> a new £300 million joint investment, to develop cleaner, greener forms of transport. The government will provide £125 million, which will be supported by industry co-investment of up to £175 million to support new technologies including flying urban taxis, electric passenger planes and even freight-carrying drones. The ‘Future of Flight Challenge’ is delivered by UK Research and Innovation. Industry will initially focus on smaller aircraft and drones to ensure the suitability of the new technologies before developing them for larger passenger aircraft.
- 3.44. The Secretary of State for Transport (Grant Shapps) referred to this investment in a recent speech delivered at Cranfield in which he stated that:

*“I want this country to become a hotbed for the design, manufacture and use of electric aircraft in the 21<sup>st</sup> century, seizing a share of a market that could be worth £4 trillion by 2050.”<sup>23</sup>*

### **Conclusion**

- 3.45. In this section we have outlined the current position of the general aviation and aerospace sectors in the UK and government policy (planning and industrial) as it relates to them. It is clear that these sectors of industry are thriving and on the threshold of some exciting new technological developments in the aviation industry, which are in line with efforts to make aviation more sustainable and efficient in the future. There is also clear government support for these new initiatives.
- 3.46. Whilst significant technological advances will emerge from the large aerospace companies, we believe that much of the supporting technologies will derive from work being undertaken by universities such as Cambridge and Cranfield and practically developed by small and medium sized enterprises (such as is the currently case with some electric and hybrid aircraft). These smaller enterprises have yet to find a location in the UK around which they can cluster, and the Duxford site presents a significant opportunity in this respect. We consider the potential advantages of the Duxford site in more detail in Section 5 of this report.

<sup>20</sup> ‘Aviation 2050: the future of UK aviation’, Dec 2018, paragraph 8.1

<sup>21</sup> Ibid: paragraph 8.16.

<sup>22</sup> <https://www.gov.uk/government/news/pm-accelerates-towards-greener-travel-with-new-300-million-investment>

<sup>23</sup> [https://www.gov.uk/government/speeches/an-electric-revolution-in-the-skies?utm\\_source=00ce211c-6120-49eb-84fc-bbf032ee85c8&utm\\_medium=email&utm\\_campaign=govuk-notifications&utm\\_content=immediate](https://www.gov.uk/government/speeches/an-electric-revolution-in-the-skies?utm_source=00ce211c-6120-49eb-84fc-bbf032ee85c8&utm_medium=email&utm_campaign=govuk-notifications&utm_content=immediate)

## 4. Views of Consultees

- 4.1. During the course of preparing this report we spoke to a number of consultees to gauge support for the proposals. We outline their views and responses below.

### Duxford Airfield and the IWM

- 4.2. We spoke with the Imperial War Museum (IWM) Duxford, which is probably unique in Europe as site which brings together historic aviation museums and associated archives, and an active airfield especially suited to the operation, display, and maintenance of historic aircraft. As such, Duxford is more than just an airfield with a museum; it is a location of national significance in the UK's aviation heritage and the priority for Duxford/IWM is to maintain this unique position.
- 4.3. Duxford Airfield and the Imperial War Museum (IWM) already has a strong link with Gonville & Caius College, from whom it originally purchased land for the airfield in 1917. Today the airfield is still surrounded on three sides (west, south and east) by land owned by the College. There is therefore significant mutual interest in developing activity that has a high degree of synergy with the IWM and the operations on the airfield.
- 4.4. IWM therefore sees great potential in an 'Aviation Technical Park' on the site of the proposed development adjoining Duxford village, which could offer a significant new location for some of the emerging technologies described in the previous section. We examine the particular advantages and opportunities offered by this the location in the next section. Furthermore, Duxford/IWM told us it would be open to the development of hangar space to the west of the airfield (including land owned by Gonville & Caius College – the so-called 'cabbage patch') should the proposed development mature to a point where some aircraft testing on the airfield itself may be required.
- 4.5. Duxford/IWM confirmed to us that the proposed development would not be in conflict with its airfield operations.

### Cambridge University Department of Engineering

- 4.6. We spoke with the Department of Engineering at Cambridge University, which is the largest department in the university with some 900 post-graduates and 400 post-doctoral research students. It is the largest integrated engineering department in the world and has significant involvement with industry, including with Boeing and Rolls Royce. The university has a particular interest in aerodynamics and aircraft propulsion systems.
- 4.7. The University hosts the Whittle Laboratory, which combines both experimental and computational methods to determine the underlying physical mechanisms affecting turbomachinery performance including in jet engines. The University's Centre for Doctoral Training in Future Propulsion and Power is a partnership of the UK's three leading universities in the field of gas turbine aerodynamics (Cambridge, Oxford and Loughborough) and is supported by a £7.3M grant from the Engineering and Physical Sciences Research Council (EPSRC) - the main funding body for engineering and physical sciences research in the UK.EPSRC.
- 4.8. The University is very supportive of the proposed development at Duxford and noted the presence of various other hi-tech companies in the Cambridge area that may have overlaps with the aerospace sector, including Blighter Surveillance (radar) Systems Ltd in Great Chesterford, just south of Duxford, or Hexcel Composites, a leading supplier of carbon fibre and other composite materials to the aerospace industry, which is located in Duxford itself.

## Cranfield University

- 4.9. Cranfield lies some 40 miles west of Duxford in the Oxford-Cambridge Arc in the administrative area of Central Bedfordshire. Cranfield is a leading university in aerospace studies and the only university with its own airfield. It is home to the new Aerospace Integration Research Centre (ARIC) co-funded by Airbus, Rolls Royce and the Higher Education Funding Council for England, to integrate airframes, propulsion and other systems and technologies that will radically change the design of aircraft in the future. The University's aerospace research focuses on bringing technologies together and demonstrating them to industry partners.
- 4.10. Cranfield's 'global research airport' offers a unique environment for transformational research into the aerospace sector and is at the forefront of aerospace technology, and digital aviation that will support the development of airports, airlines, airspace management and the aircraft of the future.
- 4.11. DARTeC – the Digital Aviation Research and Technology Centre at Cranfield – is an industry consortium of leading aviation organisations and Cranfield University and brings £67 million of investment in state-of-the-art facilities that will leverage both the University's airport and its newly opened autonomous vehicle research facility. DARTeC will initially focus on five primary research challenges as set out in the graphic below.

**Figure 3.1: DARTeC Research Challenges**



- 4.12. We understand that Cranfield has planning permission for 100,000 square metres of business space at its own airfield. Notwithstanding that, Cranfield University sees opportunities and potential in the Duxford site as a hub for entrepreneurial activity, perhaps focussed on the sub-component sector of the aerospace industry and emerging technologies.

### **The General Aviation Champion**

- 4.13. We spoke to Byron Davies, the Government's GA Champion<sup>24</sup>, who is familiar with Duxford Airfield and its activities. Byron Davies is highly supportive of the proposed development in so far as it may raise the profile of general aviation in the UK and support the potential development of new technology in the sector.

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<sup>24</sup> Since we spoke to Byron Davies, he has been elevated to the House of Lords as Lord Davies of Gower, and so has relinquished his position as GA Champion.

## 5. The Duxford Location and its Potential

### Introduction

- 5.1. In this section we look at the location's potential advantages and how Duxford could offer a unique selling point for the attraction of a cluster of activity focussed on aerospace and aviation technology ('AvTech'), with a particular focus at least initially on new technologies in the general aviation sector.

### The Location

- 5.2. Whilst this report does not set out to provide a detailed assessment of the South Cambridge economy, we would highlight the observation made in the 'call for sites' submission by Gonville & Caius College that Duxford sits within a growing constellation of major developments. It is also within the Oxford-Cambridge Arc, which some have said could be 'the UK's Silicon Valley' and a world-renowned centre for science, technology and innovation, although it is also recognised that without a 'joined-up plan' for housing, jobs and infrastructure across the corridor, it will be left behind by its international competitors<sup>25</sup>.
- 5.3. This area between Oxford and Cambridge, incorporating the ceremonial county areas of Oxfordshire, Buckinghamshire, Bedfordshire, Northamptonshire, and Cambridgeshire, forms a core spine that the government recognises as the 'Oxford-Cambridge Arc'. The Arc is home to 3.7 million people and currently supports over 2 million jobs, contributing £111 billion of Gross Value Added (GVA) to the UK economy each year. The Government published a joint declaration between Government and local partners involved in the Arc in March 2019, in which it states:

*"We recognise that the Arc is first and foremost an area of significant economic strength and opportunity, which can further benefit its existing and future communities and businesses by realising its potential. It has a population of over 3 million and a Gross Value Added over £100 billion per year. Building upon strengths in individual parts of the Arc, especially in science, technology and high-value manufacturing, there is the long-term potential to transform the Arc as a whole into a world-leading economic area, acting as a testbed for innovation. Because of this potential, the Government has already designated the Arc a key economic priority."<sup>26</sup>*

- 5.4. Cambridge is also a node of the 'UK Innovation Corridor' that connects the area north from the Royal Docks in London, into Tech City, the City Fringe, Kings Cross, and the Olympic Park, up through the Lea Valley, the M11, A1 and A10, the East Coast and West Anglia Mainline rail routes to Stevenage, Harlow and Stansted, and through to Cambridge and Peterborough.
- 5.5. One example of a local and successful development is the Wellcome Trust Genome Campus, located to the south east of Duxford, and specialising in genomics and biodata research. This kind of development could provide a model of how a single site can bring together institutes and organisations and act as an incubator for other related businesses in a process that economists refer to as 'agglomeration'.
- 5.6. The Cambridge and Peterborough Independent Economic Review of 2018 notes how agglomeration has occurred in the 'knowledge intensive' (KI) life sciences sector in Cambridge:

*"These KI businesses have been witnessed to 'cluster' together, in a process known as agglomeration. Spillover benefits from business activity benefits other businesses, such that the whole is greater than the sum of the parts...In Cambridge, over the last few years we have seen exactly this kind of clustering going on in the life sciences sector."<sup>27</sup>*

<sup>25</sup> See the National Infrastructure Commission Interim Report on the options to maximise the potential of the Oxford-Cambridge Arc.

<sup>26</sup> The Oxford-Cambridge Arc Government ambition and joint declaration between Government and local partners, March 2019, page 7.

<sup>27</sup> Cambridge and Peterborough Independent Economic Review, September 2018, page 51.

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- 5.7. We believe that potential exists for exactly this kind of agglomeration in the AvTech sector around Duxford, forming a key supporting link in the Oxford-Cambridge Arc.
- 5.8. Hitherto, the region around Cambridge has mainly been associated, in aviation terms, with Marshalls Aerospace at Cambridge Airport, the Imperial War Museum (IWM) at Duxford, along with world-class aerospace research at the universities of Cambridge and nearby Cranfield.
- 5.9. We are aware of Marshalls' recent decision to leave Cambridge Airport by 2030 and their ongoing consideration of alternative locations in the region, namely Cranfield, Duxford, and Wyton, but at the time of writing no firm decision has been made. However, based on our research and consultations to date, we believe that the prospects for an AvTech innovation cluster at Duxford are strong irrespective of any future decision Marshall's may make.
- 5.10. We would highlight that there are already a wide range of other AvTech and aerospace firms in the region around Cambridge (and some located near to or in Duxford) and also in the wider Oxford-Cambridge Arc. We list some of these below:
- ➔ **AIM Composites, Cambridge** - manufacture of complex composite exterior and interior components, mouldings, sandwich, flat panels and laminates, for a multitude of industries such as Aerospace, Rail, Marine, Military and Automotive, and their varied and specific applications;
  - ➔ **Airbus Defence and Space, Stevenage** - design and manufacture of advanced satellites and systems for telecommunications, earth observation, as well as navigation and science programmes;
  - ➔ **Blighter Surveillance Systems Ltd, Great Chesterford (just south of Duxford)** – world- leading designer and manufacturer of electronic-scanning radars and surveillance solutions - including for airports.
  - ➔ **EchoStar Mobile, Milton Keynes** - satellite/terrestrial (hybrid) communications company serving Europe;
  - ➔ **GioCAS Aeronautical Consultancy, Cambridge** - aeronautical consultancy and development of progressive light aircraft;
  - ➔ **Hexcel, Duxford** - leading producer of carbon fibre reinforcements and resin systems, and the world leader in honeycomb manufacturing for the commercial aerospace industry;
  - ➔ **Honeywell, Aylesbury** - the combined Honeywell-COM DEV portfolio is bringing new capabilities and functionalities to the space industry;
  - ➔ **MDA, Didcot** - develops and delivers advanced surveillance and intelligence solutions, defence and maritime systems, radar geospatial imagery, space robotics, satellite antennas, and communication subsystems; a global leader in aviation information systems and products that promote airspace safety and operational efficiency, while reducing costs through automation;
  - ➔ **MDBA, Stevenage** - missile design and manufacture;
  - ➔ **Multiple Space Companies, Harwell Campus, Didcot** - major science and technology R&D campus home to ESA, Airbus Defence & Space and multiple space and satellite companies;
  - ➔ **Oxford Engineering, Abingdon** - manufacturing and supply of aerospace parts;
  - ➔ **SATAVIA, Cambridge** - reduces the maintenance impact of damage to aircraft engine and airframe components caused by ice, dust, corrosive air pollution, sea salt and volcanic ash;
  - ➔ **Senior Aerospace Thermal Engineering, Royston** - a leading aerospace components manufacturer, supplying aero engine and airframe OEMs and their Tier 1 suppliers globally;
  - ➔ **SIMEX Aerospace and Simulation Systems, Cambridge** - civil flight simulation and avionics systems design and integration;
-

- **Ultra-Electronics Precision Control Systems, Cambridge** - supports its military and civil aerospace customers by providing innovative electronic, electro-mechanical and pneumatic solutions.

- 5.11. There are thus numerous aerospace related firms with supply chain synergies within the region that could potentially link with an AvTech cluster around Duxford.
- 5.12. We also understand that there is interest in the proposed development from a commercial pilot training organisation, which undertakes much of its training in simulators.

### The Duxford Brand

- 5.13. A further advantage of the location is the 'Duxford Brand'. Duxford is already well known as the location of the best historic aircraft museum in the country, and arguably in Europe. But Duxford is not only the location of the Imperial War Museum, it is also an airfield able to display aircraft in the air and maintain them on the ground. It is in this sense a unique location and one that is well-known and strongly supported by the general aviation community.
- 5.14. The Duxford brand could therefore be a significant advantage in attracting AvTech firms to the proposed development site and building up an agglomeration of firms with similar interests and activities.
- 5.15. We recognise that the proposed Gonville & Caius development location on the eastern side of the M11 lacks direct access to the Duxford runway. However, there are many AvTech related activities that do not require access to an airfield (as is the case with the aerospace companies cited above). Furthermore, in speaking with Duxford/IWM we understand that they would be open to the development of hangar space to the west of the airfield should the proposed development mature to a point where some aircraft testing on the airfield itself may be required.
- 5.16. We understand from the College's master planning team that the proposals include a new east/west 'green link' for cycling and walking from Whittlesford Parkway, through the site of the proposed development, and under the M11 slip road through to IWM Duxford. We also understand that in due course this green route could include electrically powered autonomous shuttles. In other words, the two sites would be directly linked under the M11, minimising extra congestion on the A505 corridor and facilitating even more synergy between the two.
- 5.17. We note that Duxford's General Aviation Expo is scheduled for Saturday 25 April 2020. General Aviation Expo 2020 is the pre-season event to meet and network with experts from across the UK's General Aviation community. The event is supported by the All-Party Parliamentary Group for General Aviation and may afford an opportunity to explore the potential of AvTech sector agglomeration at Duxford with stakeholders in the GA community.

### Competition

- 5.18. We have noted in Section 3 of this report that the UK aerospace industry is the second largest aerospace sector in the world. Yet 92% of the UK's aerospace sector is based outside of London and the South East<sup>28</sup> and geographically spread across the whole of the UK. There are clusters of activity particularly in the South West (Bristol and South Wales for example) the Midlands (home to Rolls Royce in Derby) and the North West (with its connection to BAE Systems at Warton and Samlesbury and Rolls Royce Barnoldswick). Hitherto, the East of England has not been particularly prominent in the aerospace sector although there are clusters of aircraft maintenance repair and overhaul (MRO) activity at Stansted, Norwich, and Southend airports and, of course, there is Marshalls at Cambridge.
- 5.19. Yet most of these clusters of activity are focussed around relatively large and established firms such as BAE and Rolls Royce. There is as yet no established cluster of firms developing new technologies in the general aviation sector, such as electric, hybrid, or autonomous aircraft. There is therefore a gap in the market that Duxford is uniquely well placed to fill.

<sup>28</sup> Aerospace Sector Deal, HM Government, page 7.

## Criteria for Success

- 5.20. Whilst we have identified a potential niche market that the proposed development could serve along with a number of advantages of the Duxford location, it would be difficult at this stage to predict exactly how the market might respond to the opportunity and how quickly the development might grow. We would expect, however, that the development would benefit from attracting an 'anchor tenant' around which other AvTech related firms might gradually coalesce.
- 5.21. Partnership support will also be crucial and our research to date has indicated that there is considerable interest and support for the proposals not only from IWM Duxford, but also from the universities of Cambridge and Cranfield who would be prepared to work in partnership rather than in competition.
- 5.22. At the time of writing, the position of Marshalls is not yet clear as to where they might ultimately relocate, although we understand that irrespective of their decision there could be some associated or ancillary Marshalls activity that does not require access to a runway that may find the Duxford location attractive, even if the main operations are located elsewhere.
- 5.23. Clearly there are other factors beyond the scope of this report that will also need to come together to make the proposal successful such as transport links and housing provision, but we understand this will be taken into consideration in the final evaluation of the site.

## Local Jobs for Local People

- 5.24. We appreciate that this development must be able to offer opportunities and benefits for local people and especially those living and in and around Duxford itself.
- 5.25. Although the nature of the development would be likely to generate a need for relatively specialised and skilled jobs with an aeronautical engineering focus, there will also be a need for medium and lower level skills in managerial and administrative support, as well as other associated employment such as catering and cleaning.
- 5.26. It will be important, therefore, that employment opportunities generated by the proposed development are advertised and promoted locally as and when they arise. Where relatively large numbers of jobs are likely to be generated, local jobs and careers fairs are a proven way of raising the profile of employment opportunities at a local level.
- 5.27. It will also be important to work with local schools and educational establishments, especially those pursuing qualifications in STEM<sup>29</sup> related subjects, to highlight potential career opportunities and strengthen links between schools and the world of work, in this case with an emphasis on aviation and aerospace. Addressing STEM shortages is a key part of the government's policy agenda and is mentioned specifically in the Government's recent aviation consultation in relation to addressing skills gaps that impact the aviation and aerospace sectors<sup>30</sup>.

## Conclusion

- 5.28. We believe that potential exists for a cluster of AvTech sector activity around Duxford, forming a key supporting link in the Oxford-Cambridge Arc and the UK Innovation Corridor. There is already a wide range of aerospace related companies operating in the region, and some in and around Duxford itself, which could form potential supply chain synergies within the region that could link with an AvTech cluster around Duxford.
- 5.29. The 'Duxford brand' could be a significant advantage in attracting AvTech firms to the proposed development site and building up a cluster of firms with similar interests and activities.

<sup>29</sup> Science, Technology, Engineering, and Mathematics.

<sup>30</sup> Aviation 2050: The Future of UK Aviation, December 2018, paragraphs 4.56ff.

- 5.30. There is no single geographical location in the UK with a focus on the development of new technologies in the general aviation sector and Duxford presents a unique opportunity in this regard. For the proposal to be successful it will be important to develop and maintain strong local partnerships, which clearly already exist, and the proposed development would be likely to benefit from attracting an 'anchor tenant' around which other AvTech related firms might gradually coalesce.
- 5.31. The development could offer opportunities and benefits for local people, especially those living and in and around Duxford itself, and it will be important at the appropriate time to take steps to work at a local level to raise awareness of such opportunities.

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## 6. Form and Nature of an 'AvTech' Cluster at Duxford

- 6.1. Given that there is no comparable geographical location in the UK with a focus on the development of new technologies in the general aviation sector, a new cluster of this type would therefore be an innovative development that would evolve and develop over a number of years. It is therefore challenging at this early stage to estimate with any precision what type of accommodation would be required and over what period.
- 6.2. However, we believe that the proposal by Gonville & Caius College for around 110,000 square metres dedicated to an AvTech cluster is a reasonable quantum of space for long term planning purposes. How this space might be distributed between offices, research and development facilities, light industry/manufacturing, or (potentially) warehousing is difficult to predict at this stage, but we would expect that the majority of space would be taken up by research and development facilities (B1b), possibly with some quantum of associated office space (B1a).
- 6.3. Based on the Homes & Communities Agency Employment Density Guide<sup>31</sup> for these categories of development, we would estimate that the proposed AvTech cluster could eventually support 1,800 to 2,400 job opportunities with an associated GVA impact of £93 million to £127 million<sup>32</sup>.
- 6.4. Given the expected functions on site, we would expect these jobs to be a mixture of highly skilled, high value-added opportunities, with particular focus on advanced engineering activities, along with attendant administrative functions. We would expect the higher skilled opportunities to draw individuals to work in the cluster from across the UK or even further afield, but also to help retain existing talent within the area that otherwise might move away. The quality of life offer around Duxford, with its rural location but proximity to Cambridge and good links into London, is expected to be a significant draw for this group, which will create demand for appropriate housing in the areas around the cluster. The associated administrative functions are likely to draw labour from more local sources, potentially supporting regeneration from some areas in the region by supporting people into employment, which will in turn boost demand for appropriate housing in the area.
- 6.5. In terms of potential markets, we have highlighted in the previous section the wide range of AvTech and aerospace firms in the region around Cambridge, as well as the strong interest of the two universities of Cambridge and Cranfield, and the possibility of some displaced Marshalls activity. We have also noted the potential synergy with IWM and Duxford Airfield and the interest in the proposed development of a pilot training organisation.
- 6.6. Attracting a major international investor is also a possibility and we note in this regard the interest of Chinese aerospace companies in European investment. For example, we noted earlier that the Chinese company eHang, a leader in the development and sale of commercial drones and taxi drones, has selected Lyon in France as the location for its first European R&D centre.

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<sup>31</sup> Third edition, 2015.

<sup>32</sup> GVA estimates are based on latest available ONS statistics for GVA per filled job for Cambridgeshire at 2017 prices.

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## 7. Key Conclusions

- 7.1. In this report we have outlined the current position of the general aviation and aerospace sectors in the UK and government policy as it relates to them. It is clear that these sectors of industry are thriving and on the threshold of some exciting new technological developments in the aviation industry, which are in line with efforts to make aviation more sustainable and efficient in the future. There is also clear government support for these new initiatives.
- 7.2. We believe that potential exists for a cluster of 'AvTech' sector activity around Duxford, forming a key supporting link in the Oxford-Cambridge Arc and the UK Innovation Corridor. In terms of potential markets, there is already a wide range of AvTech and aerospace firms in the region around Cambridge, as well as the strong interest of the two universities of Cambridge and Cranfield, and the possibility of some displaced Marshalls activity. We have also noted the potential synergy with IWM and Duxford Airfield and the interest in the proposed development of a pilot training organisation.
- 7.3. Consultation with stakeholders has demonstrated strong support for the idea of an AvTech cluster around Duxford Airfield and Duxford IWM is already working in close partnership with Gonville & Caius College to progress the idea.
- 7.4. The 'Duxford brand' and the existence of the airfield could be a significant advantage in attracting AvTech firms to the proposed development site and building up a cluster of firms with similar interests and activities. Although the proposed development location on the eastern side of the M11 and lacks direct access to the Duxford runway, there are many AvTech related activities that do not require access to a runway. Furthermore, in speaking with Duxford/IWM we understand that they would be open to the development of hangar space to the west of the airfield should the proposed development mature to a point where some aircraft testing on the airfield itself may be required.
- 7.5. The synergy between the airfield, IWM, and the proposed development is in line with local policy to ensure that associated development is complementary to the character, vitality and sustainability of the site and also with the development of employment clusters, drawing on the specialisms of the Cambridge area.
- 7.6. There is currently no single geographical location in the UK with a specific focus on the development of new technologies in the general aviation sector and Duxford presents a unique opportunity in this regard. For the proposal to be successful it will be important to develop and maintain the local partnerships referred to above. The proposed development would also be likely to benefit from attracting an 'anchor tenant' around which other AvTech related firms might gradually coalesce.
- 7.7. Although it is difficult to state with any precision at this early stage how such a new and innovative development might evolve over time, we estimate that the proposed AvTech cluster could eventually support 1,800 to 2,400 job opportunities with an associated GVA impact of £93 million to £127 million. We would expect these jobs to be a mixture of highly skilled, high value-added opportunities, with particular focus on advanced engineering activities, along with attendant administrative functions. It will be important at the appropriate time to take steps to work at a local level to raise awareness of employment opportunities.

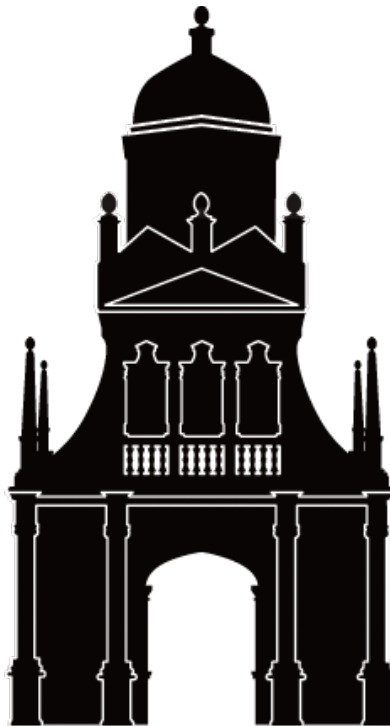
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# Gonville & Caius

**DUXFORD: Call for Sites (2019)**



**APPENDIX 2**

**URBAN FLOW**

**Delivering Sustainable Development – Movement**





GONVILLE & CAIUS COLLEGE, CAMBRIDGE

DUXFORD: Call for Sites proposal (2019)

Delivering Sustainable Development – Movement

Urban Flow

16 Brewhouse Yard

London EC1V 4LJ

November 2019

## **Delivering Sustainable Development – Movement**

The transport planning consultancy Urban Flow has been commissioned to undertake a high-level assessment of the likely movement issues and impacts arising from the development proposals promoted by Gonville and Caius. Urban Flow has considerable experience of masterplan-related transport studies over many years in locations from urban centres through to similar large-scale semi-rural locations as considered here.

The assessment considers the potential and scope for sustainable development considering the present and future transport system on the area across all travel modes, including those future-looking proposals relating to new mass transit connections and the further active promotion and adoption of sustainable community living.

The work is based largely on a review of the recent available technical studies and reports relevant to this area and the proposed development nature, including those relating to the highway network, Whittlesford Parkway station, sustainable and forward-looking transport initiatives promoted by the Greater Cambridge Partnership, and planning documentation related to other large-scale developments in the area.

### **1. Introduction**

The present and future context for large-scale development around Cambridge is exciting, with a number of factors combining to offer the prospect of truly sustainable living. That context includes many technological advances in movement related technology, forward-looking local and regional mass transit initiatives, and the widespread healthy living culture.

Along with Gonville and Caius (G&C), that prospect has been recognised by various interested parties proposing significant developments in recent years, as well as the joint planning authorities, not least as evidenced by the 2019 Call for Sites.

In this report we consider the present-day movement context in the surrounding area, and then the broad principles for the future development on the G&C site. After that, we present an indication of the likely scale of movement to be generated by the development along with the associated types of intervention that may be needed to accommodate that demand.

### **2. Present day movement context**

#### **Road network**

With the M11 lying along its western boundary, M11 junction 10 (J10) at its the north-western extent, and the major A505 east-west strategic route to the north, the site is very well connected in terms of road access. More locally, Hunts Road and Morefield Road provide access to Duxford and destinations further southwards including Saffron Walden. Some 2.5

kms to the east, the A1305 north-south route provides access to Cambridge to the north and the A11 / M11 to the south.

The A505 corridor is an important east-west strategic route and as such, is subject to congestion. Proposals for relieving the corridor are though under study (A505 Corridor Improvement Feasibility Study: A10 to the A11, Uttlesford District Council, 2018) and include consideration of that section east of J10 fronted by the site.

The M11 Junction 9 (J9) to the south, is limited in terms of the turning movements offered, with its 'Y' shaped form, not providing for right-turning northbound movements from the east (A11), or southbound M11 traffic wishing to turn left onto the A11 eastward. These limitations place further demand on the A505 in providing for those 'missing' J9 movements.

Notwithstanding the present shortcomings in current highways arrangements, when judged in conventional highways terms, the site therefore is very favourable offering convenient connections to existing local and strategic links.

The G&C site also benefits from its proximity to Whittlesford Parkway, only some 2km along the A505 to the east. It's identification as a pilot Rural Travel Hub by the Greater Cambridge Partnership (Whittlesford Parkway Station Transport Masterplan, 2018), its key future role in contributing to supporting growth in the surrounding area. Lying on the West Anglia Mainline, it provides a connection between Cambridge to the north and London, Liverpool Street to the south, with other services to Cambridge North, Ely and King's Lynn (via Cambridge). Traditionally a commuter station, Whittlesford Parkway is viewed by the Greater Cambridge Partnership as a future destination station, providing "...a strategically important interchange and gateway to facilitate sustainable local economic growth." (Whittlesford Parkway Station Transport Masterplan, 2018).

### **Walk and cycle**

Walking facilities are generally absent in the site area, whether of the main A505 or local road network, such as on Hunts Road and Moorfield Road, reflective of the area's generally open and rural landscape. As to be expected, conditions are markedly better in Duxford itself with footpaths and crossings more readily available. National Cycle Route 11 passes north-south along Moorfield Road and on to Duxford and Hinxton, and ultimately, connecting the Bishop's Stortford area to the south to Cambridge to the north, and onwards to Ely.

### **3. Gonville & Caius proposals - Duxford**

The G&C "call for sites" (2019) proposal is for a mixed-use sustainable development. The College are working with the nearby Imperial War Museum, Duxford (IWM) to assist with its expansion programme. In addition, the College's proposals involve developing an innovative new "AvTech" R&D cluster.

We understand the new AvTech cluster would have the potential to deliver some 1800- 2400 new jobs (depending upon exact mix of employment uses) and include up to 800 new homes around the existing Duxford settlement. Both are intended to meet local needs and those of people working at the new Av Tech hub. In addition, there will be a 40-ha new country park to support and enhance local biodiversity. Throughout, the development will adopt the best sustainable development principles for its travel needs.

The College’s call for sites submission includes:

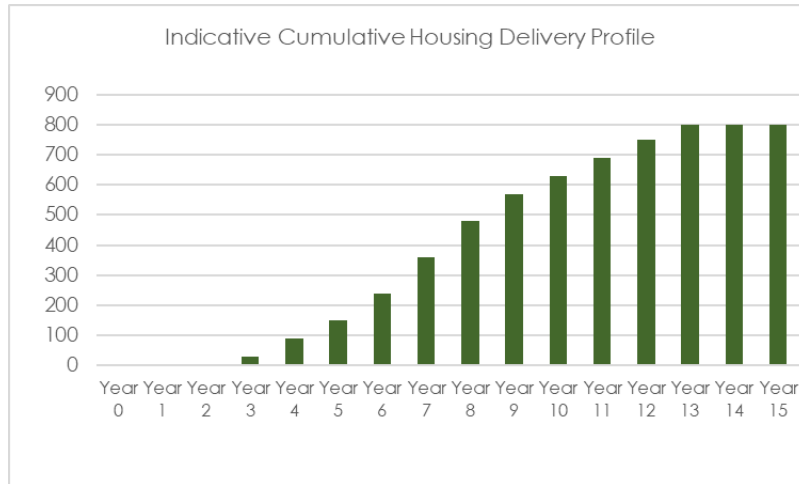
- AvTech R&D centre c14 ha, 110,000 sqm (approx. 1.2 M sq. ft) - south of A505 potentially capable of delivering 1800-2400 FTE jobs new jobs. The development would be “set back” from the A505 to allow for any future widening of the highway/footpath/cycle way
- Up to 800 new homes (and accompanying social infrastructure) wrapped around Duxford Village
- New country park – 40 Ha
- Retained agricultural land along M11 – 50 ha.

By way of comparison, taking the two most significant site proposals currently within the planning system, we may put the College’s proposal in context regarding its scale:

Development proposal	Dwellings	Jobs
Gonville & Caius	800	1800-2400
Wellcome Trust Genome Campus expansion	1500	4330
North Uttlesford Garden Community	5000	4364

More generally, the site’s co-location with Duxford village offers the potential to extend the local amenity offer, whether in terms of local shopping, leisure, medical services etc meaning those living and working in the area have less reason to leave it, by any travel mode. Managing travel demand at source is the most effective means of managing movement.

The intention is to build the new residential provision gradually in the early years as shown by the indicative cumulative housing delivery profile below, with only some 150 units constructed by year 5, 360 units by year 7, 630 units by year 10, with the total of 800 units reached by year 13.



Similarly, the indicative Avtech development profile is incremental, with an intended delivery rate of some 4,000sqm of floor space per year over some 25 years, leading to the total of 110,000sqm.

This approach to delivery is helpful in terms of the area’s related infrastructure, with ample time for appropriate improvements to the transport system to be implemented before numbers increase markedly. This profile also provides time for the sustainable movement initiatives and interventions, as discussed later, to be developed and put in place as this development and others come forward.

#### 4. Providing for development related movement

##### Site related movement

The proposal will of course add movement to the surrounding road network and place additional demand on sustainable modes. Whilst the emphasis with the proposal will be very much upon encouraging people to stay local, the majority of movements, at least in the near term, will be made by car.

Whilst access is possible from the south via Hunts Road / Ickleton Road, and by way of Duxford Village via Moorfield Road, principal access will focus on the A505 to the north. In order to assess the broad scale of that movement, Urban Flow as the College’s team’s transport planners, have made some initial estimates based on available movement generation data and relevant research of sustainable community developments.

### ***Staying local***

That movement estimate also included a conservative allowance for journey internalisation, that is, movements assumed to be contained within the site rather than leaving it to access employment or general amenities.

Of itself, the proposal may justify the provision on site of a new primary school, and potentially additional local retail facilities, but it may not be of sufficient scale to suggest the necessary provision for example for a full GPs surgery or library, (which are presently absent in Duxford). However, it is sufficient to add significantly to aggregate demand when combined with Duxford Village (c. 2,800 population. 2017 ONS) Ickleton (c.700) and Hinxton (c. 320). With the new resident population and current existing population Duxford could end up with a resident population in the order of 5000.

The movement generation assessment has adopted a conservative trip internalisation factor of 20%, that is some 20% of residents' trips to employment will lie within the proposed site (i.e. Av Tech-related, the remaining 80% will leave the site to work elsewhere. Over time, the ambition would be to grow that proportion very significantly as the employment destination becomes fully established in its own right, with new joiners choosing to live within walking / cycling distance of their workplace.

### **Sustainable travel mode shift**

Similarly, the ambition is to improve significantly on the area's car travel mode share of 75%, reducing downward to a significantly more sustainable 60%. As described elsewhere, there are a number of initiatives, for example the Whittlesford Parkway improvements and the prospect of a mass transit link to Cambridge, which aim to deliver such significant in sustainable transport mode take-up.

### **Road network interventions – site access**

Jumping forward in time to a point where the proposal is fully built-out ( i.e. over next 15 - 25 years), trip internalisation is in full flow, sustainable transport interventions are in place and being taken-up, then the car-borne journeys are presented at a manageable level for the road network. The site access flows accessing the site are forecast to be in the order of 525 vehicles per hour i.e. entry and exit movements combined, during peak morning / evening hour periods. To put that in



*A505 Hunts Road junction (Google Earth)*

context, such movements are in the order of present day out of a single out of town superstore building for example. The type of site access junction appropriate for traffic flows of this scale would be a roundabout, perhaps similar to the present Hunts Road roundabout. There is certainly ample site frontage within which to site this form of access junction and at a suitable distance east of the Hunts Road roundabout and west of the A1301 junction.

Later in this section, we discuss the wider context for road network improvements which are expected to ease conditions on the A505 in response to present demands and future development related growth expectations.

#### **Road network interventions – M11 J9**

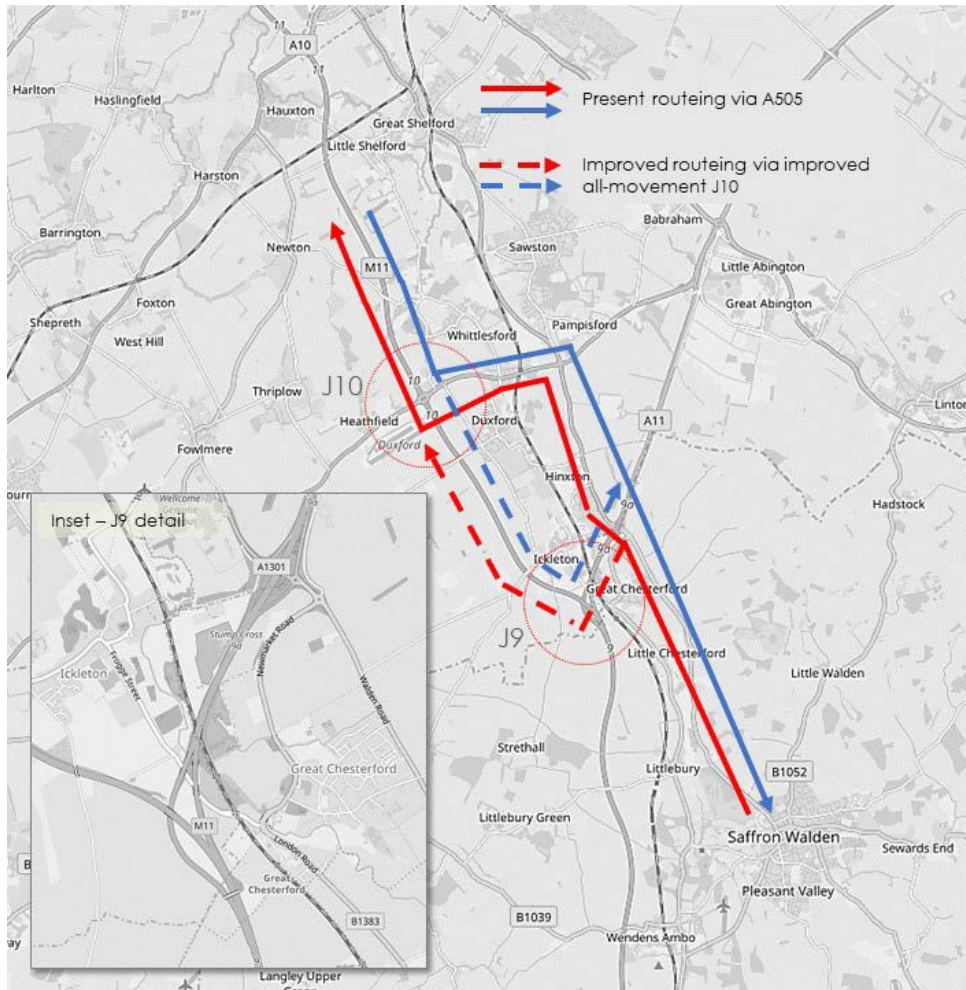
Looking more widely at traffic impact, the A505 is known to be congested at peak periods, and the A505 Corridor Improvement Feasibility Study of January 2018 looked specifically at how this may be addressed. A key finding was that that the A505 / J10 could be substantially relieved of traffic through improvement to J9 to the south (paras. 6.2.10 – 13 A505 Corridor Improvement Feasibility Study: A10 to the A11):

*The congestion and delays experienced on the A505 between the M11 and the A1301 could potentially be resolved by making improvements to M11 Junction 9, as opposed to undertaking works on the A505 itself. A proportion of traffic using the A505 is due to the limited access from the existing motorway junction 6.*

*This subsequently requires those heading south down the M11, and wishing to access Saffron Walden for example, to use Junction 10, the A505 and A1301 as opposed to continuing along the motorway and exiting at Junction 10. Strategic trips are in effect forced to use the local road network.*

*Given this pattern of demand, any improvements to the A505 would fail to address this more strategic issue in ensuring the most appropriate routing of vehicles on the network. It would still see heavy flows of strategic trips on the local road network.*

*In this respect, a solution which took these vehicles off the local road network completely, freeing up both the A505 and A1301, and providing more route choice, would seem to be a more effective and strategic solution. Consequently, opportunities to cater for all turning movements at M11 Junction 9 should be explored.*



*M11 Junction 9 improvement - traffic re-routeing*

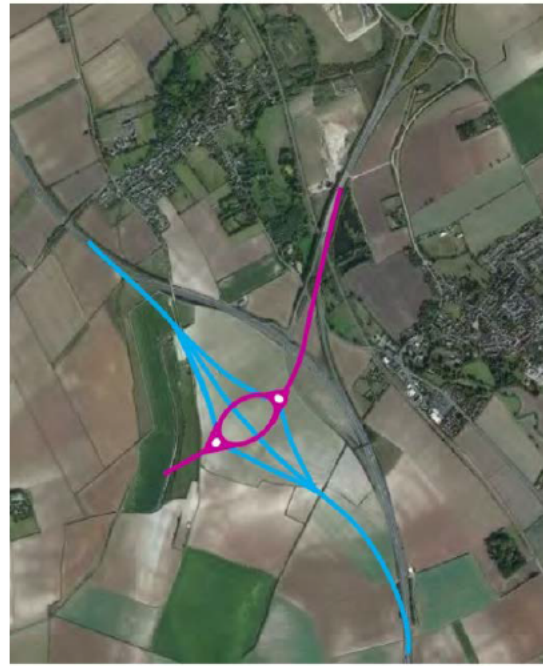
The study went further in considering the prospect of relocating Junction 9 to the west of its present location, meaning that the motorway could remain open during construction. It also offers the prospect of direct access and related for Great Chesterford village, albeit at considerably greater cost.

Figure 5.5: M11 J9 Reconfiguration



Source: Bing Maps

Figure 5.6: M11 J9 Relocation



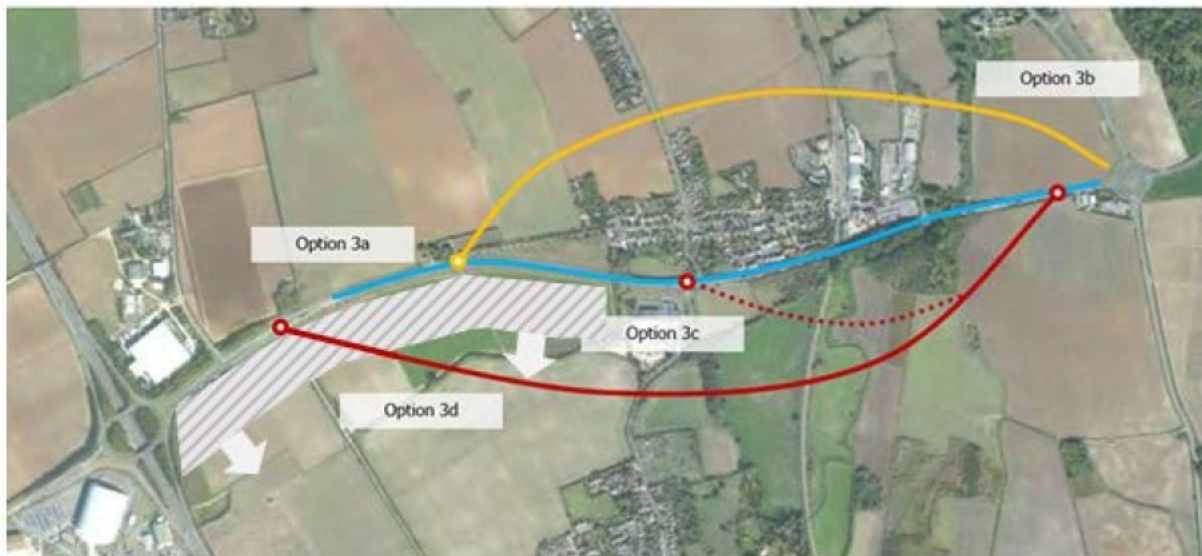
Source: Bing Maps

*M11 J9 rerouting proposals from A505 Corridor Improvement Feasibility Study*

### Road network interventions – A505

Notwithstanding the substantial benefits of the M11 J9 re-routeing of A505 traffic, the same corridor improvement study explored options for improving the A505 directly, including the section from M11 J10 A1301 Moorfield Road, see diagram below (as amended).

Figure 5.3: Section 3 – M11 to A1301



Source: Bing Maps

*Amended plan (title above) from A505 Corridor Improvement Feasibility Study showing A505 land in G&C control (hatched)*

The land in the College's control has the potential to contribute meaningfully to improvement of the A505 through providing the needed land for carriageway widening (para. 5.4.3). The new bridges mentioned lie to the east of that land.

*Option 3c: This would entail online widening between Hunts Road and the junction with Moorfield Road at which point the route would be realigned to the south of the existing corridor and woodland, before re-joining the existing route at a new roundabout to the west of the A1301 junction. It would require a new bridge over the London – Cambridge rail line and the River Cam.*

Although the various realignment options are all considered to present some difficulties in terms of construction, once in place, their contribution is viewed as helpful in relieving congestion and enabling related development (para. 6.2.8):

*Regarding the realignment options, all have benefits in terms of alleviating the impacts of through traffic on the village and providing the scope to cater for additional housing growth in the area by opening-up land for potential development.*

### **Road Infrastructure delivery**

As noted earlier, the proposal site does not of course sit in isolation, this is an area of considerable interest and activity; within significant employment hubs just 3.5 miles of Duxford lie:

- Whittlesford Parkway rural hub and associated mixed-use development
- Unity Research Campus (consented redevelopment)
- Babraham Research Campus
- Sawston (consented major expansion)
- Granta Park (consented major expansion)
- Wellcome Trust Genome Campus expansion (planning application submitted)
- IWM – with its plans to expand

Other major development sites within 4 miles but situated in the neighbouring district of Uttlesford are the North Uttlesford Garden Community (in consultation) and the consented expansion to Chesterford Research Park. These are clearly significant developments all making demands upon the present transport network.

A review of related transport impact documentation for the various development proposals shows the increasing and welcome shift towards forward-looking developments with the accent on sustainable development and living. This co-location of such modern development types is beneficial in delivering efficient and sustainable movement in several ways:

- Associated residential development means shorter commuting journeys for residents whether within the site, or off-site to employment nearby

- The aggregated development scale provides the needed scale of movement demand to initiate substantial transport initiatives
- Developments can work-together to achieve shared aims such as in shared travel initiatives.

The nature and long lead-in times of these developments, including that proposed here, presents planning challenges in delivering the needed infrastructure, a challenge which continues to be met by the planning system, as evidenced by the Call for Sites to which this report responds. The sites mentioned above are at various stages of the planning process, with two particularly relevant to the G&C proposal; North Uttlesford Garden Village and Wellcome Trust Genome Campus expansion. Both are relatively nearby, and both have had the benefit of substantial technical study.



*From G&C - Vision for Duxford*

The proposals share a strong focus on sustainable living principles, providing needed amenities on site wherever possible and encouraging residents, employees and visitors to stay on site rather than leave it. Where off-site travel is needed, then the default choice should not be car travel but walk, cycle, bus and rail. More on the means to encourage sustainable mode travel is presented in the following section.

Both developments make mention of highway improvements. The North Uttlesford Garden Community states support for the continuing study A505 corridor related improvements, acknowledging NUGC's role as a catalyst for area-wide improvements. Mention is also made of the benefits of M11 J9 changes to relieve the A505 and provide for more flexible vehicle routing. The Wellcome Trust Genome Campus expansion proposes specific A505 / A1305 roundabout improvements along with partial signalisation of M11 J10.

The nearby Whittlesford Parkway rural hub and associated mixed-use development is of smaller scale, but significant in not only also improving the A505 / A1305 junction but looking to reduce A505 severance between the station and Duxford to the south.



A505 relief. The A505 corridor improvement study presented some indicative infrastructure cost estimates of the improvements considered (see extracts below from Table 6.1: Summary of Outputs from DfT EAST Assessment of Improvement Options). Of those, there are two which appear especially relevant to the G&C site, A505 Option c, that is, the widening and bridging along the A505, and the addition of this 'missing' movement arms at J9.

*3a. M11 to A1301 Online Widening – “Online widening including a reconfiguration of existing junctions with Moorfield Road and Station Road and widening of the structures to bridge the London Cambridge rail line and the River Cam.”*

- scale of impact: score = 4 (from a maximum possible score of 5)
- practical feasibility: score = 2
- infrastructure cost range: £50-100m for entire A505 section i.e. east of M11)

*5a. M11 Junction 9 Reconfiguration – “Reconfiguration of M11 J9 to incorporate both access onto the M11 northbound from the A11, and access onto the A11 from the M11 southbound, to provide an all movements junction”*

- scale of impact: score = 5
- practical feasibility: score = 2
- infrastructure cost range: £25-50m.

## **5. Future transport initiatives**

As noted earlier, the present and future development context is exciting with a number of factors including technological advances in movement technology, the healthy living agenda and environmental action combining to offer the prospect of truly sustainable living. As mentioned elsewhere, that prospect and opportunity has been recognised by various interested parties proposing significant developments in recent years, as well as the relevant planning authorities.

In this section we consider those future non-infrastructure initiatives that actively encourage transport mode-shift, from those emanating from the general arrangement of developments, to those initiatives that through organisation and / or the application of technology, are intended to promote sustainable travel behaviours.

### **Smarter Travel – through development planning**

The essential physical arrangement of the development and the types and scale of uses within it can contribute greatly to truly sustainable living. People have less need to leave the site if needed amenities are close by along with places to sit, rest, and gather. If in relation to the journey origin, sustainable transport modes are more convenient for 'front door' access and use, then the car need no longer be the default choice.

### *Smarter Travel – through shared, expanded amenity*

More generally, the site's co-location with the existing Duxford village offers the potential to extend the local amenity offer, whether in terms of local shopping, leisure, medical services etc meaning those living and working in the area have less reason to leave it, by any travel mode. Managing travel demand *at source* is the most effective means of managing movement.

### *Smarter Travel – through travel planning*

Established for some time now, travel planning has delivered strong results across the country at all scales; raising awareness of sustainable travel options and rationalising movement.

### *Smarter Travel – through personal micro-mobility*

A relatively recent innovation on our streets, electrically powered / assisted scooters and cycles, plus assorted variants, have made a real impact, and seem set have a far greater impact in the future in providing for ad-hoc, last-mile type connections and beyond in a sustainable way.

### *Smarter Travel – through Mobility as a Service (Maas)*

Another relatively recent innovation, MaaS provides an alternative to car ownership whereby individuals pay a contracted fee for use of multi-modal transport options, provided on-demand by way of a smartphone app.

### *Smarter Travel – through walking and cycling*

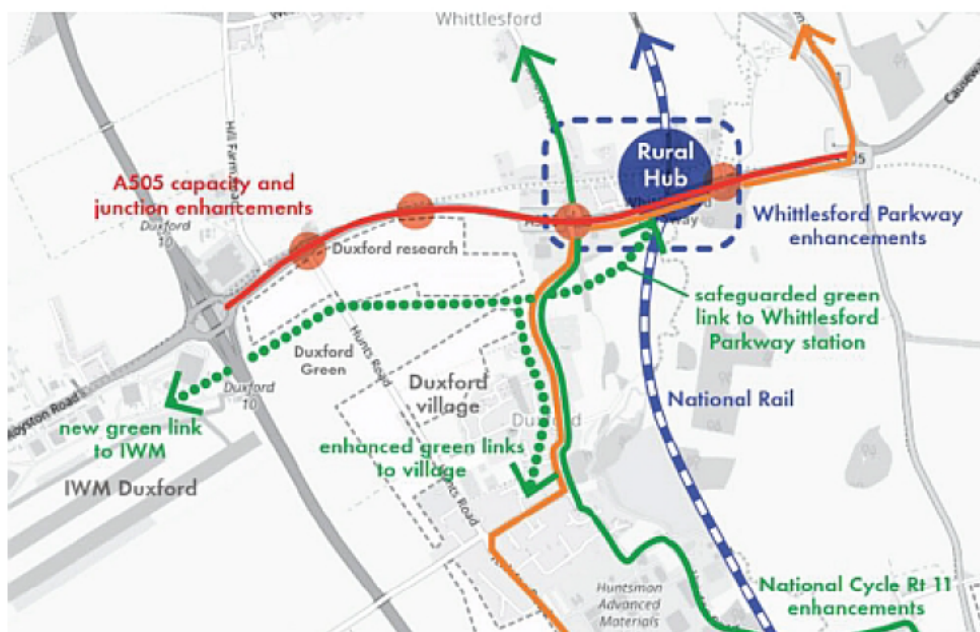
Safe and convenient walking and cycling connections and facilities are now firmly embedded within contemporary development design within the curtilage and beyond to key local destinations. High quality cycle parking facilities on-site with safe, pleasant and legible routes to local roads with specific walk and cycle facilities to key destinations, such as Whittlesford Parkway in this instance, will do much to encourage these sustainable modes. The Whittlesford Parkway Station Transport Masterplan proposes just such improvements too, fully complementing the aspirations of the G&C development.



Whittlesford Parkway Station Transport Masterplan – station visualisation extract

### Green Links: to IWM Duxford

The site also offers the prospect of an east-west Green Link between the Imperial War Museum to the west of J10, running beneath the M11 slip roads to the south, and eastwards through the proposal site towards Whittlesford Parkway. Such a link could cater for walk and cycle trips, and looking a little further ahead, the prospect of electrically powered autonomous multiple occupancy shuttles too. The Green Link could also run southward into the heart of the site benefitting Duxford Village and beyond. This would provide a valuable and sustainable alternative route for east-west movement between the presently severed communities either side of the M11 and afford convenient access to Whittlesford Parkway.



Extract from diagram from G&C - Vision for Duxford, showing Green Links E-W & N-S

## Green Links: Hunts Road - Ickleton Road - Duxford Road

The link southward from the A505 comprising Hunts Road / Ickleton Road / Duxford Road presently offers a parallel north-south routing to the M11, Moorfield Road / Ickleton Road, and the A1301. Although of limited width and variable quality, it currently offers an alternative routing for some medium to longer distance traffic, as well as local access traffic. This link could be transformed from its present condition as a rural standard road without footways into a calmed local access street environment, clearly associated with the local community and prioritising convenient local movement, whether by car, bus, walk or cycle. Although still available to through movements, such traffic would be discouraged by the active street environment, replacing the present 'open road' environment.



Illustrative view of Hunts Road as it enters Duxford from the north, transformed to a local access street environment and prioritising local movement.

*Extract from G&C - Vision for Duxford, Hunts Road visualisation*

### Site parking

The site would be predicated on a sustainable, flexible and responsive approach to parking provision. Given the nature and scale of the proposal, and the attendant timescale in delivering such a multi-phased development, then there are a range of scenarios relating to the quantum and type of associated movement demand. The ambition is for a highly sustainable community with minimal demand for conventional car-based personal travel. But that change will inevitably be incremental and therefore the provision of parking needs to respond to that change in demand over time; reducing that supply as sustainable alternatives are provided and taken-up.

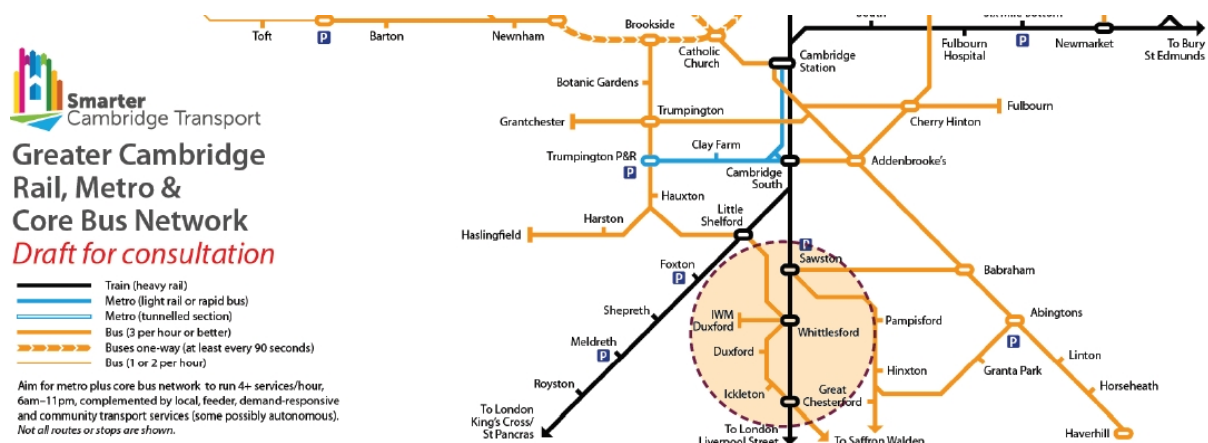
### Site servicing

Site servicing and deliveries would be substantially rationalised too, planned around single-point consolidated servicing hub principles to minimise vehicle movements to, from and within

the site. As with travel mode type and the options presented (mass transit, autonomous vehicles etc), the nature of deliveries is changing too, and during the course of the development's planning and delivery, much may change to benefit the community and the achievement of truly sustainable living. This need for flexibility and responsiveness to change needs to be recognised in all aspects of site planning.

### Buses and Demand Responsive Transport

The provision of bus services in semi-rural / rural areas is often problematical given the geographically dispersed passenger catchment and the associated commercial difficulties of operating such services economically. Community-scale proposals such as this encourage greater service frequencies and it is anticipated that the present Citi 7 service would be enhanced to serve the greater passenger demand.



Extract from Smarter Cambridge Transport Core Bus network proposals

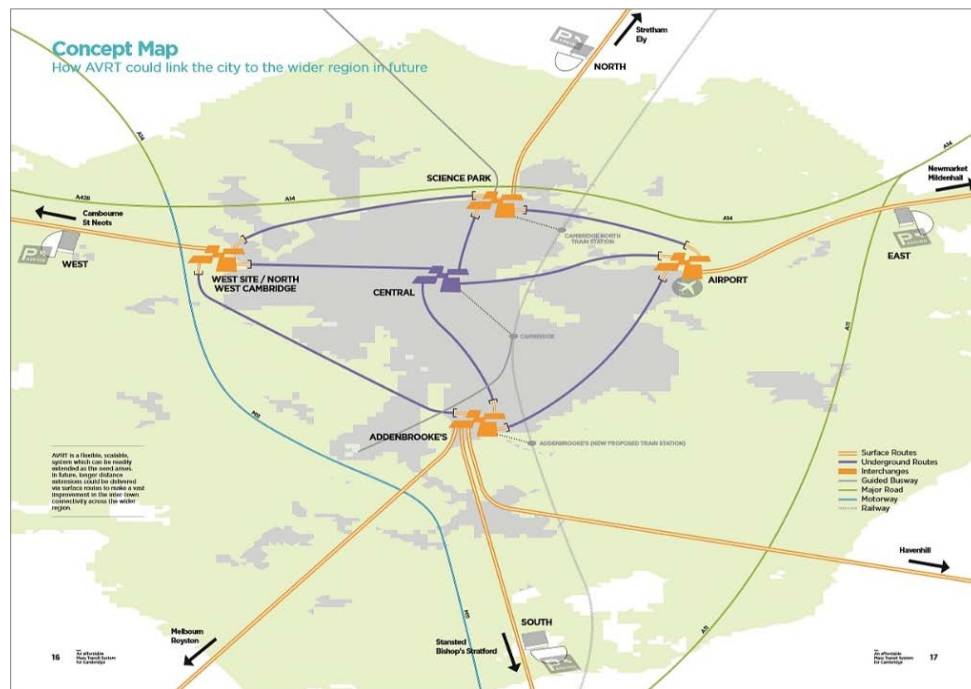
However, as technology continues to develop, we are seeing the introduction of operator and passenger apps to advise of service availability, but also to match the specific passenger demand to bus services to optimise the demand: supply relationship. Such Demand Responsive Transport is already being applied using smaller vehicles either door-to-door or upon semi-scheduled routes via mobile apps. This principle has been extended to mini / midibus scale and may find further extension, particularly in geographically challenged catchments.

### Mass Transit Link - AVRT – Affordable Very Rapid Transit

The Smart Cambridge partnership are advancing the prospect of an autonomous mass-transit link serving Cambridge from outlying areas, including Duxford, Affordable Very Rapid Transit or AVRT. In the paper "Affordable Mass Transit for Cambridge and the Wider Region", the consortium proposes the use of autonomous vehicles running along segregated at surface level through extra-urban areas



and through small-bore tunnels within the city of Cambridge. If realised, this ambitious and forward-looking proposal would transform access in and around Cambridge and contribute significantly to providing high quality sustainable access. This would be of very considerable benefit to developments in the Duxford vicinity providing a high capacity and rapid link to Cambridge and interchange for onward journeys.



Affordable Very Rapid Transit (AVRT) Concept Map – Smart Cambridge

### Autonomous Vehicles - Personal Rapid Transit (PRT)

Related to AVRT above, but at the more local level, systems such as 'ULTraTM' at Heathrow Terminal 5, provide a turn up and go, and fully autonomous Pods transporting four passengers and their luggage. In operation from 2011, the 21 Pod fleet runs along 3.8km of guideway and transports c. 900 passengers per day between the T5 business car park and the Terminal.



A system such as this may find application in the Duxford setting too, providing a quiet and efficient means of connecting the proposed community with destinations including the Imperial War Museum and Whittlesford Parkway, as envisaged by the Green Links described earlier.



Without the need for retained drivers, lower capacity on demand and shared travel becomes viable compared to the conventional bus and driver model, particularly when shared between adjacent communities.



# Gonville & Caius

**DUXFORD: Call for Sites (2019)**



## **APPENDIX 3**

**ALLIES AND MORRISON**

**Landscape, Biodiversity, Heritage, Views and Coalescence**



## Allies and Morrison

### Supplementary Report – landscape, biodiversity, heritage, views and coalescence

November 2019

#### Summary of key changes to the indicative masterplan since the Call for Sites Submission.

The masterplan concept has not changed since the Call for Sites submission. However following consultations since March 2019, the opportunity has been taken to reassess some elements of the proposals and a summary of the key changes is set out below.

- “Potential future phase” of AvTech development now shown as a first phase of AvTech cluster, with an ability to act as a front door to the development
- Introduction of 4 green wedges/corridors through the AvTech campus to achieve further greening, biodiversity and views through to the village, linking up with the Country Park directly to the south.
- Setback on A505 to allow for any future road widening
- Indicative alignment of “green link” from Whittlesford Parkway, Duxford and onto IWM, through AvTech cluster
- Replacement of residential with open space immediately to the west of Moorfield Road in order to respect the mineral extraction safeguarding designations in this area and to provide an improved setting for Coldhams Moat.
- Removal of 4ha industrial area to the south to provide a further area of open space/landscaped area or alternatively to be retained as agricultural land.

#### Strategic designations and landscape character:

- The built form of the masterplan does not encroach onto the Cambridge green belt, EA fluvial flood zones 2 and 3, HSE consultation zones, or designated mineral extraction areas.
- Duxford is positioned just beyond the Cambridge Green Belt – it is excluded from the designation as a consequence of decades of vehicular infrastructure expansion and the fringe development that is attracted to junctions of major roads such as the M11 and the A505.
- This does not suggest that Duxford does not sit in an area of characteristic landscape, it does.
- The River Cam Valley feeds between two low-lying chalk hills before it passes to the east of Duxford and the site sits in the South Cambridgeshire fringe of the “Cambridge and Surrounding Areas” study area within the ‘Cambridgeshire Green Infrastructure Strategy -2011’ While the Strategy does not address the site nor Duxford directly, it does set out key principles which have been addressed within the proposals.
- The River Cam Valley is identified as a ‘Strategic Green Infrastructure Network’. The proposals do not impact on the River Cam Valley negatively.
- Development sits to the north and west of Duxford village. A Country Park is proposed of more than 40ha which will become the green infrastructure interface between the expansion of Duxford and the River Cam Valley. The

Country Park will greatly benefit the existing landscape conditions surrounding Duxford.

- The 40ha park will be a major contribution to increasing the 20ha + AGNSt (Accessible Natural Greenspace Standard) provision in South Cambridgeshire.
- In addition, the proposals have considered the 'Cambridge Nature Conservation Strategy – 2006' which aspires to increase the quantity and quality of Nature Reserves in and around Cambridge.

#### **Heritage:**

- The masterplan does not propose building within the former curtilage of the unscheduled Coldhams Manor and moated site to the west of Moorfield Road. It seeks to reveal these assets and their settings for study and future enjoyment within a publicly accessible landscape (the "Country Park").
- The location of the proposed development does not directly abut defined conservation areas and is removed from listed buildings. The scale of development proposed is in line with, or lower than, general existing building heights in both conservation areas.
- The development is in the main proposed for low-lying land (i.e. with ground levels at 15-25m AOD) which would reduce its visual impact from most vantage points; the scale of development will generally be under 10m in height above ground level.
- The most notable views towards the existing settlement are from the north. The crenelated three-storey stone tower of St John's church, which is surmounted by a small lead spire, is the most characteristic feature in the skyline of the village. The church tower is obscured by mature trees along and to the north of St John's Street, from many vantage points outside the existing settlement. The tower is occasionally visible from outside the settlement between breaks in the hedgerow/shrubbery along the A505 and Hunts Road, from some parts of Duxford airfield and from the public footpath leading south from Whittlesford village. The proposals would seek to retain views of the church from these vantage points (see more on this below) and enhance them where possible, in discussion with the council, residents and other stakeholders.

#### **Public rights of way:**

- The form of development avoids the need to divert or stop-up existing public rights of way.
- The development will create more and better accesses to existing rights of way, as well as introducing new public access and rights of way to and through the local landscape, and the addition of a large new publicly accessible Country Park.
- The Country Park will be a publicly accessible landscape that encourages connections to the River Cam Valley and beyond. With the potential for both active and passive recreation the Country Park will offer residents significant health benefits and will encourage active travel to neighbouring settlements, the rail station, and beyond to Cambridge itself.

#### **Biodiversity, habitat, air quality, water management and loss of agricultural land:**

- The loss of land currently in agricultural use is approximately 88 hectares, of which approximately 48 hectares would be mixed-use development, including open spaces, and approximately 40 hectares of Country Park.

- The large new Country Park offers the opportunity to improve the biodiversity of over 40 hectares of land over the monoculture of the existing arable land, as well as opening up improved and new biodiverse habitat corridors between the Cam valley and local chalklands landscapes.
- This landscape character of this area is representative of the Chalk Hills landscape ecology of Chalk Hill, thin soils, and modern agriculture.
- Over time this area of South Cambridgeshire has suffered from the field expansions typical of modern agriculture. Hedgerows have been removed and those that remain can be “gappy”. The intention is to reverse this recent decline in habitat and positively to increase habitat and biodiversity of the site through the delivery of the Country Park, open spaces and noise attenuation buffers to major roads.
- Existing hedgerows and veteran trees will be retained, enhanced, and will drive the ‘landscape first’ approach to site planning.
- Joined-up areas will be set aside as Nature Preserves creating species links to the River Cam Valley. As the design process progresses, ecological surveys will be undertaken, and the masterplan developed around their findings.
- Consideration will be given to the proximity of the airfield and any impacts on local ecology or visa-versa.
- Duxford would have been surrounded by small paddocks and field prior to previous residential expansion. The masterplan intends to retain the positive characteristic of an agricultural community by retaining fields to the east and south of the village. The hedgerows and natural systems within bounding these fields will be enhanced in line with the overall bio-diversity strategy.
- Flood storage within the River Cam Valley floodplain will not be adversely affected. The development proposals will adhere to the most advanced sustainable drainage and ‘Sponge City’ principles which manage stormwater run-off rates beyond those of the greenfield site today. The streets, spaces, and the Country Park will be led by the attenuation and absorption of stormwater within the thin, free draining soils.
- Wet meadows, enhanced field drains, and a network of ponds will embrace the wider Chalk Hill landscape character and that of the wider fens.
- Given the proximity to the M11 and A505, air quality and carbon sequestration are key objectives within the landscape planning for the site. A ‘carbon forestry’ program can be introduced for the Country Park and the surrounding landscape buffers where fast-growing trees which maximize carbon sequestration can be planted and managed. In addition, tree species such as lime or larch can be planted as species who best capture airborne particulates and absorb NOX which are the key elements of air pollution.

#### **Noise from M11 and A505:**

- The proposals and associated landscaping offer a significant opportunity to mitigate existing noise impacts from existing strategic road infrastructure within the existing settlement and within open spaces adjacent to the village to the west and north, by shaping the landform, vegetation and development in a comprehensive manner.

#### **Landscape impact and coalescence:**

- To address these interrelated issues, it is helpful to review some history of the local area.
- The historical parish of Duxford included the present village, Duxford Airfield (RAF Duxford/IWM Duxford), and much of Whittlesford Bridge/Whittlesford Parkway, including its notable scheduled ancient monument, Duxford Chapel (located just to the east of the station). This only changed when the parish boundary was moved slightly south in 2009-2010 to coincide with the centreline of the A505.
- Duxford village and its disparate components sit within a pattern of small to medium-size settlements within the Cam Valley historically associated with the ancient Hundred Parishes.
- The settlement's historical form is directly related to its topography, positioned on the edge of the River Cam, which runs through a gap in a line of low chalk hills just to the south, and land ownership patterns.
- The village was progressively subdivided from several historical manors and religious institutions, traces of which still exist. These larger holdings were arranged in a loose line along the west bank of the Cam from south of St Peter's Church to Duxford Chapel in the north within the present settlement of Whittlesford Bridge. Other manors lay along St John's Street in the direction of the airfield and Grange Road.
- Gonville and Caius College's current land ownership (extending along Grange Road, the village centre and northwards to the A505, reflects an aspect of the historical pattern of settlement in the area.
- The village's character has been somewhat diluted by the encroachment of the railway in the C19 (Whittlesford Station opened in 1845), by strategic highways infrastructure implemented in the late C20, and residential development out of keeping with the architectural qualities, layout and materiality of the historical settlement, mostly executed after the Second World War.
- The village's relationship to the Cam valley and to the countryside immediately surrounding the settlement is not as well articulated as in neighbouring settlements, with no direct rights of way to the river from the village, and no rights of way leading out of the village to the north, other than roads. This could be due to historical land ownerships along the Cam and restrictions of the airfield to the north and west.
- Footpaths through the countryside to the south are more plentiful, including good walking routes to neighbouring villages of Hinxton and Ickleton.
- The major expansion of the airfield during the interwar and post-WWII eras, and the practicalities of the airfield's operations, restricted the physical growth of Duxford village, generally pushing new development to the south of the historical village centre, until the area between the village and the established works site on Ickleton Road was fully infilled.
- Figure 1, below, overlays the airfield plan of 1964 onto a contemporary aerial photograph for reference. Some traces of the previous extents of the airfield, its compounds and outbuildings, remain visible today within the landscape to the east of the M11. It is thought the restricted area of the airfield would have extended to or beyond Hunt's Road in recent periods, and the nature of the take-off and approach planes of the longer runway would have made occupation of the land north of the village problematic.

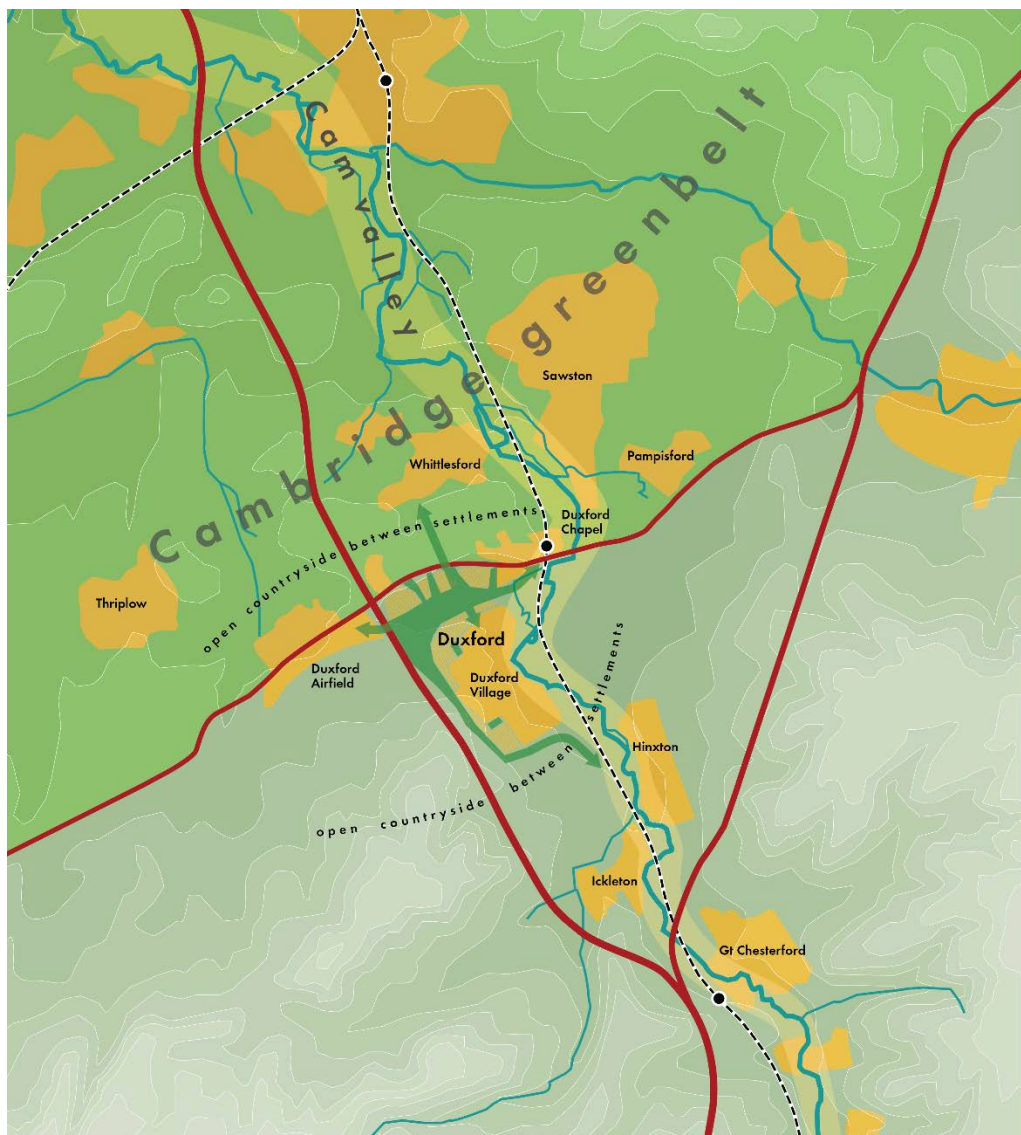


**Figure 1:** Duxford Airfield plan c.1964 (white) overlaid on modern aerial photograph

- In the C19 the railway divided Duxford Chapel and neighbouring buildings from the rest of the settlement.
- In the last two decades of the C20, additional strategic infrastructural interventions progressively eroded the more direct relationships which had existed between Duxford village, Duxford aerodrome and Whittlesford Bridge.
  - M11 – completed 1980; Duxford airfield runway was shortened 300m from its eastern end during construction of the motorway, and the extensive compounds of the aerodrome which had existed to the west of Hunt's Road were converted to agricultural land. The M11 is a major cause of physical severance between local places and attractions.
  - A505 – works were completed in the 1990s. The new road has resulted in poor north-south and east-west pedestrian connections between Whittlesford / Whittlesford Bridge and Duxford village, and between Duxford village / Whittlesford and Duxford airfield, exacerbating the severance and environmental impacts already caused by the M11.
- These highways interventions eroded the open aspect of the land around the village, and progressively subdivided the historical parish of Duxford, distorting previous relationships and severing connections between places which had once been more closely connected, physically, socially, politically and economically.

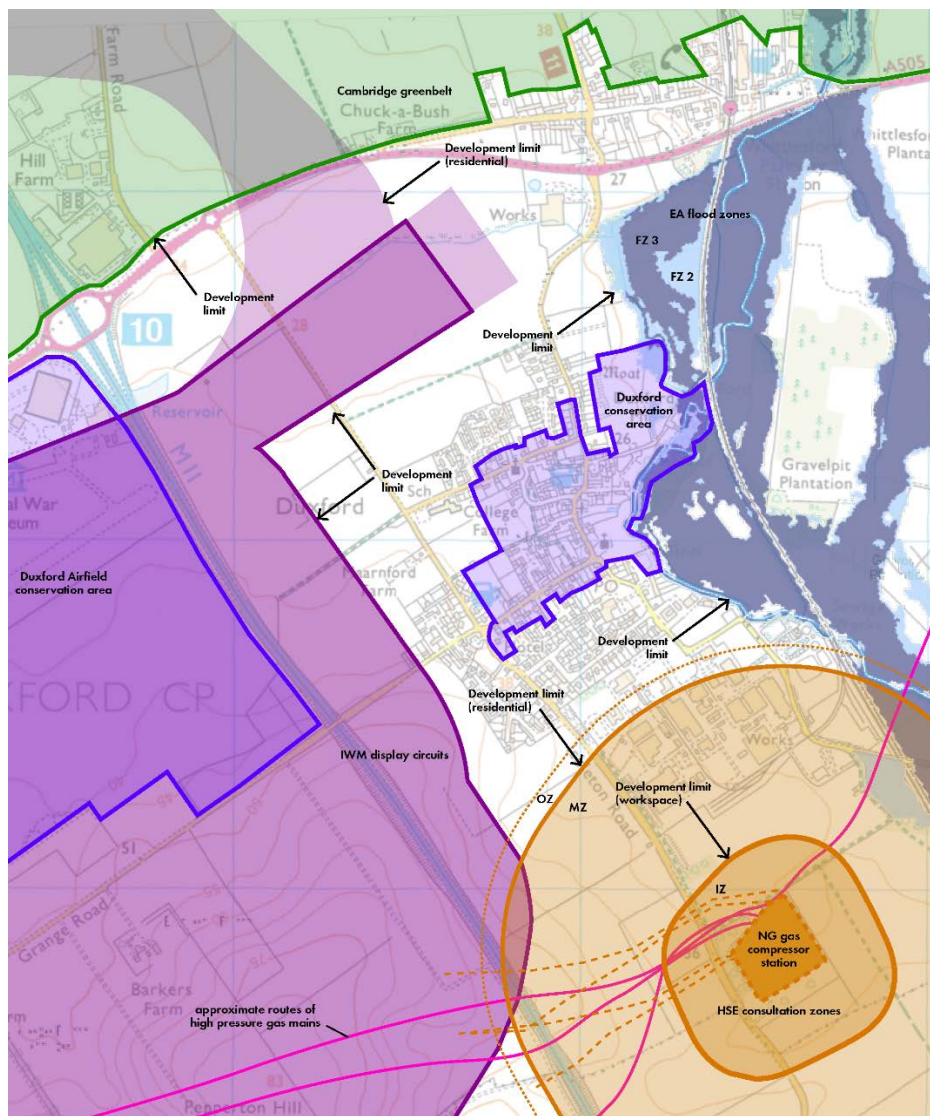
Paradoxically, they have also made the village and aerodrome much more accessible to people coming from far outside the district.

- Ongoing incremental residential development has recently filled the gap along the A505 between Whittlesford Bridge and the fringe industrial area to the north of Duxford village along Moorfield Road. The effect of these developments has progressively reduced the perceived separation between Whittlesford Bridge and Duxford to the point that there is little practical distinction.
- The proposals provide the opportunity to address or mitigate some of the recent severances caused by transport infrastructure, and make better use of this existing strategic infrastructure, including Whittlesford Parkway railway station (which has experienced more than a 20% increase in ridership in the past five years, 2013-2018).
- New pedestrian-cycle (and potentially sustainable public transport) links between the station, Duxford village and Duxford aerodrome are proposed.
- The masterplan only proposes development where the “open countryside” aspect of the site has been most eroded by modern infrastructural interventions (M11 and A505) and more recent fringe developments/interventions (including at IWM Duxford, Cambridge Assessment, Volvo and Welch’s Transport along the A505).



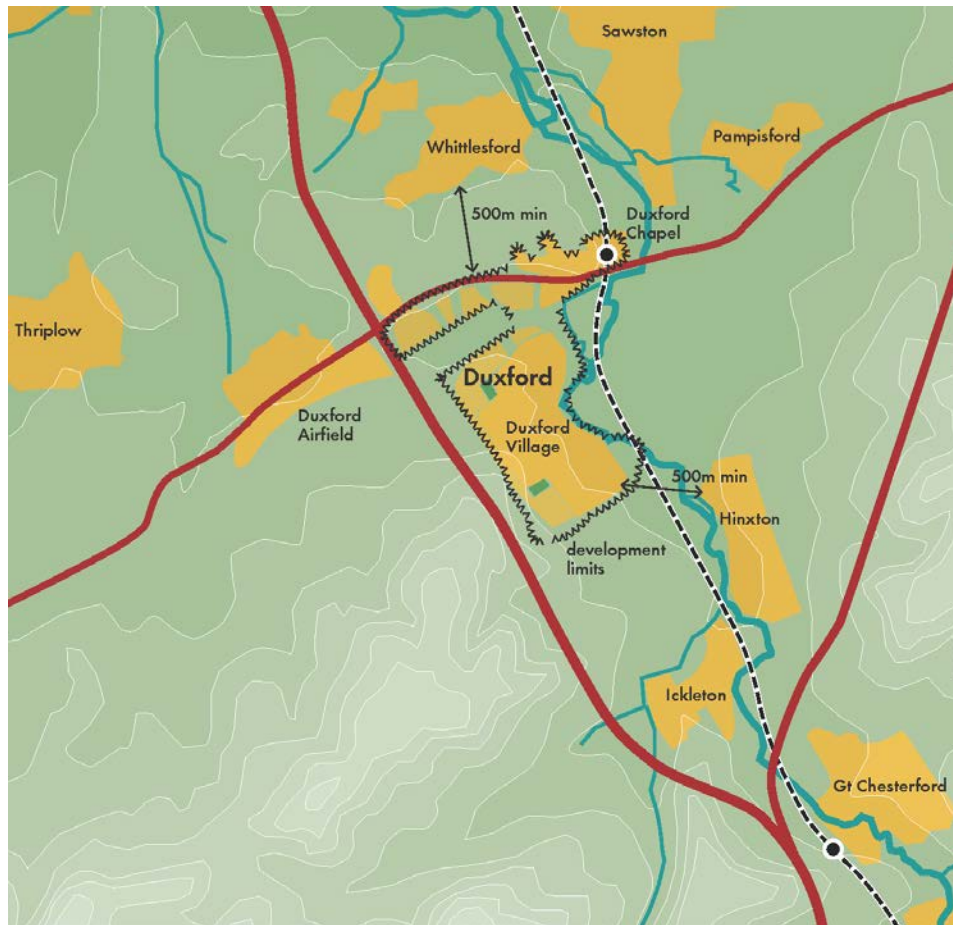
**Figure 2:** Duxford’s various elements consolidated and integrated into its context

- The proposals would help to enhance the identity of the disparate elements once known as “Duxford”, and allow them to function as a more coherent whole. (Note, for instance, that the hotel at Whittlesford Parkway Station is called "Holiday Inn *Duxford*", as this provides a clearer association of place and function. See Figure 2 above.
- The comprehensive nature of the proposals would allow for a greater mix of uses (incl. employment, affordable housing, education, culture, retail, community) to be incorporated into the new village fabric compared to the recent piecemeal, parcel-by-parcel development which has tended to produce isolated sites with singular uses.
- The proposals would preserve clear expanses of open countryside between neighbouring settlements and create more positive and defensible boundaries to the countryside which will continue to bound Duxford on all sides. These would be defined by the greenbelt to the north, IWM flight circuits to the west, Cam valley flood zones/designated landscape corridor to the east, and HSE consultation zones and existing gas mains to the south. See Figure 3 below.



**Figure 3:** Duxford’s development limits create defensible boundaries to the settlement on all sides for the future

- The proposed new development would therefore be seen to sit within a 'contained' zone between these regions, with open land of no less than 500m between the expanded Duxford and each of its nearest neighbouring settlements. See Figure 4 below.



**Figure 4:** A minimum distance of 500m would be preserved between Duxford and adjacent settlements in perpetuity.

- The Duxford Aerodrome Safeguarding area, which covers the whole of the proposed development, limits buildings in general to no more than 10m in height above ground level, minimising impact on views and ensuring that the scale of new development will be in keeping with existing buildings.
- The form of the proposals, including the location and heights of all buildings would go beyond the safeguarding guidelines and seek to further minimise visual and environmental impacts on the landscape and townscape, and active measures would be taken to mitigate long-standing environmental issues associated with the strategic highways and airfield. The sketches shown are only the starting point for in-depth investigation and consultation with the local council, residents and other stakeholders/consultees.

### **Landscape impacts – views**

- The key views for Duxford include:
  - o Views of the tower of St John’s Church, Duxford (Grade I) which is a C13 stone tower with lead spire visible from certain aspects north of village.
  - o Long views from the A505 east of J10 and from the public footpath from Whittlesford village to Duxford village take in Pepperton Hill south of Grange Road and, further west, Therfield Hill.

- These views would be preserved/enhanced by shaping the form of development to frame vistas and by the low height of development proposed (total height less than 10m above ground level, i.e. 2-2.5 storeys).
- In particular the amended indicative masterplan shows four green corridors through the AvTech proposals which will preserve viewing corridors.

**Summary:**

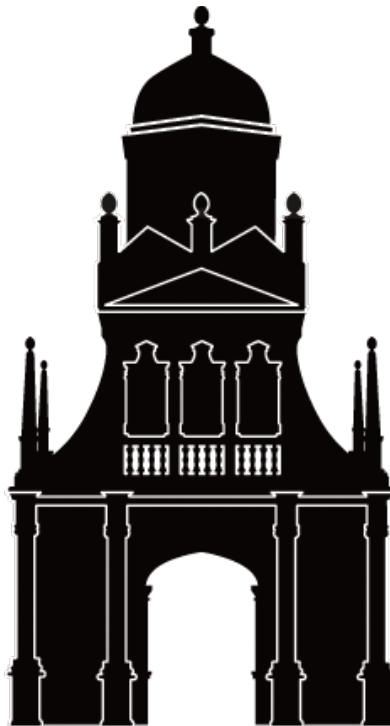
The proposals represent a significant opportunity to

- Comprehensively redress and enhance Duxford's relationship with its natural and historical environment, including:
  - o Better access to open space through the institution of a new large and publicly accessible country park which is accessible from all of Duxford's 'parts'
  - o Enhanced and more diverse wildlife habitats and biodiversity corridors
  - o Mitigation of noise and pollution from strategic highways on the village and adjacent landscapes
  - o Protection of long views from key locations in the landscape to the wider countryside
  - o Helping to achieve the aims of the Cambridge Green Infrastructure Strategy in this locale
- Address the physical and social fragmentation which has progressively separated Duxford village, Duxford airfield and Whittlesford Bridge from one another, and from the adjacent countryside, through a new network of enhanced and safe public foot / cycleways (and potentially sustainable public transport) to facilitate links between local places with a shared history.
- Highlight and enhance key views towards the village and airfield buildings from the surrounding area.



# Gonville & Caius

**DUXFORD: Call for Sites (2019)**



**APPENDIX 4**

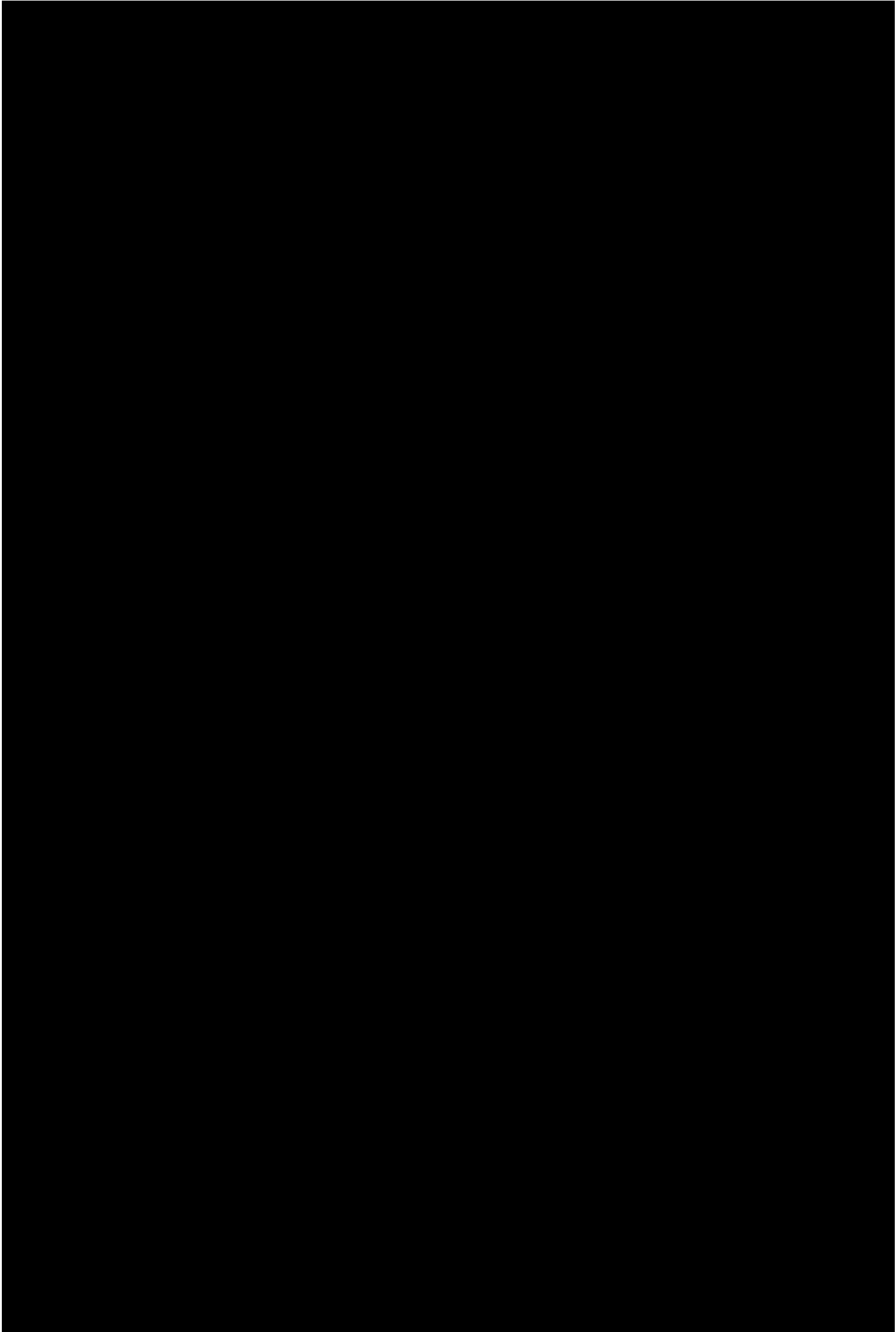
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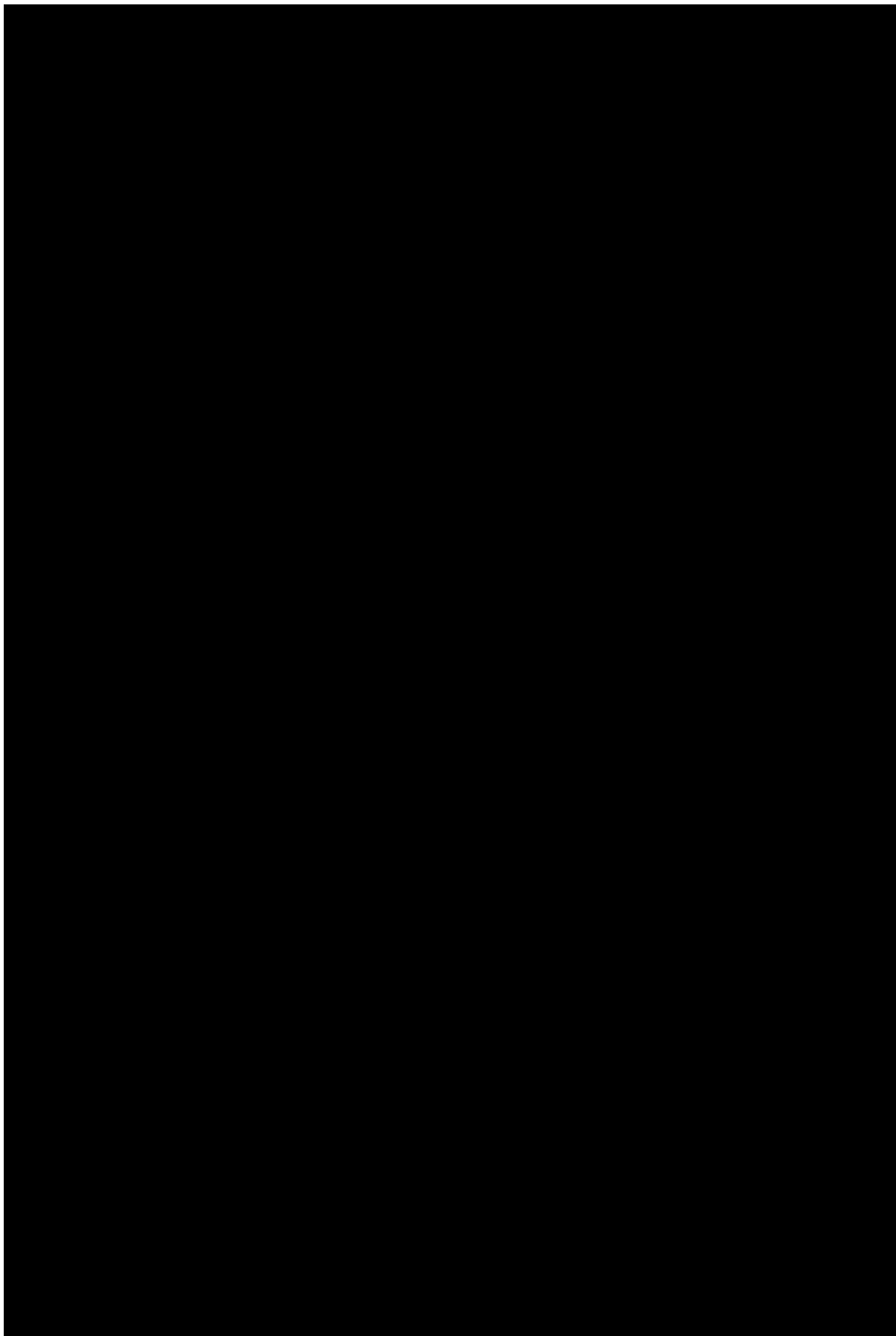
**Viability and deliverability commentary**

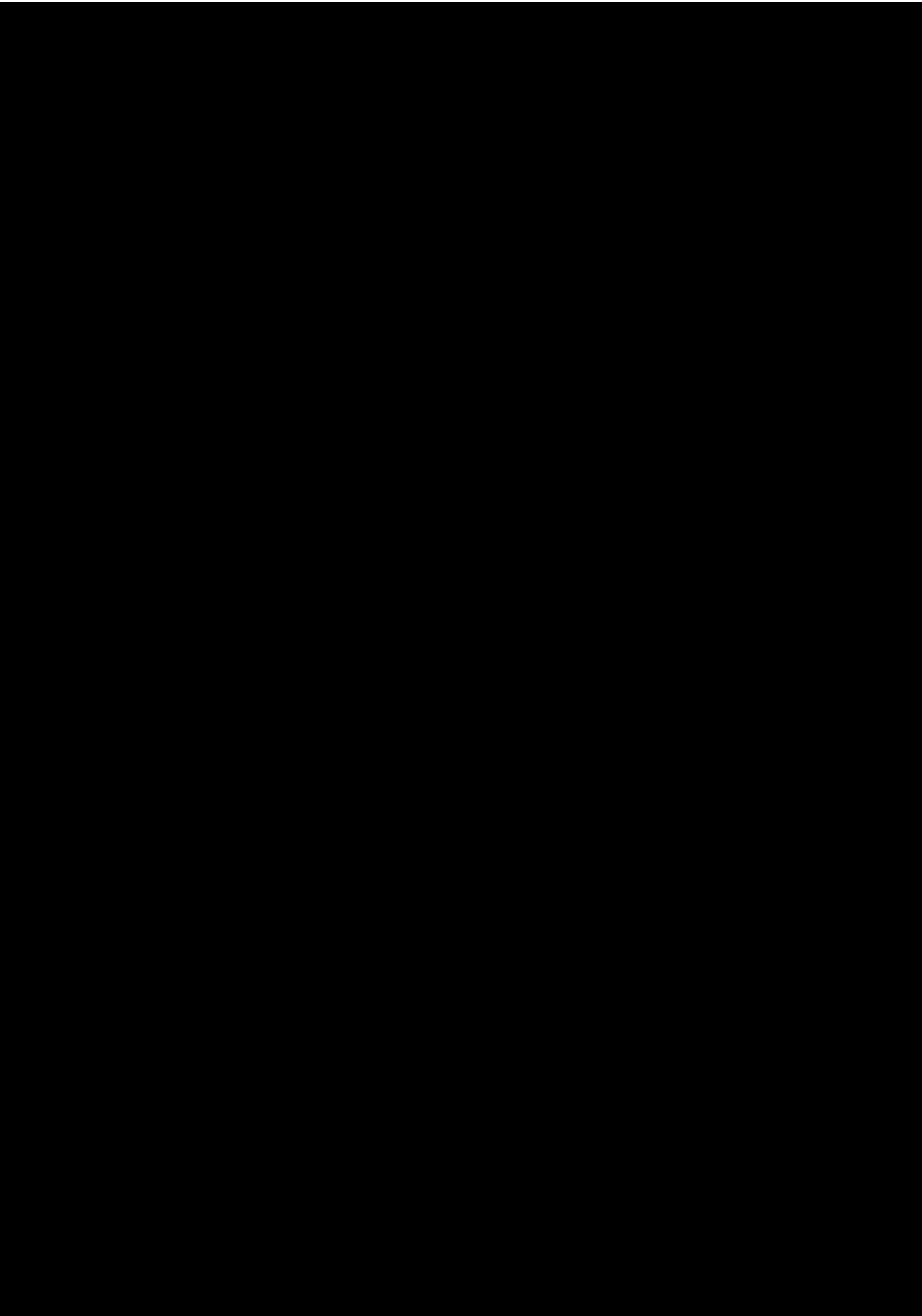


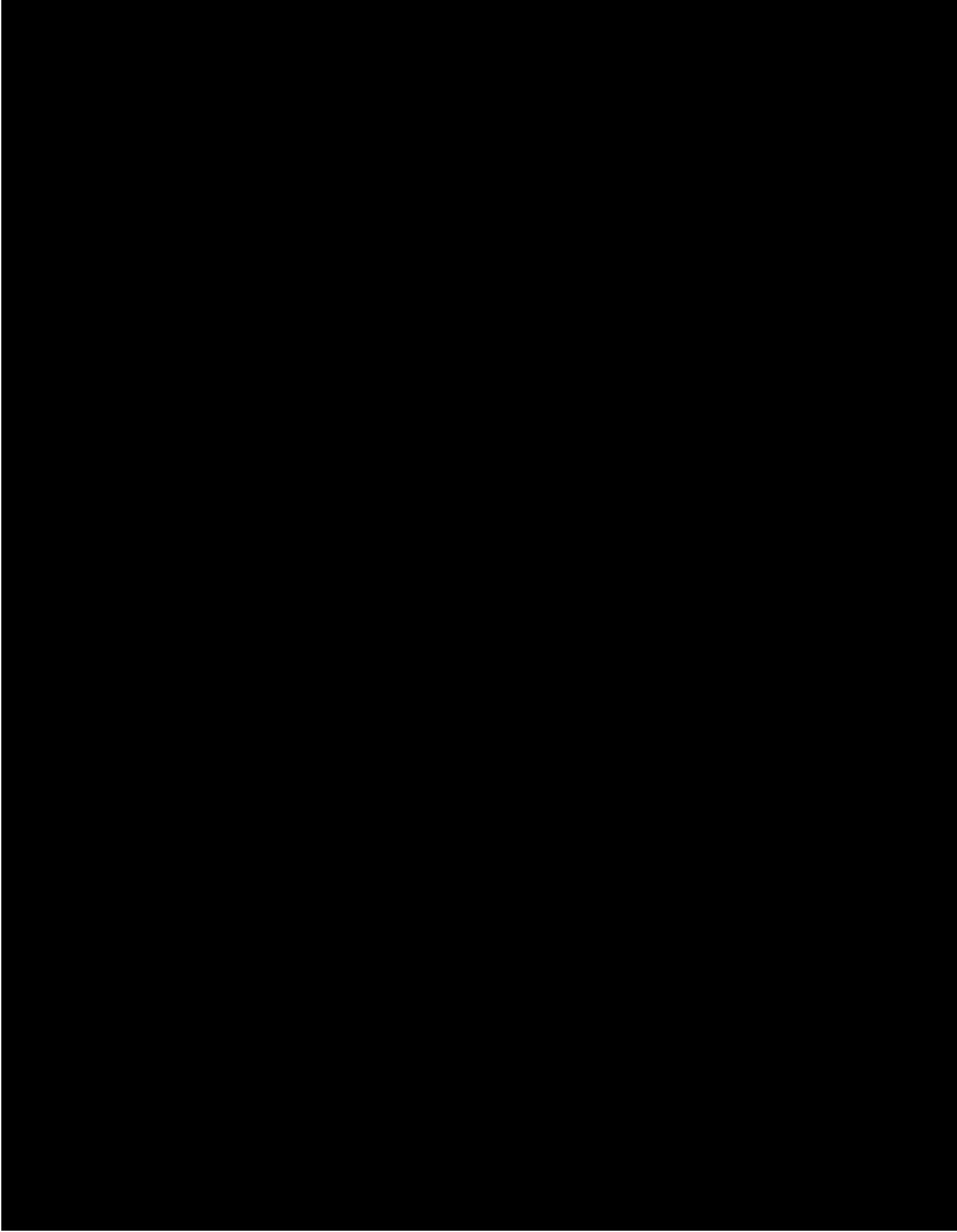
**VIABILITY AND  
DELIVERABILITY  
DUXFORD – CALL FOR  
SITES 2019**

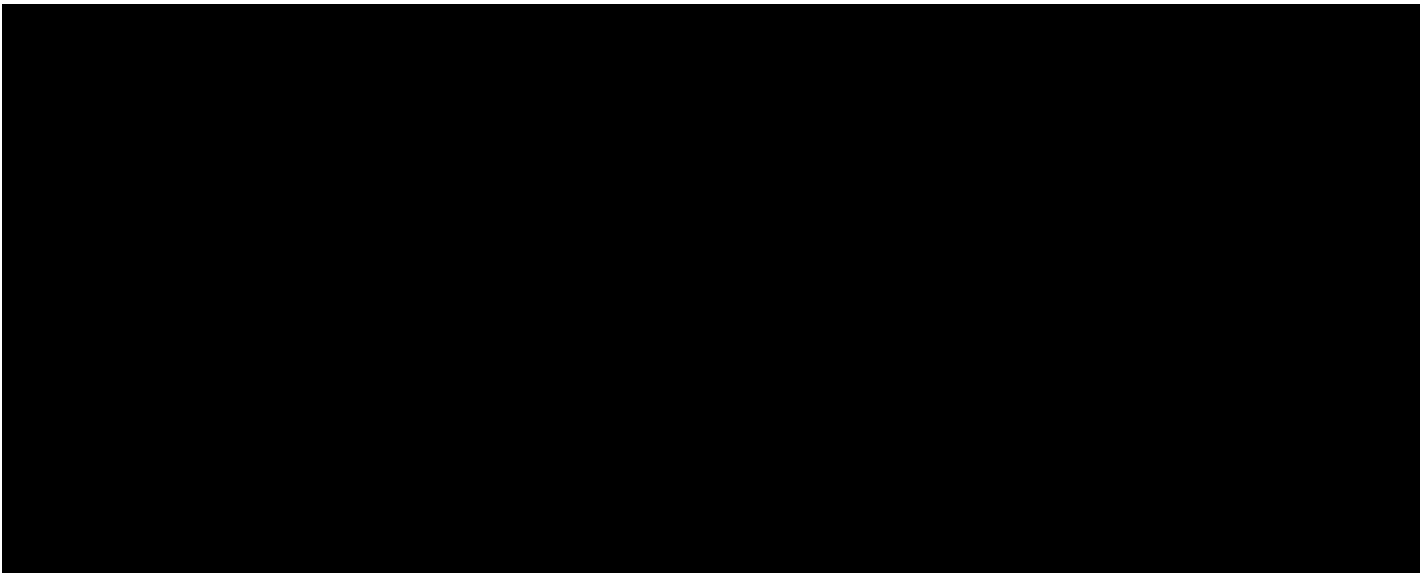
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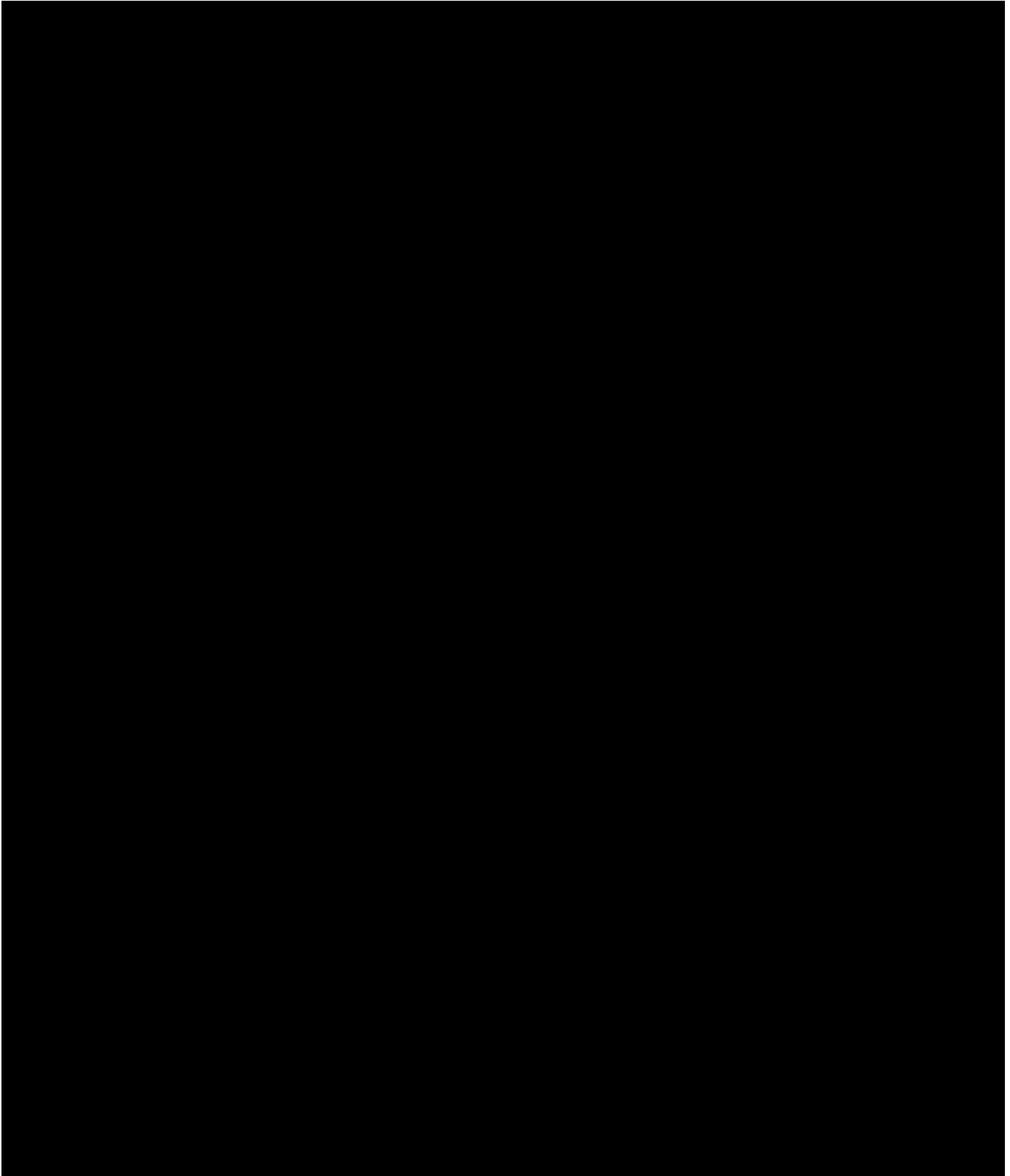


















# Gonville & Caius

**DUXFORD: Call for Sites (2019)**



**APPENDIX 5**

**IMPERIAL WAR MUSEUMS**

**Letter of support**



**IWM DUXFORD**

Cambridgeshire  
CB22 4QR

[iwm.org.uk](http://iwm.org.uk)



Martyn Chase  
Gonville & Caius College  
Trinity Street  
Cambridge  
CB21TA

6<sup>th</sup> November 2019

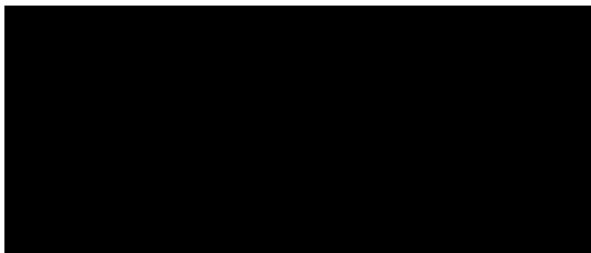
Dear Martyn

### **Proposed Development at Duxford**

I write in connection with the submission by Gonville & Caius College Cambridge as part of the recent 'call for sites' (2019) by the local planning authorities, for potential development on a site adjoining Duxford village, which would include a sustainable mixed-use development to the east of the M11. The development would include a proposed centre of excellence for UK general aviation and aerospace research and development (an 'AvTech Cluster'), building on the existing group of companies around IWM and the wider science and technology cluster around Cambridge.

Imperial War Museums (IWM) Duxford is unique in Europe as site which brings together historic Aviation museums and associated archives, and an active airfield especially suited to the operation, display, and maintenance of historic aircraft. As such, Duxford is more than just an airfield with a museum; it is a location of national significance in the UK's aviation heritage and the priority for Duxford/IWM is to maintain this unique position. The recently adopted Local Plan (Policy E/7) is fully supportive of IWM and its special position as a major tourist / visitor attraction, educational and commercial facility. It further states that proposals will be considered with regard to the particular needs and opportunities of the site and any proposals involving the use of the estate and its facilities for museum uses or non-museum uses must be complementary to the character, vitality and sustainability of the site as a branch of the IWM.

IWM already has strong links with Gonville & Caius College, from whom it originally purchased land for the airfield in 1917. Today the airfield is still surrounded on three sides (west, south and east) by land owned by the College. There is therefore significant mutual interest in developing activity that has a high degree of synergy with IWM and the operations on the airfield. IWM therefore sees great potential in, and is fully supportive of, the proposed development.



Commerce and Operations  
Imperial War Museums



# Gonville & Caius

**DUXFORD: Call for Sites (2019)**



## **APPENDIX 6**

**DEPARTMENT OF ENGINEERING, UNIVERSITY OF CAMBRIDGE**

**Letter of support**



Philip M Guildford  
Director of Strategy and Operations



## Department of Engineering

30 October, 2019

Ref: PMG/jh

Dear Martyn

### Proposed Development at Duxford

I write in connection with the submission by Gonville & Caius College Cambridge as part of the recent 'call for sites' (2019) by the local planning authorities, for potential development on a site adjoining Duxford village, which would include a sustainable mixed-use development to the east of the M11. The development would include a proposed centre of excellence for UK general aviation and aerospace research and development (an 'AvTech Cluster'), building on the existing group of companies around the Imperial War Museum and the wider high-technology cluster around Cambridge.

The Department of Engineering is the largest department in the University of Cambridge with approximately 1200 undergraduate students, 900 postgraduate students and 400 postdoctoral researchers. Research and teaching spans all of the engineering disciplines in this highly integrated department, which, together with scale, gives the Department a unique advantage – the ability to combine skills and expertise to address almost any industrial challenge.

Aviation technology is of particular interest to the Department, because:

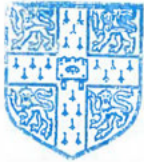
- the Whittle Laboratory, world-famous for turbomachinery research, is being expanded to house the National Centre for Propulsion and Power with support from the UK Government's Aerospace Technology Institute (ATI), Rolls-Royce, Mitsubishi Heavy Industry, Siemens, Dyson and the University
- the Department has many other partners working on machine learning, machine intelligence, robotic vision, control, electric and hybrid systems, advanced materials, additive manufacturing, batteries and many other technologies vital for the future of aviation
- the Department's work on smart infrastructure and agritech is creating exciting applications for the latest avtech to save resources, reduce emissions and boost productivity.

The Department of Engineering is fully supportive of the proposed development at Duxford and sees potential in the future for collaboration with firms that could form a cluster of activity on the site. This could support various new and exciting technological developments in the aviation and aerospace industries and would build on the presence of various other high-technology companies in the Cambridge area that have overlaps with the aerospace sector.

Yours sincerely



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# Gonville & Caius

**DUXFORD: Call for Sites (2019)**



**APPENDIX 7**

**UPDATED MASTERPLAN**



