ANNEXURE 8

PRE-APPLICATION SUBMISSION TO CENTRAL BEDFORDSHIRE COUNCIL

ANNEXURE 8 - PRE-APPLICATION SUBMISSION TO CENTRAL BEDFORDSHIRE COUNCIL

2 August 2019
CAPL 437702/PR

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PRIVATE AND CONFIDENTIAL

Dear Jennie,

Planning Investigation of Options for Relocation of Marshall Aerospace Defence Group Functions from Cambridge Airport to Cranfield.

I am writing to request your Council's informal views on the potential relocation of Marshall from Cambridge to Cranfield. Savills are providing planning consultancy advice to Marshall Aerospace Defence Group (MADG) following their recent public announcement that they intend to relocate from their current operating base at Cambridge Airport. MADG have a unique reputation for their world class applied engineering services and technology business and the prospect of relocation offers significant benefits and opportunities for the community in the chosen location. The most high-profile element of the business is involved in maintenance, conversion and modification of military, civil and business aircraft and it is understandably reliant on being located at an operational airfield. Marshall also seek to relocate its Land Systems business which designs and makes mobile equipment to provide urgent or temporary deployment of emergency and military services throughout the world.

You may have seen from the reports in the press that the site currently occupied by Marshall at Cambridge Airport is part of a strategic development opportunity being safeguarded by Cambridge City Council and South Cambridgeshire District Council in their current Local Plan for development beyond 2030. Marshall has put the Cambridge Airport site forward for redevelopment in the Call for Sites as officers are aware. The masterplan for that development will necessitate the relocation of the current business. MADG has undertaken a thorough search of all the identified airfields in a two-hour travel time from Cambridge. The search has been narrowed according to some readily identifiable

constraints relative to the scale of the MADG operation, reducing the number of locations currently being considered to three, Cranfield, Duxford and Wyton.

MADG have instructed a team of specialists to undertake an initial appraisal of each of the sites in order for them to identify a preferred location on which to focus attention, with the prospect of preparing and submitting formal pre-application submissions and then, for the preferred location, commencing preparation of an outline planning application. We have not yet reached that stage however, and my reason for writing at this point is to seek your Council's initial views about the potential for MADG to successfully relocate to Cranfield Airport.

We have already met with you and explained this context **and discussed in general terms the commercial sensitivities that have led us to mark all correspondence Private and Confidential.** We recognise that you may be asked to release the information under FOI or EIR and under those circumstances you may be obliged to do so. Apart from this we are sharing information as widely as we feel we can whilst protecting the sensitivities discussed and we understand you will respect this approach as best you can. It is hoped that the enclosed package of information will enable you, your colleagues and appropriate Members of the Council to understand, at a relatively high level, the key aspects of the MADG business as it would bring changes to the local community, economy and environment in order to reach an initial view about whether or not you could support, in principle, an application for relocation to Cranfield. Key positive aspects of the business are:

- High quality engineering employment for up to 1,500 personnel
- Strong synergies between MADG and the aerospace, engineering and management focus of the world class Cranfield University and existing campus tenants
- Contribution to sustaining airport infrastructure whilst generating relatively very low aircraft landing and take-offs.
- Local economic benefits from increased local spend

MADG has been in exploratory discussions with Cranfield University for a number of months and both parties are confident that commercial, technical and practical matters can be agreed between the parties.

We hope that you will be able to engage with us over the next eight weeks and be able to provide us with your initial views by the end of September. We intend to share the information we are submitting here with local council members and their community in a managed way over the same timescale. The accompanying documents broadly describe the elements of development needed to support the MADG business, with buildings serving the following functions:

MADG

- Facilities (GIA 17,511 sq.m.)
  This floorspace supports operations in the hangar including manufacture, storage, non-destructive testing, engine bay workshop, component workshop

- HQ Building (GIA 6,000 sq.m.)
  Comprises the centre for the administration of Marshall's business and will hold administrative offices, meeting spaces and staff support areas such as a café, gym, showers etc.
- Engine Pen (3,800 sq.m.)
  Indicates the location for an external area that may be fully or partially enclosed to attenuate noise arising from aircraft engine testing. Aircraft engines will be powered up and run at varying power settings and durations as part of the testing and maintenance regime.
- C130 Hangar Bays (GIA 5,200 sq.m.)
- A400M Hangar Bays (GIA 19,656 sq.m.)
- C17 Hangar Bays (GIA 35,072 sq.m.)
  Each of the hangars is referred to by the type of aircraft that the hangar can accommodate; Boeing C17, Airbus A400M and Lockheed C130. To accommodate these aircraft the hangars vary in height; 26m for C17, 24m for A400M and 22m for C130. Each hangar will also include engineering offices, workshop, stores and rest facilities.
- Paint Shop (GIA 6,808 sq.m.)
  This will be a specialist enclosed hangar for painting aircraft. Fumes and paint residue will not be discharged from this building.
- The plan also indicates the likely site take-up for associated parking and hard-surfaced circulation areas, both airside and non-airside and potential runway extension.

Land Systems

- Building (GIA 15,720 sq.m.)
  This building comprises warehousing, production space, office/administration areas, small stores and plant, staff welfare facilities
- External areas for staff and visitor parking, delivery and dispatch yards for HGV, external storage area.

As part of the initial work to reduce to three possible options the consultant team has studied the facilities available at Cranfield and is now exploring the feasibility of achieving all of the functional requirements set out above in order to further narrow the number of possible options for relocation.

As you might expect, each of the three sites being investigated has a different range of planning considerations. We recognise that a potential development of the scale and nature envisaged would necessitate an outline planning application, supported by an Environmental Statement. Our experienced team have begun to look at all the recognised material considerations in each case. At this stage however it is necessary to try to reach some broad conclusions about the suitability and level of risk associated with pursuing each of the options through to an outline planning application.

In the case of Cranfield, the team has identified the following important factors:

- A willing landowner in Cranfield University whose holdings appear at this stage to have the capacity to accommodate all the identified MADG business components
- Local Development Framework Policies that appear to be framed positively in relation to the development of land for aviation-related business purposes at Cranfield Airport
- The support of the Local Planning Authority for a substantial amount of built development on the site, based on the grant of planning permission for the Air Park development (CB/17/05862/OUT) in June 2018
- A strong strategic location in the Oxford to Cambridge Arc and clustering advantages with existing high tech and specialist engineering businesses
- A strong pool of potential training and employment in surrounding urban areas

We have then identified the aspects of the MADG requirements that we consider most likely to be the major issues influencing the outcome of any future planning application. We realise that the range of issues is much wider and you might advise us that other considerations will be as or more important than those we have identified. This is one of the matters we would like you to address in your response to us at the end of September. Equally, we recognise that a number of site specific matters would need to be addressed through detailed design and that it is too early to get into these matters at this stage. However, the list of issues we have identified at this stage is;

- Traffic
  Modelling and consideration of employee shift and travel patterns are needed to forecast impacts on local traffic levels

- Noise from flying activities and ground engine testing
  Because the MADG business forecast is for only up to 1,000 aircraft ground movements per annum and an average of one take-off and landing per day, the impact of flying activities associated with the business operation here would be greatly reduced in comparison to the number of flights generated by the permitted Air Park development.
  Once aircraft have undergone maintenance, conversion or overhaul it is necessary to undertake engine ground running at varying power levels to prove the safety and airworthiness of aircraft before they depart. Such tests can create noise impacts. Marshall have experience of managing these impacts at their current site adjoining the built-up area of Cambridge and our noise consultants are assessing the potential impacts and mitigations that might be involved at Cranfield.

- Visual impact of new buildings
  The hangars required to accommodate the business would have a greater height and therefore may be more noticeable in the landscape than those permitted in the Air Park application.

Our team has begun looking at each of these matters and we are enclosing three position statements that set out the nature of the issues, the approach being taken to investigating

them and the potential outcomes where predictable at this stage. These position statements and illustrative material reflect the work being developed by the consultant team and over the next eight weeks we will be pleased to have relevant consultants share with you any further information we have found or produced and to discuss the issues, to help your team reach some initial views about the suitability of the airport to accommodate and support the business operations described.

Also enclosed are:

- The Marshall prospectus document
- A plan identifying the extent of the area being investigated
- A 'proving' masterplan layout to illustrate the potential extent of operational development relative to the area of investigation
- Illustrative views of the potential buildings required, based on the proving masterplan layout
- Initial illustrations of the site from key visual receptors used in the ES that accompanied the Air Park planning application in 2017
- Drawings to compare the scale and massing of the consented Air Park scheme with the preliminary MADG proposals

The purpose of this letter has been to set out the context for the enquiries we are now making of the Council and explain the nature of the business and its potential impacts as we see them. We look forward to engaging further with you and your colleagues over the next few weeks with the aim of reaching an understanding of the Council's initial views as to the merits and main planning considerations likely to be involved in the relocation of the MADG operation to Cranfield airport. This information will then be used by our clients to decide whether or not these investigations warrant taking their proposals to the point of formal pre-application discussions.

Please contact me to discuss and arrange any follow up meetings you would like to have, once you have circulated the information around your team.

Yours sincerely,

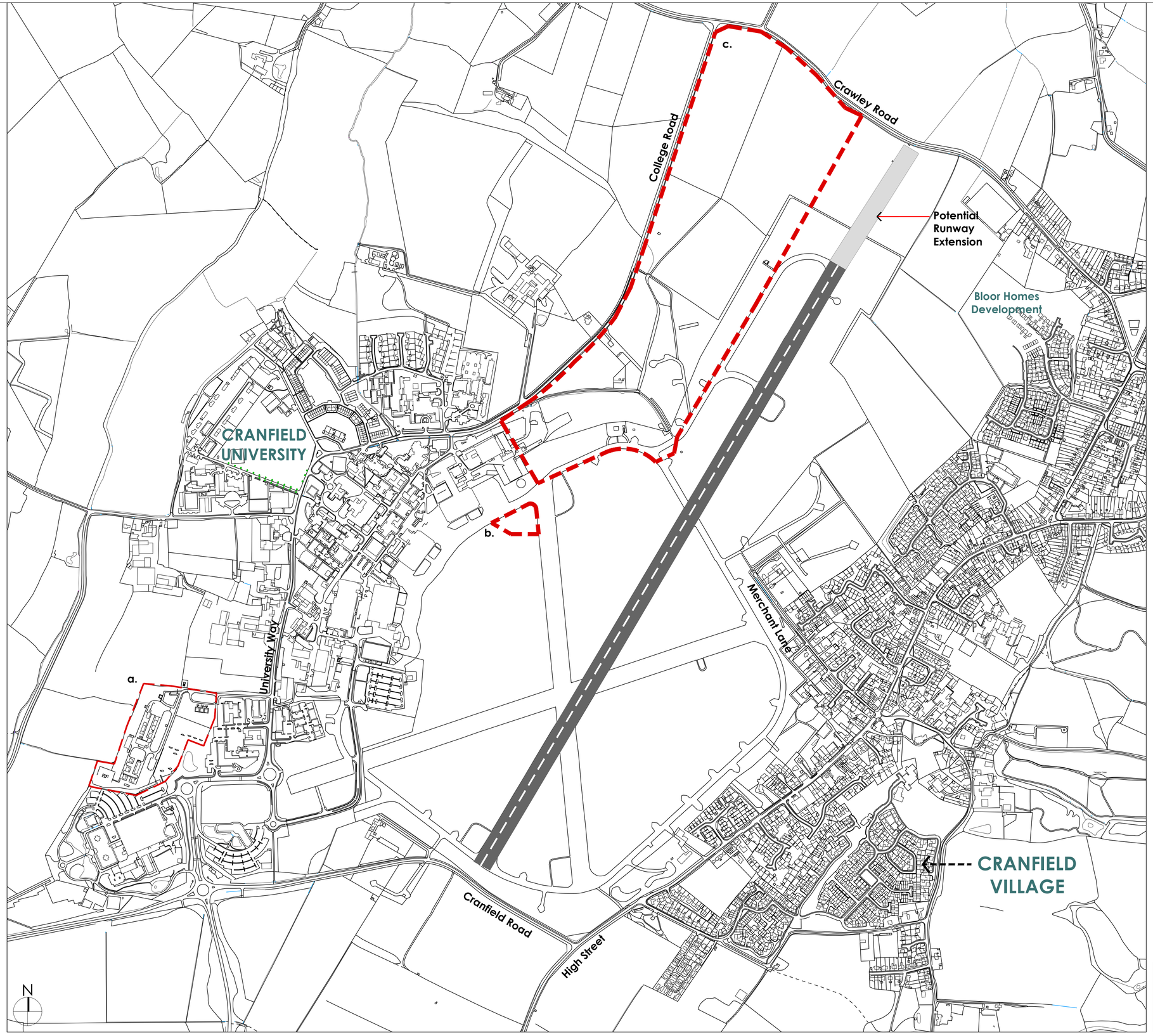
Paul Rowland DipEnvP MRTPI
Director

List of enclosures:

1. Marshall prospectus

Continued overleaf……..

2. 1301-GTA-CRA-SK-100 Area of Investigation
3. 1301-GTA-CRA-SK-101 Constraints Plan
4. 1301-GTA-CRA-SK-102 Context Plan
5. 1301-GTA-CRA-SK-104 Land Systems
6. 1301-GTA-CRA-SK-105 Comparison with Permitted Scheme
7. 1301-GTA-CRA-SK-106 Comparison Runway Elevation
8. 1301-GTA-CRA-SK-107 Block Plan
9. 1301-GTA-CRA-SK-109 Aerial View 1
10. 1301-GTA-CRA-SK-110 Aerial View 2
11. Highways Position Statement - Stantec.
12. Landscape Visual Impact Position Statement – LDA
13. Noise Position Statement – Noise Consultants



Area of Investigation **47.26ha**

Existing Runway

Potential Runway Extension

0 100 200 300 400 500 600 700 800 900 1000m

Areas (hectares)
a. 5.25
b. 0.60
c. 41.41
Total - 47.26 ha

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Rev.	Description	Revision Date	Chckd	Approved
P01	INFORMAL SUBMISSION	26.07.2019	FH	DT

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Client: MARSHALL AEROSPACE

Project: BETA II

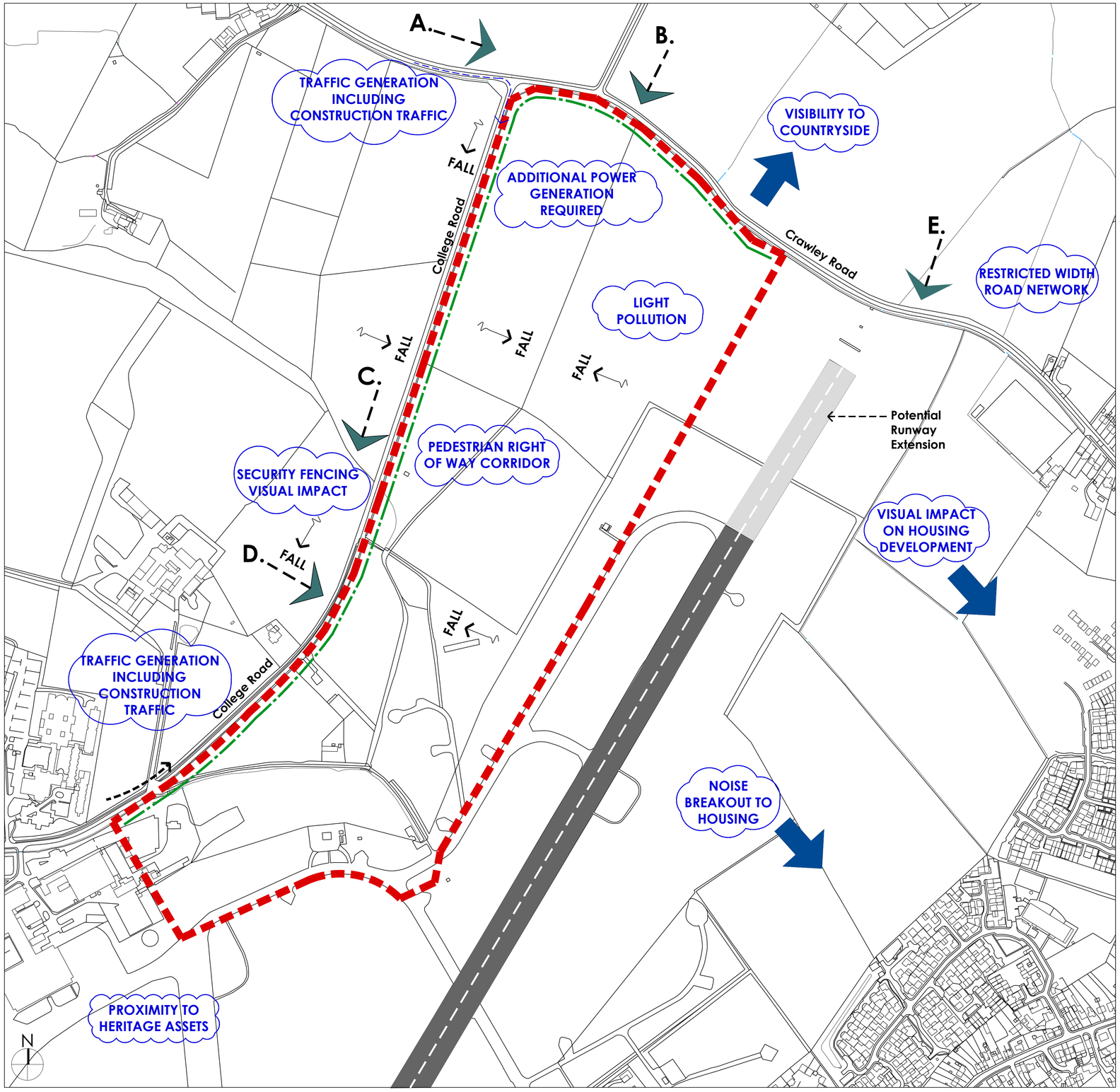
Title: INDICATIVE MASTERPLAN
CRANFIELD
AREA OF INVESTIGATION

Suitability description: SUITABLE FOR REVIEW+COMMENT

Scale	Drawn	Checked	Approved	Suitability	Project No	Date
1:5000	SL	DT	DT	S3	1301	22.07.2019

Code - Originator - Stage/Option - Level - Doc - Role - Class - Identifier: **1301-GTA-CRA-SK-100**

Revision: **P01**



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P01	INFORMAL SUBMISSION	26.07.2019	FH	DT

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Client
MARSHALL AEROSPACE

Project
BETA II

Title
INDICATIVE MASTERPLAN
CRANFIELD
SITE CONSTRAINTS PLAN

Suitability description
SUITABLE FOR REVIEW+COMMENT

Scale	Drawn	Checked	Approved	Suitability	Project No	Date
1:3000	SL	DT	DT	S3	1301	22.07.2019

Code - Originator - Stage/Option - Level - Doc - Role - Class - Identifier
1301-GTA-CRA-SK-101

Revision
P01

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2500
2000
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500
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Project
BETA II

Title
INDICATIVE MASTERPLAN
CRANFIELD
CONTEXT PLAN

Suitability description
SUITABLE FOR REVIEW+COMMENT

Scale	Drawn	Checked	Approved	Suitability	Project No	Date
1:20000	SL	DT	DT	S3	1301	10.07.2019

Code - Originator - Stage/Option - Level - Doc - Role - Class - Identifier
1301-GTA-CRA-SK-102

Revision
P01

A.

A. View from South East
B. Block Plan
C. Roof Plan

B.

C.

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P01	INFORMAL SUBMISSION	26.07.2019	FH	DT

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Client
MARSHALL AEROSPACE

Project
BETA II

Title
INDICATIVE MASTERPLAN
CRANFIELD
LAND SYSTEMS

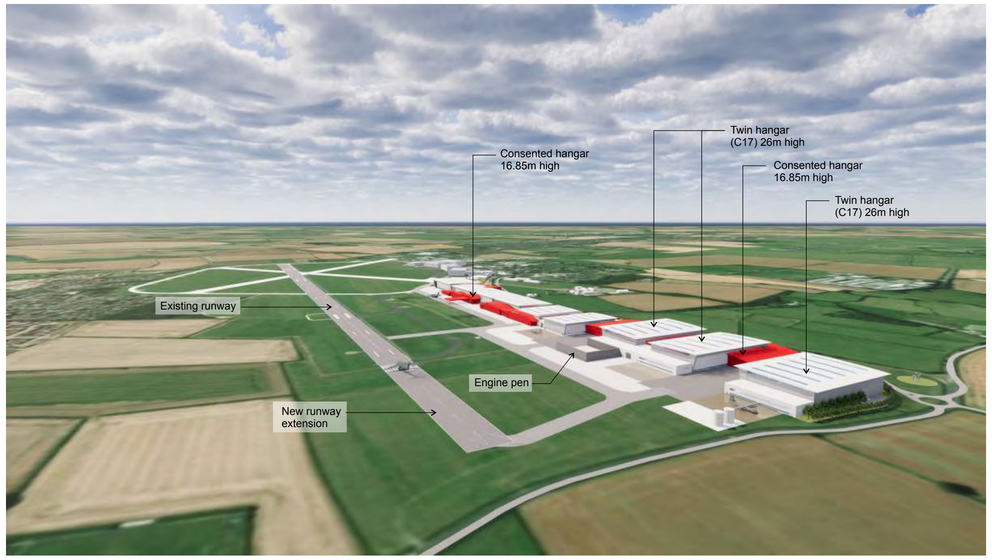
Suitability description
SUITABLE FOR REVIEW+COMMENT

Scale	Drawn	Checked	Approved	Suitability	Project No	Date
1:3000	SL	DT	DT	S3	1301	22.07.2019

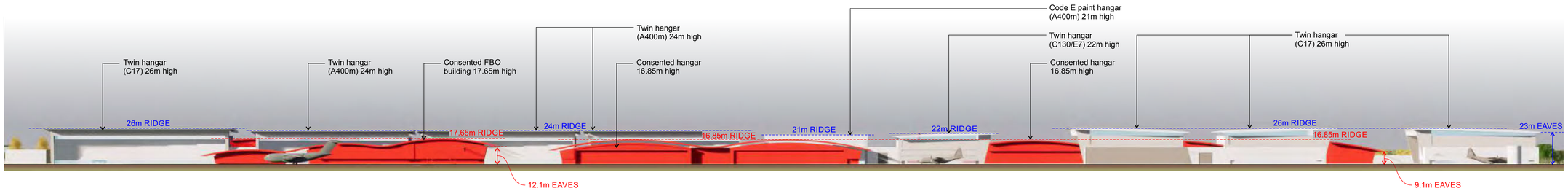
Code - Originator - Stage/Option - Level - Doc - Role - Class - Identifier
1301-GTA-CRA-SK-104

Revision
P01

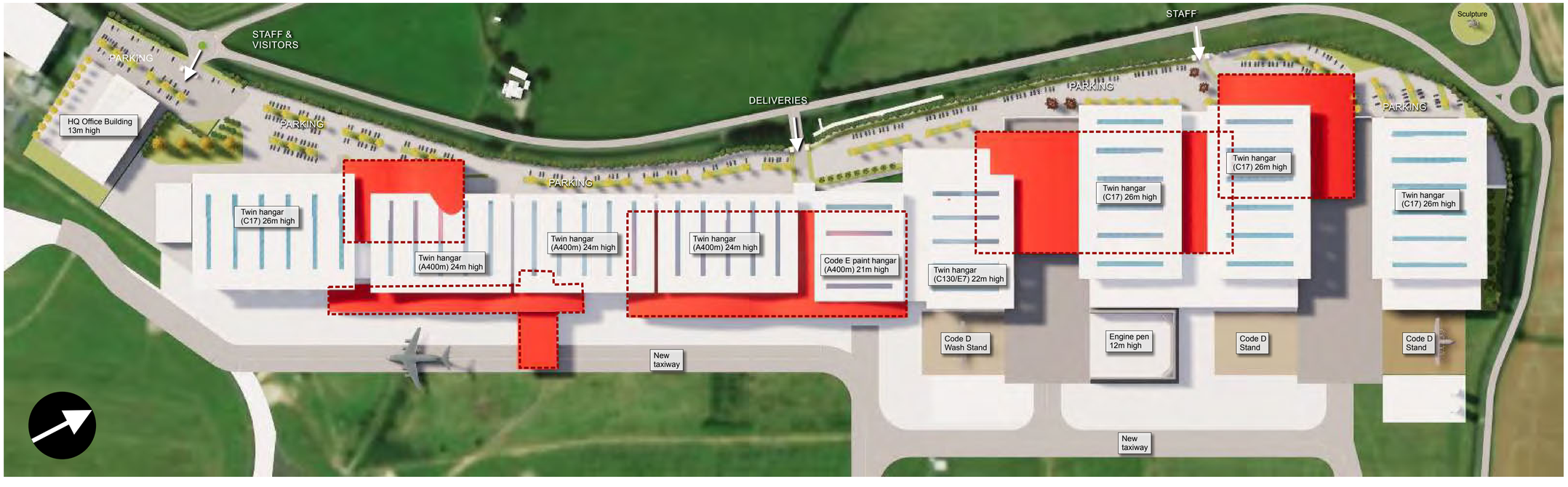
1. COMPARISON AERIAL VIEW LOOKING TOWARDS THE NORTH-EAST



2. COMPARISON AERIAL VIEW LOOKING TOWARDS THE SOUTH-WEST



2. RUNWAY ELEVATION COMPARISON (Consented scheme shown in red)



4. ROOF PLAN COMPARISON (Consented scheme shown in red)

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P01	26.07.2019	Informal Submission	FH	DT

Key Plan

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MARSHALL AEROSPACE

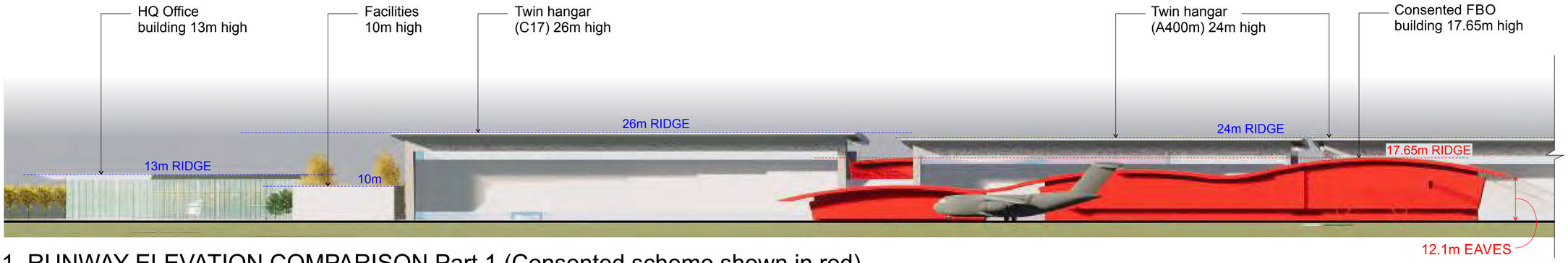
Project
BETA II

Title
Indicative Masterplan
Cranfield
Comparison with Permitted Scheme

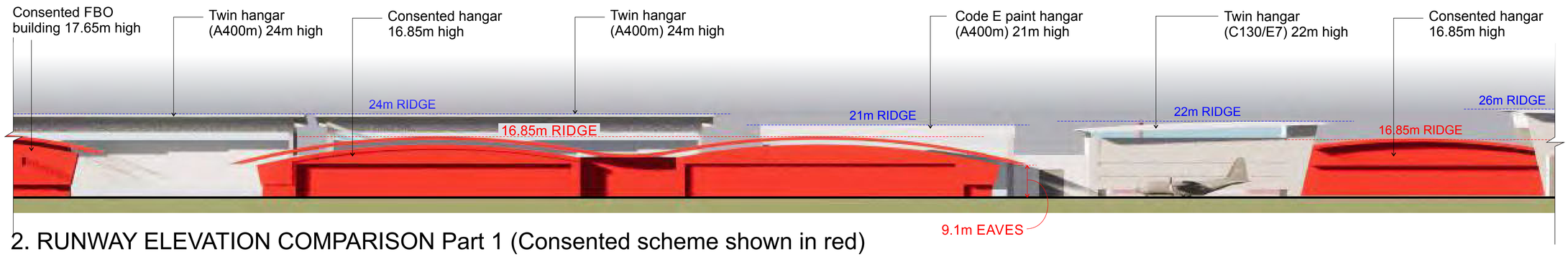
Original Scale	Drawn By	Date	Checked By	Author	Status
nts	FH	09.07.2019	SB	DT	S3

Drawing Number
1301-GTA-CRA-SK-105

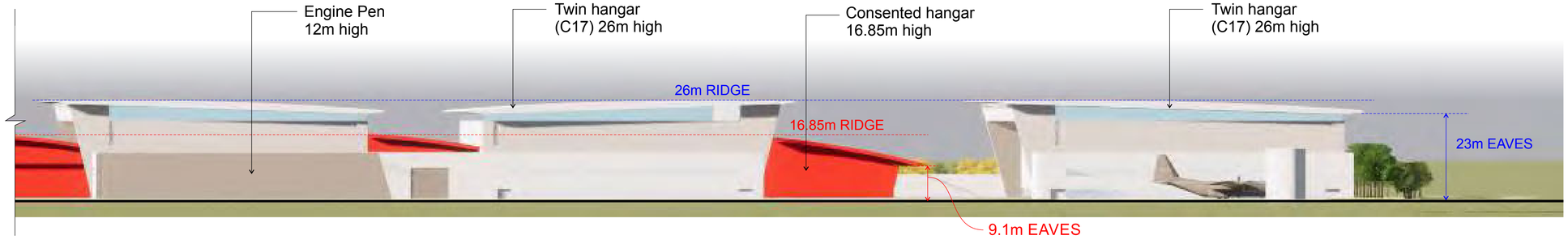
Version
P01



1. RUNWAY ELEVATION COMPARISON Part 1 (Consented scheme shown in red)



2. RUNWAY ELEVATION COMPARISON Part 1 (Consented scheme shown in red)



3. RUNWAY ELEVATION COMPARISON Part 1 (Consented scheme shown in red)

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P01	26.07.2019	Informal Submission	FH	DT

Key Plan

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MARSHALL AEROSPACE

Project

BETA II

Title

Indicative Masterplan
Cranfield
ComparisonRunway Elevation

Original Scale	Drawn By	Date	Checked By	Author	Status
nts	FH	09.07.2019	SB	DT	S3

Drawing Number: 1301-GTA-CRA-SK-106

Version: P01

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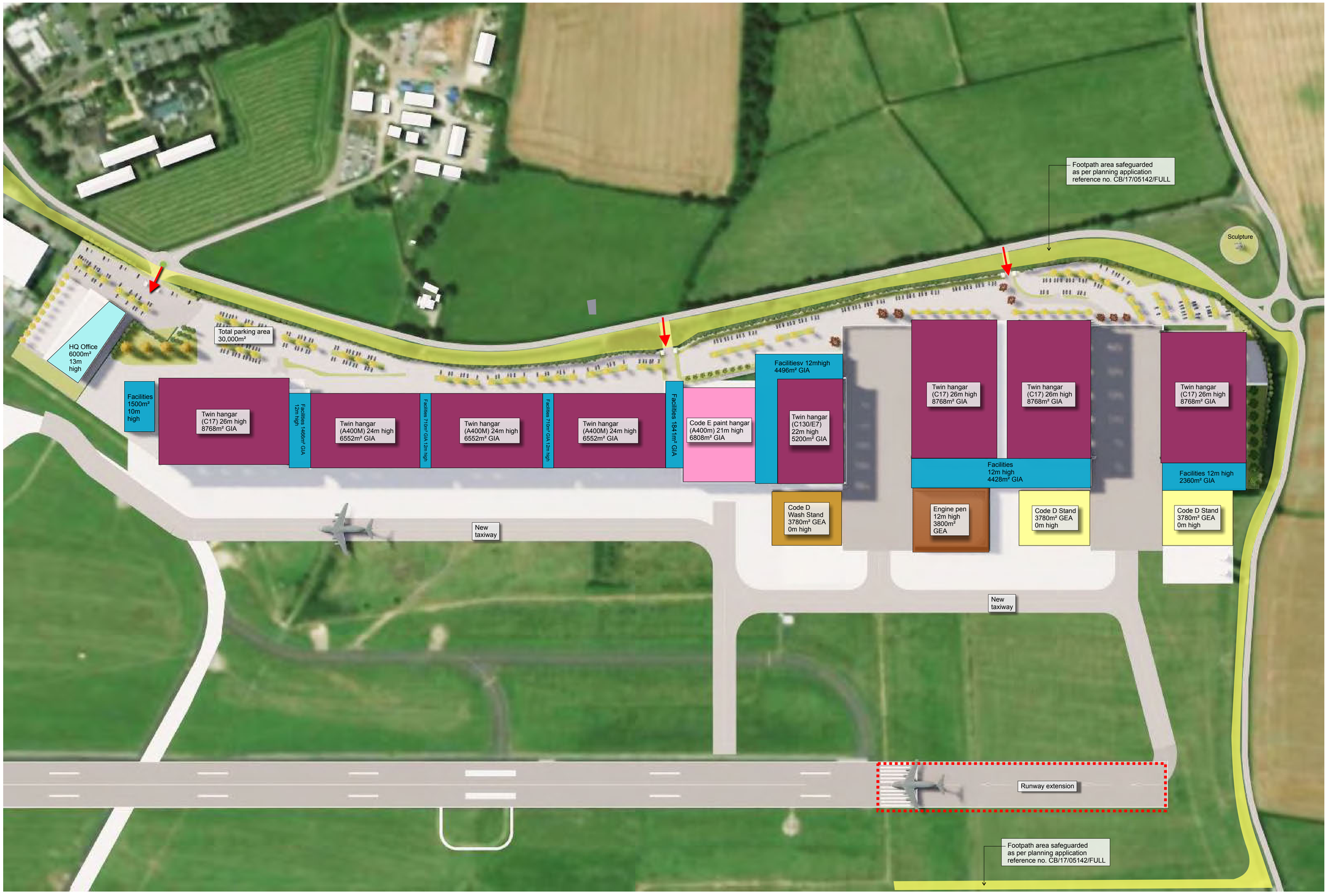

NOTES:

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

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

Areas labelled as Facilities are to include:

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

Ver	Date	Description of Change	Drn	Auth
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Client
MARSHALL AEROSPACE

Project
BETA II

Title
Indicative Masterplan
Cranfield
Block Plan

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

Drawing Number
1301-GTA-CRA-SK-107

Version
P01

1. AERIAL VIEW LOOKING TOWARDS THE SOUTH-EAST

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Ver	Date	Description of Change	Drn	Auth
P01	26.07.2019	Informal Submission	FH	DT

Key Plan

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Client

MARSHALL AEROSPACE

Project

BETA II

Title

Indicative Masterplan
Cranfield
Aerial View 1

Original Scale	Drawn By	Date	Checked By	Author	Status
nts	FH	09.07.2019	SB	DT	S3

Drawing Number

1301-GTA-CRA-SK-109

Version

P01

1. AERIAL VIEW LOOKING TOWARDS THE WEST (EAST ELEVATION OF BUILDINGS)

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Ver	Date	Description of Change	Drn	Auth
P01	26.07.2019	Informal Submission	FH	DT

Key Plan

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Client
MARSHALL AEROSPACE

Project
BETA II

Title
Indicative Masterplan
Cranfield
Aerial View 2

Original Scale	Drawn By	Date	Checked By	Author	Status
nts	FH	09.07.2019	SB	DT	S3

Drawing Number
1301-GTA-CRA-SK-110

Version
P01

now part of

Relocation of Marshall Aerospace & Defence Group

Phase 3: Proposed Approach to Transport Appraisal Work for Cranfield

Transport Position Statement for Pre-Application Submission

On behalf of

Project Ref: 46572/5501 | Rev: A | Date: August 2019

Registered Office: Buckingham Court Kingsmead Business Park, London Road, High Wycombe, Buckinghamshire, HP11 1JU
Office Address: 50-60 Station Road, Cambridge

Document Control Sheet

Project Name: **Relocation of Marshall Aerospace & Defence Group**

Project Ref: **46572**

Report Title: **Phase 3 Outline Methodology Scope – Cranfield**

Doc Ref: **46572/04**

Date: **August 2019**

	Name	Position	[redacted]	Date
Prepared by:	Katie Stannard	Associate	[redacted]	01/08/19
Reviewed by:	Elliot Page / Matthew Ingrey	Director of Transport	[redacted]	01/08/19
Approved by:	Elliot Page	Director of Transport	[redacted]	01/08/19
For and on behalf of Peter Brett Associates LLP				

Revision	Date	Description	Prepared	Reviewed	Approved

Contents

1 Introduction

1.1 Introduction

1.1.1 Marshall Aerospace and Defence Group (MADG) has appointed Peter Brett Associates LLP (PBA), now part of Stantec, to undertake a high-level Transport Appraisal into the feasibility of relocating the Marshall business currently based in Cambridge to one of the following alternative sites:

- Cranfield Airport
- Wyton
- Duxford

1.1.2 The objectives for this study have been set by MADG and the work is to be completed and reported in full by late September 2019. The study will be used by the MADG Board to consider the relative merits of each site alongside an array of other technical and commercial matters. NDAs have been signed by PBA in relation to the project.

1.2 Purpose of this document – Potential Relocation to Cranfield

1.2.1 This position statement forms part of a package of initial information which accompanies a request to Central Bedfordshire Council (CBC) for informal, pre-application advice on the potential relocation site of Cranfield. We are also sending the information to the following highway authorities with a request that they discuss the issues with SCDC to enable a view to be provided to Marshall by the end of September 2019:

- CBC, highway authority for local roads;
- Highways England, highway authority for the A421 and M1.

1.2.2 This document sets out the outcomes sought from the study by MADG, how PBA is undertaking the study to meet these objectives, the way in which key matters will be reported and how transport related conclusions will be reported to the client. This project is not a planning application and therefore the final reporting will be the high-level Transport Appraisal rather than a Transport Assessment.

1.2.3 Through this document and the response to it, feedback on the approach being pursued is requested but it should be noted that the timescales do not allow for detailed methodological discussion and agreement.

1.2.4 Therefore, the nature of the advice sought on the high-level Transport Appraisal's approach and assessment methodology is commensurate with the strategic nature of the study. It is accepted that all advice provided in response to this study will be caveated until such time that further detail can be provided and agreed through subsequent stages of the planning process.

1.3 Advice Sought & Project Objectives

1.3.1 By way of written response to this position paper, we would request that the following matters are considered by the respective highway authorities for the potential relocation to Cranfield:

- That the work being undertaken is suitable for a high-level appreciation of the transport benefits and challenges of the site.

- That the identified key issues relevant to the site have been described and reported accurately and if further information is available to the highway authorities, this is provided to PBA to supplement the study.

- That the report has appropriately described, at the time of writing, the respective authority's commitment to any strategic network improvements that the site and proposals may need ultimately need to contribute to.

- That the report has identified the basis of a sustainable transport strategy to be developed further in due course with further detail, including Travel Plan.

- That the locations requiring potential mitigation, whilst not designed or fully agreed, have been identified and that the potential to mitigate the issues has been explored at a high level and reported accurately.

- That in due course a Transport Assessment and associated necessary modelling will need to be undertaken to develop this work to an appropriate level of detail to support an Outline Planning application.

1.3.2 The primary objective from the entire study is to allow the MADG Board to identify a preferred site and a viable alternative. The advice sought on transport matters will inform this considered decision.

1.3.3 Separate transport position statements have been prepared for Wyton and Duxford and submitted to the relevant planning and highway authorities. These separate statements set out the same project objectives and broad scope and assessment methodology for the transport appraisal work of these other potential relocation sites, and seek the same advice as requested in this position statement for Cranfield. This is so that there is consistency in the scope of responses on the alternative site locations from the respective highway authorities to the submission of information. This allows a comparison to be made by the MADG Board across the three sites.

1.4 Structure of this note

1.4.1 The following sections of this note are structured as follows:

- Section 2: Outcomes sought from the study by MADG;

- Section 3: Relevant transport contexts

- Section 4: Methodology and detailed scope

- Section 5: Proposed reporting structure

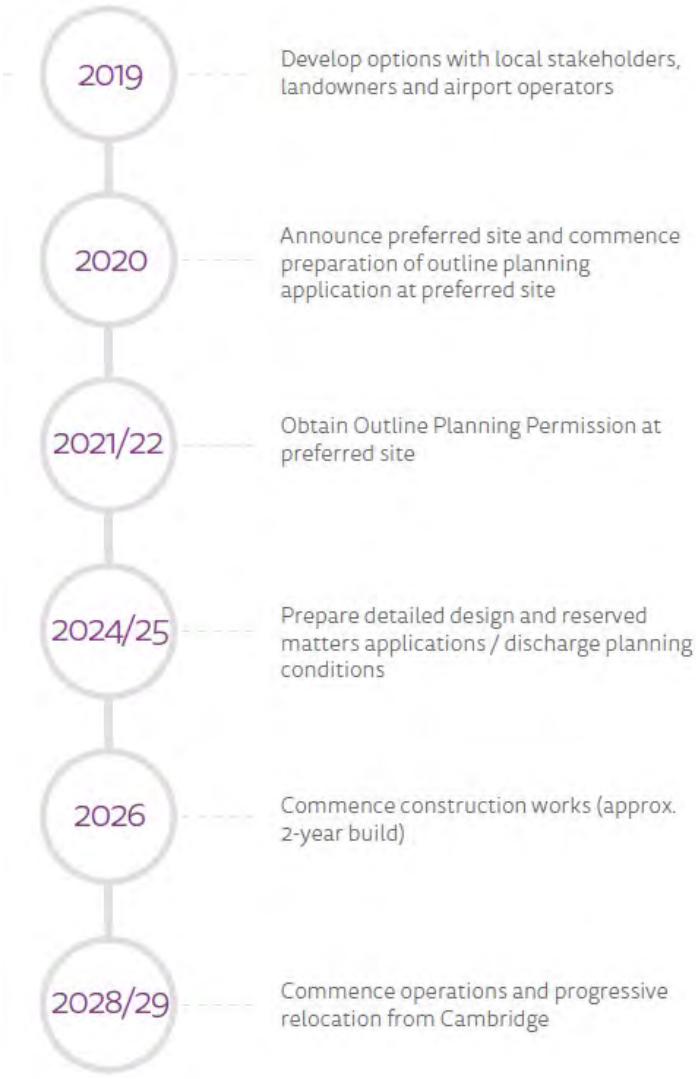
2 Marshall Aerospace & Defence Group

2.1 Background to MADG

2.1.1 The Marshall Aerospace and Defence Group business (MADG) is one of the largest independent aerospace and defence companies. The business employs almost 2,000 people and specialises in the conversion, modification, maintenance and support of aircraft and defence solutions in the air, land and at sea. Its capabilities include engineering design, manufacturing, test, certification, maintenance and support and the provision of personnel, training and advice. The business has completed over 1,500 modifications in more than 35 countries worldwide.

2.1.2 The business is currently based in Cambridge with offices around the globe.

2.1.3 As part of the wider strategic planning within Marshall Holdings, MADG intends to review options to improve its capability to undertake its business without a critical dependency on Cambridge airport. The timeframe for the relocation is summarised below.



2.2 MADG Proposals

2.2.1 The full proposals relative to each site are being developed by the wider project team alongside the existing airports. The specific business requirements are set out in full in a separate document prepared by Marshall. However, in headline terms, the development requirements at each site are likely to comprise buildings serving the following functions:

- For MADG:
  - A Facilities building (17,511sqm GIA) to support operations in the hangar including manufacture, storage, non-destructive testing, engine bay workshop, component workshop;
  - A Headquarters building (6,000dqm GIA), being the centre for the administration of Marshall's business and which will hold administrative offices, meeting spaces and staff support areas such as a café, gym, showers etc;
  - A Ground Run Enclosure (3,800 sq.m GIA), which will be the location for an external area that may be fully or partially enclosed to attenuate noise arising from aircraft engine testing. Aircraft engines will be powered up and run at varying power settings and durations as part of the testing and maintenance regime;
  - Lockheed C130 aircraft Hangar Bays (5,200 sqm GIA and height 22m;)
  - Airbus A400M aircraft Hangar Bays (19,656 sqm GIA and height 24m);
  - Boeing C17 aircraft Hangar Bays (35,072 sqm GIA and height 26m);
  - A Paint Shop (6,808 sqm GIA), which will be a specialist enclosed hangar for painting aircraft. Fumes and paint residue will not be discharged from this building;
  - Associated parking and hard-surfaced circulation areas, both airside and non-airside and potential runway extension.
- For Marshall Land Systems:
  - A building (15,720sqm GIA) comprising warehousing, production space, office/administration areas, small stores and plant, staff welfare facilities;
  - External areas for staff and visitor parking, delivery and dispatch yards for HGV, external storage area.

2.2.2 As MADG's global headquarters, the development would need to accommodate up to 1,500 employees.

3 Methodology

3.1 Introduction

3.1.1 This Section of the report sets out the methodology proposed to assess the high-level impact of the relocation on each of the sites based on up to 1,500 employees.

3.2 Year of Assessment

3.2.1 The relocation is expected to have been completed by 2030. It is therefore proposed to assess the transport networks in this test year. Infrastructure to be included in this test year is set out in Section 4 of this report.

3.3 Overview of Methodology

3.3.1 Figure 3.1 provides an overview of the proposed assessment process. Further detail of the individual stages is contained in the following sections.

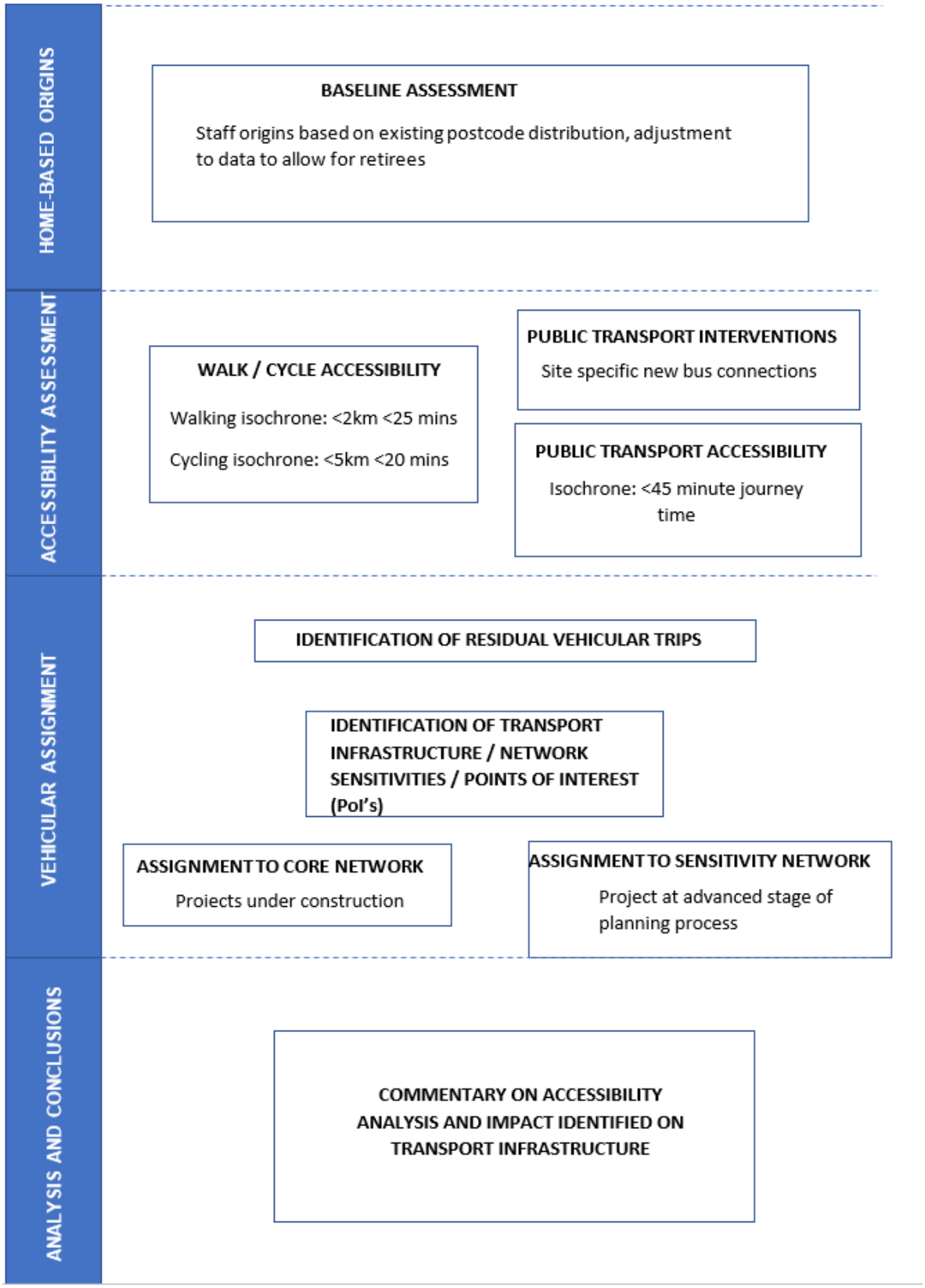


Figure 3.1 | Assessment Process Overview

3.4 Home Based Origins – Baseline Assessment

3.4.1 PBA have been provided with existing postcode data of all employees at the existing MADG business. It is proposed to use this data with the only changes being that employees who are anticipated to have retired by 2030 are removed from the dataset and then the remaining existing postcodes increased pro-rata to ensure that a full workforce is assessed.

3.5 Development of Trip Matrices

3.5.1 In order to develop a set of residual vehicle trips to assign to the road network to understand the locations of greatest traffic impact, the accessibility of each of the sites for walking, cycling and public transport was assessed.

Person Trips & Peak Hour Matrix Development

3.5.2 The total Home-Based Origins for the baseline postcodes form the total person matrix for trips to and from Cranfield. However, these postcodes will be adjusted to reflect those trips likely to be travelling during peak hours for assignment to the respective transport networks.

3.5.3 In order to make this adjustment the following processes will be applied:

- PBA has obtained from MADG Human Resources the current staff shift patterns. At the current site, there is an informal agreement with Cambridge City Council that staff should arrive and depart outside of the transport peak hours. However, for the purposes of this study, such a commitment would be seen as part of a mitigation strategy and therefore those existing trips which travel within an hour of the network peaks (0800-0900 and 1700-1800) are assumed to be peak hour trips.

- Not all staff employed by MADG will be travelling to the new site on a typical working day. For the purposes of this study, it is assumed that 85% of staff will travel to the site on an average working day, which is considered a robust assessment. Therefore, 15% of MADG staff would typically be away from the site due to external meetings, training, annual leave and sickness, and for other reasons.

Walk and Cycle Accessibility

3.5.4 Now that the peak hour person matrices have been established, the respective walking and cycling accessibility for each relocation site will be calculated and will be summarised on isochrone plans and compared in a table. This will also be compared against the current airport location. There are no major walking or cycling infrastructure projects under construction near the site that would significantly affect the outcomes of the assessment and thus require coding within the accessibility modelling.

3.5.5 The isochrone plans will be produced in GIS as follows:

- Walking Isochrones for each site: 5-minute increments up to 25 minutes (~2km)

- Cycling Isochrones for each site: 5-minute increments up to 20 minutes (~5km)

3.5.6 Two tables will be prepared, one for cycling and one for walking. These two tables will compare the relative accessibility of each site for the baseline postcode data.

3.5.7 Home Postcodes which are within either a 2km (~ 25 minute) walk or 5km (~ 20 minute) cycle will be identified. These will then be netted out of the overall dataset.

3.5.8 It is accepted that not all staff in these postcodes located within these distance catchments would choose to walk and cycle and also that some staff living in postcodes beyond these may. Some may choose to travel by public transport instead. However, for the purposes of this high-level analysis this approach has been adopted to provide a consistent comparable methodology for assessment of the three sites. This creates a clear basis for interpretation of the outcomes and commentary will be provided to take account of the sensitivity of the high level accessibility conclusions created by this methodology. It also provides the basis for MADG to consider whether it may be feasible to introduce a car parking permit system that is related to accessibility by sustainable modes.

Public Transport Accessibility

3.5.9 The public transport accessibility of the site will also be summarised on isochrone plans and compared in a Table and will be undertaken using the TRACC software. This exercise will be undertaken on the peak hour person matrices with the Walk and Cycle trips already removed.

3.5.10 TRACC is a GIS application designed to estimate the true accessibility of sites rather than just their proximity to nearby public transport nodes. TRACC therefore inputs public transport user origin points (home postcodes) and assesses this in respect of the known destination, i.e. Cranfield.

3.5.11 Travel time is inclusive of walk time and therefore this represents the 'door to door' journey time. Routes and service frequencies have been assessed using 2019 public transport timetables. The isochrone plans will be produced for 10-minute intervals up to a maximum 45-minute public transport journey time. These will then be netted out of the overall dataset.

Public Transport Network Changes

3.5.12 In order to reflect likely sustainable travel interventions, new bus services have been coded at the relocation site which connect to the nearest public transport hubs. Whilst these are only possible services at this stage, their inclusion in the assessments means that a greater proportion of the home-based postcodes could arrive by public transport within a 45-minute journey time and it was considered unrealistic to assess the relative public transport accessibility of the site assuming only existing services would remain in place. The public transport service coded is shown below.

Cranfield: 30-minute service linking Cranfield with MK Coachway and Ridgmont Railway Station.

3.5.13 It is accepted that not all staff in postcodes located within the PT time catchment would choose to come by public transport but also that some staff living in postcodes beyond it may be happy to travel for longer. However, for the purposes of this high-level analysis this approach has been adopted to provide a consistent comparable methodology to assess the three sites. This creates a clear basis for interpretation of the outcomes and commentary will be provided to take account of the sensitivity of the high level accessibility conclusions created by this methodology. It also provides the basis for MADG to consider whether it may be feasible to introduce a car parking permit system that is related to accessibility by sustainable modes.

3.6 Vehicular Trips

3.6.1 Now that the potential peak hour Walk/ Cycle and public transport trips have been removed from the dataset based on the walk/ cycle and PT accessibility, we are then left with the residual peak hour trips which are assumed to be vehicular trips. Car occupancy levels for these trips are assumed to be 1.16 for both the existing Cambridge site. For the relocation to Cranfield, car occupancy levels have been increased to 1.30 to reflect that a significant proportion of the workforce would be travelling further distances from a largely common origin, and therefore more likely to car-share than current travel patterns.

3.6.2 The residual vehicular trip matrices which have been generated are then to be assigned to the highway network using CUBE modelling software. CUBE provides an automated approach to highway assignment using an “all or nothing” assignment based on peak hour journey times extracted from HERE, a company which powers four out of five in-car navigation systems in Europe and North America. The data is collated by HERE through Samsung and Windows operated phones, in-built car navigation systems, aftermarket GPS units and their own surveys. Average data is provided for the most recent 5 years of data in fifteen-minute increments to remove outliers and any issues created by roadworks etc. The availability of average journey times for links means the most likely journey time is being used in the assessment.

3.6.3 The main strengths of the automated approach are:

i. The road network can be built into the HERE network in the modelling software. Committed improvement schemes can also be built into the network.

ii. The assessment uses an “all or nothing” approach to assignment which gives an indication of which routes drivers would prioritise based on the shortest journey time;

iii. The process is transparent, quick, flexible and simple to produce graphical representations of travel patterns and therefore commensurate with the high-level study for which it is being used.

3.6.4 Bandwidth plots will be provided showing the proportion of vehicular demand using the network.

Highway Network Changes

3.6.5 The core network comprises the existing network and major road projects currently under construction, which for Cranfield relates to the A421 dualling between M1 Junction 13 and Eagle Farm roundabout, and the M1 smart motorway scheme between junctions 13 and 16. A sensitivity network has been prepared which comprises the same network as the Core Network but includes for the A428 Black Cat to Caxton Gibbet works, which although are not committed are at a relatively advanced stage in the planning process.

3.6.6 Where other strategic network changes are being considered, at this stage these have not been coded into the networks but will be considered as part of the reporting commentary.

4 Relevant Transport Network Context

4.1 Introduction

4.1.1 The previous section of the report set out the methodology for establishing the modal matrices, appraising accessibility and assignment of the residual trips to the highway network. This Section of the report sets out the existing key transport constraints that relate to the Cranfield site. The identification of these network constraints will be used to then inform the impact assessment and the appraisal undertaken.

4.1.2 It is requested that the Transport Authorities agree or suggest changes to these identified network Points of Interest (PoI's) identified so that the appraisal work can be aligned with this agreed list. It is then proposed that a level of sensitivity is given to each PoI, meaning that each PoI are more or less sensitive to changes in traffic (or passenger) flow. The following definitions having been used to establish the categorisation of levels of sensitivity:

- Higher Sensitivity: Intervention must happen to enable growth in area;
- Medium Sensitivity: Intervention likely to be required to support growth and transport policy objectives but would not necessarily prevent development from occurring; and
- Lower Sensitivity: Desirable for infrastructure that is required for sustainable growth but is unlikely to prevent development in the short to medium term.

4.2 Network Context

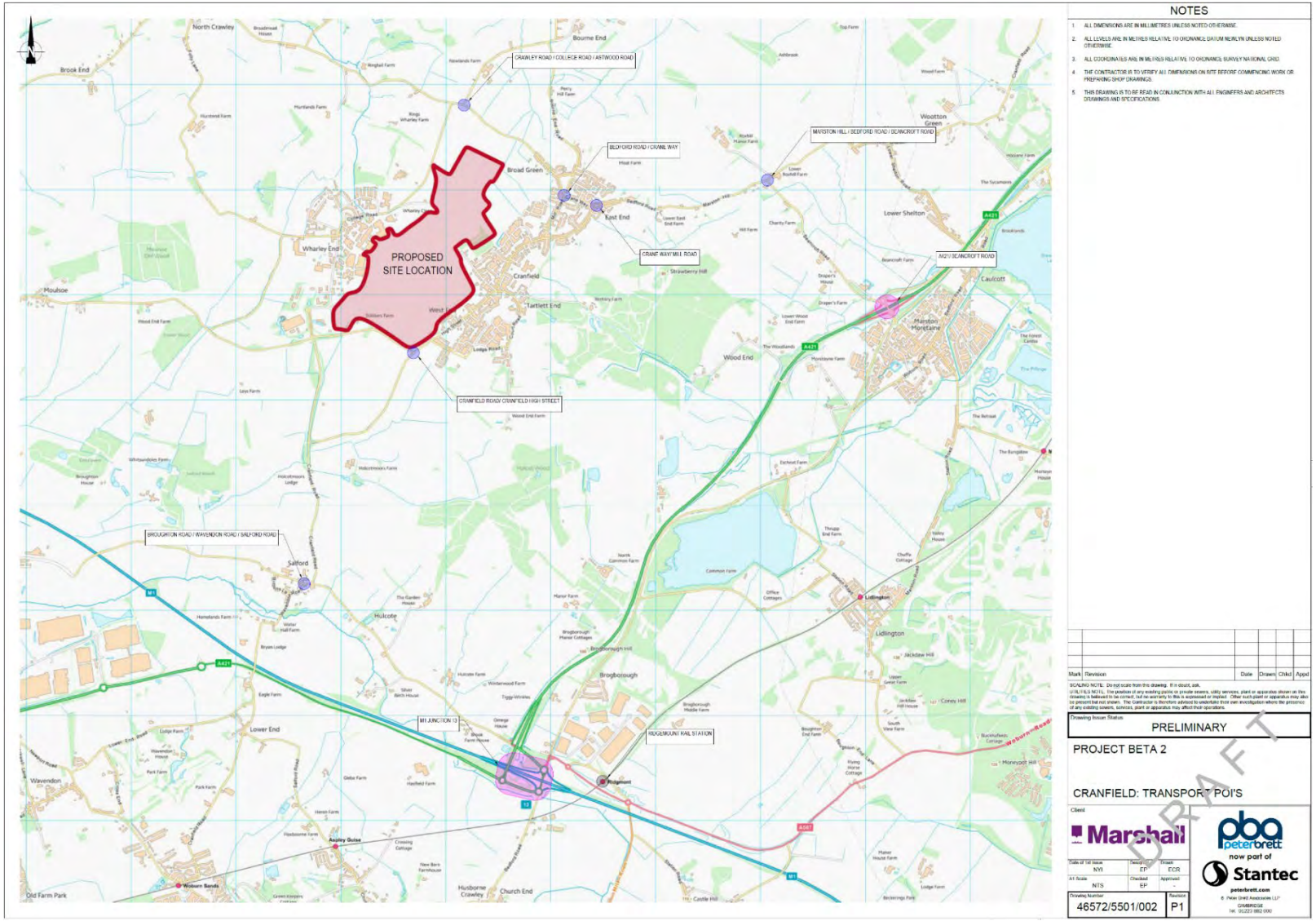
4.2.1 Transport PoI's around the Cranfield area site have been determined from a review of the Transport Assessment for the previous Cranfield Airpark planning consent. These points of interest are summarised in Table 4.1 and contained in Figure 4-1.

Table 4.1 | Points of Interest around the Cranfield Site

Point of Interest	Higher Sensitivity	Medium Sensitivity	Lower Sensitivity
Crawley Road / College Road / Astwood Road	X		
Bedford Road / Crane Way			X
Marston Hill / Bedford Road / Beancroft Road		X	
Broughton Road / Wavendon Road / Salford Road	X		
Cranfield Road / Cranfield High Street			X
A421/ Beancroft Road	X		
M1 Junction 13	X		
M1 Junction 14	X		

4.2.2 It is proposed that the impact of trip assignment is assessed against the above PoI's. Should further network PoI's be identified by Central Bedfordshire Council or Highways England then these will be incorporated into the reporting of the assessment accordingly.

Figure 4.1 – Location Plan including Key Junctions



5 Proposed Reporting Structure

5.1 Introduction

5.1.1 Previous sections of this report have set out the methodology for the high-level transport appraisal assessment and have also sought to set out which parts of the transport networks should be subject of the assessment. This section of the report therefore looks to set out the reporting proforma which will then be discussed and agreed with the relevant authorities prior to agreeing the final reporting for the MADG Board.

5.2 Accessibility Comparison

5.2.1 The accessibility analysis will be reported in accordance with Section 3 where tables will be prepared for walking, cycling and public transport. These tables will compare the relative accessibility of each site for the baseline postcode data.

5.2.2 The comparison of accessibility will then be reported against the following metrics:

- Number of people within 2km and are therefore within comfortable walking distance
- Number of people within 5km and are therefore within comfortable cycling distance
- Number of people within 45-minute public transport journey time and are therefore within comfortable public transport travel distance.

5.2.3 The way in which the site is assessed against the above criteria will be set out and we will seek to agree with the relative authorities that it is a reasonable and fair reflection of accessibility as a product of the methodologies applied.

5.3 Assigned Transport Trips Against Network PoI's

5.3.1 Section 3 set out the network assignment approach which will only be undertaken for highway trips. The assignment of these trips will then be considered against the PoI's for the site as identified in Section 4. The relative impact of these trips against the PoI and the sensitivity level will then be reported and then summarised in accordance with the following proforma.

5.3.2 It is proposed that this table forms a collaborative and agreed deliverable of the assessment of Cranfield between PBA and the respective authorities. The summary table can be used by the MADG Board to understand the relative risks in Transport terms of each of the respective sites.

5.3.3 The table is provided for agreement and feedback as part of this pre-application exercise.

5.4 Assessment of Impact - Cranfield

Point of Interest	PoI Sensitivity Categorisation	Existing Peak Hour Network Performance Summary	Assignment of Traffic Commentary	Likely Impact of Traffic on PoI	Known Physical Mitigation Scheme?	Further Potential for Physical Mitigation Scheme?	Potential for Strategic Investments and certainty over deliverability	Sustainable Transport Strategies & Shift Working potential	Summary of Risks to MADG
Crawley Road / College Road / Astwood Road									
Bedford Road / Crane Way									
Marston Hill / Bedford Road / Beancroft Road									
Broughton Road / Wavendon Road / Salford Road									
Cranfield Road / Cranfield High Street									
A421/ Beancroft Road									
M1 Junction 13									
M1 Junction 14									

Position Statement
Noise:
Relocation of Marshall Aerospace and Defence Group - Cranfield Airport

August 2019

Experts in noise and vibration assessment and management

Document Control

Client	Marshall Aerospace and Defence Group (MADG)	**Principal Contact**	Manny Coulon – Programme Director

Job Number	J1074

Report Prepared By:	George Gibbs (Associate Director) & Tom Everson (Assistant Consultant)

Document Status and Review Schedule

Report No.	Date	Status	Reviewed by
J1074A/1/D2	1 August 2019	Draft	James Trow (Managing Director)

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Contents

Figures

1 Introduction

1.1 Marshall Aerospace and Defence Group (MADG) has shortlisted three potential sites for the relocation from their current base at Cambridge Airport. The sites being explored for a new, state-of-the-art facility are at:

- Cranfield Airport;
- Duxford Aerodrome; and
- Wyton

1.2 Whichever of the sites is chosen, a full Environmental Impact Assessment (EIA) will be required as part of any planning application, and will include consideration of environmental issues including noise, air quality, traffic, landscape visual impacts, ecology and flood risk / drainage, with the complete topic list to be confirmed through the EIA scoping process in due course.

1.3 Prior to the site selection MADG are undertaking initial evaluations of the potential environmental issues associated with each site. This is to help determine which of the three sites they will pursue to formal pre-application advice and full EIA preparation to support a formal planning application. This work will aid the design of MADG's proposals so to help mitigate and reduce environmental impacts.

1.4 This reports set out MADG's position with respect to the likely noise-related issues, the contents of which is to inform Local Authority representatives, local stakeholders, landowners and airport operators and to provide an understanding of the main issues being considered throughout the site evaluation process, and the likely processes for the management of any noise-related impacts.

1.5 This Position Statement sets out the relevant experience of the technical team undertaking the assessment work, MADG's understanding of the sensitivity of communities to noise surrounding Cranfield Airport, and the likely main noise issues associated with the proposals.

1.6 For each of the main issues, the potential noise-related impacts are explored and where necessary, possible approaches to noise management and mitigation of potential impacts summarised.

1.7 The structure of this Position Statement is as follows:

- Summary of MADG technical teams experience of similar developments;
- Background of existing and historical activities at Cranfield, and sound climate within existing communities;
- Summary of the main noise sources associated with the MADG activities; and

- Review of the potential noise impacts and likely appropriate noise management and mitigation options.

1.8 Should Cranfield Airport be taken forward as MADG's preferred option, then further consultation with Local Authority and local stakeholders will be sought in order for prior agreement on the noise assessment scope and methodology for the EIA.

Technical Team Experience

1.9 Noise Consultants Limited (NCL) is a UK-based company specialising in environmental noise and vibration management and assessment. NCL provides independent expert advice and assessments covering all aspects of environmental noise and vibration, including aviation acoustics. The company has significant experience of supporting UK and European Union airports and airfields with noise management and assessment support.

1.10 NCL is led by James Trow, an expert in the field of aviation acoustics. James's project experience includes lead roles on major airport projects including Heathrow Expansion and Gatwick North Terminal. He has worked as an advisor to EU accession states on aircraft noise regulation for the European Investment Bank and has worked in research and advisory roles aimed at helping develop noise policy.

Project Experience Relevant to MADG Proposals

Cambridge Airport – Ground Running Enclosure (GRE) Development

1.11 NCL's consultants provided noise assessment works to identify constraints and opportunities related to the relocation of legacy aircraft engine testing activities at Cambridge Airport on behalf of MADG.

1.12 This work included the development of a comprehensive noise baseline, measurements of engine testing activity and the characterisation of emissions for modelling. A full optioneering study was undertaken along with expert support to the GRE suppliers during the planning process.

1.13 Planning permission was granted for the facility in November 2017.

RAF Brize Norton – Engine Ground Running (EGR) Scenario Noise Assessments

1.14 NCL's consultants supported the Royal Air Force (RAF) by undertaking multiple investigations of noise from aircraft ground activities at RAF Brize Norton.

1.15 These works included drafting of noise investigation reports, responses to freedom of information (FOI) requests and representation for the Ministry of Defence (MoD) Defence Infrastructure Organisations (DIO) at meetings with MoD secretariat and Wing Command.

These works led to the development of bespoke noise modelling tools and the development of management procedures for open EGR.

2 Background

2.1 The potential sensitivity to airport related noise in communities surrounding Cranfield Airport has been informed by a review of historical and existing activities at the airport, along with observations of the sound climate in the surrounding communities as part of a short site visit.

2.2 Whist the sound climate in the majority of communities is considered to be commensurate of a semi-rural location, there are existing appreciable levels of noise from activities at Cranfield Airport, including aircraft engine testing activities and aircraft runway events.

Historical and Existing Activities

2.3 Cranfield Airport, Bedfordshire, was previously a RAF aerodrome, and its use included night fighter training until the end of the 1945. After 1945 the airfield became the site of the College of Aeronautics (now Cranfield University), and associated research and development related activities are still an important operational consideration.

2.4 The airport is currently used for aircraft training activities, business aviation and private flights, and is the home of the Facility for Airborne Atmospheric Measurements (FAAM), which operates a modified BAe 146 type 301 aircraft.

2.5 The airport has a permitted capacity of 150,000 aircraft movements. The peak of the Airport's activity occurred in 2003 with 102,000 movements. Current levels of aircraft movements are significantly lower than the permitted capacity, with 23,000 movements in 2017. Through the full implementation of the Airport's 'Air Park' planning consent, the Airport has forecasted a rise in aircraft movements to 46,000 in 2027.

2.6 The existing aircraft types and those associated with the consented Air Park include aircraft such as: Bombardier Global 600 and 5000; Gulfstream G650; and Dassault Aviation Falcon 7x, and heavy jets such as: Bombardier Global Express and Challenger 604, and Dassault Aviation Falcon 2000s.

2.7 The airport does not have any existing restrictions on night-time aircraft movements, however operations are mainly during the daytime hours.

2.8 Aircraft engine test activities do currently take place at the airport, including by Cranfield Aerospace Solutions (CAeS) and by FAAM, which are usually undertaken on the runway. The Airport also has a historic permission (08.00613/RM, 25 June 2008), which provides for an attenuated aircraft maintenance bay to be used for engine test activities.

Communities and Sound Environment

2.9 Cranfield Airport is located in a semi-rural area, with communities predominantly located to the east and west of the airfield. The sound climate in these communities includes noise from road traffic

movements on the local area road network and noise from recurrent airport related activities, most noticeable at the communities closest to the airport.

2.10 The closest communities to the airport are Cranfield and Broad Green to the east, and Wharley End and Cranfield University campus to the west, with a combined population of approximately 5,400 people.

2.11 Cranfield, to the south of the airfield, is predominantly residential, and is the largest community in the vicinity of the airport. Cranfield contains multiple schools and places of worship and is within 200m of the Airport's boundary. Distant road traffic movements are a constant contributor to the existing sound climate, with light and commercial aircraft arrival, departure and taxiing noise audible during events. During aircraft engine testing activities, noise from the testing dominates the ambient sound climate, particularly in northern parts of the Cranfield.

2.12 Broad Green, to the north-east of the airport, is largely residential and includes Cranfield Baptist Church. The predominant contributor to the sound climate is from activities associated with Cranfield Airport, including light aircraft departures and overflights. Between aircraft activities, the predominant contributor to the sound climate is from distant road traffic movements.

2.13 The area of Wharley End, to the north-west of the airport, is largely used by affiliates of Cranfield University, but also includes a children's nursery and industrial usages. The sound climate has contributions from road traffic noise, and aircraft engine testing activities are clearly audible whilst taking place on the airfield.

2.14 Bourne End is a small community located approximately 1.3km north east of the airport and contains a small number of residential properties and an industrial park. The existing sound climate is commensurate with a semi-rural location, but has contributions from distant commercial aircraft and road traffic movements.

2.15 Salford is another small community located approximately 2.4km south of the airport and is largely residential and includes the Church of St Mary. The predominant contributor to the sound climate in the southern area of the community is from M1 road traffic noise. In the northern areas of the community, where there is a greater screening of noise from the M1, noise from activities associated with Cranfield Airport become more audible.

2.16 **Figure 1** is presented in **Appendix A1** and shows the location of the communities and any specific non-residential noise sensitive receptors within close proximity to the airport.

Noise Sources Associated with Relocation of MADG

2.17 MADG activities include Maintenance, Repair and Overhaul (MRO) support of aircraft such as the Lockheed C-130 Hercules, with the potential for other large aircraft, namely the Boeing C-17

Globemaster III and Airbus A400M, and heavy jets such as the Boeing E-7 and small business jets such as the Bombardier Global 6000 and 6500.

2.18 The MADG activities are to be undertaken during weekdays and during daylight hours, and are likely to introduce a maximum of 1,000 aircraft ground movements per year, resulting in a likelihood of no more than one departure and one arrival per day on average.

2.19 The MADG activities are to be undertaken during weekdays and during daylight hours, and are likely to introduce a maximum of 1,000 aircraft movements per year, resulting in a likelihood of no more than one departure and one arrival per day on average.

2.20 As part of MADG's activities, aircraft will manoeuvre around the airfield, entering and exiting hangars, undergoing aircraft engine testing activities. Aircraft engine testing activities are expected to be for up to 500 hours per year.

2.21 NCL's experience of MADG's activities and other similar developments has identified the following main sources of noise which require particular consideration:

- Aircraft 'Air Noise';
- Aircraft 'Ground Noise'; and
- 'Engine Ground Running' (EGR) Noise.

2.22 Noise from other sources, such as road traffic associated with MADG and other ancillary uses, are also an important consideration, and will be fully considered should Cranfield Airport be taken forward as the preferred option as part of the EIA preparation and formal planning application.

2.23 In the event that exceedances of associated noise thresholds are determined to be likely, appropriate noise management and mitigation options will be investigated.

Aircraft Air Noise

2.24 Aircraft air noise constitutes noise generated by the interaction of the aircraft airframe with air flow, or from the engines whilst in flight. The highest levels of air noise are generated by aircraft on the runway and whilst in the landing and take-of cycle (LTO). Not all aircraft produce the same level of noise, this can vary depending upon the size of the aircraft, their engines and weight. These factors can contribute towards the characteristic of the noise generated by aircraft during the LTO along with their visual impact to influence how communities may perceive noise from different aircraft types.

Aircraft Ground Noise

2.25 Aircraft ground noise comprises of aircraft related noise emissions whilst aircraft are on the ground but not on the runway. This includes noise from aircraft taxiing and holding, as well as the use of aircraft auxiliary power units (APU) whilst at stand.

Engine Ground Running (EGR) Noise

2.26 Engine Ground Running (EGR) activity has the greatest potential for discernible noise emissions in the surrounding communities surrounding airports. EGR is required test aircraft engine performance and systems and will be a major part of the MRO operations of MADG. During the EGR, a range of engine settings are investigated, including high power which equates to the highest noise emissions. EGR can take place for several minutes or hours, depending on the requirement for the test. For example, engine changes require more thorough EGR than general aircraft system tests.

2.27 Noise from EGR can be successfully managed and mitigated though a combination of measures including the preferred location for engine testing, which may differ depending upon wind direction, and the use of dedicated facilities such as Ground Running Enclosures (GRE).

2.28 A GRE can be a three or four-sided enclosure within which the engine testing occurs. The walls and vents of the GRE are lined with acoustically absorptive materials, whilst also providing suitable airflow. The GRE construction is designed to maximise its noise reduction performance.

2.29 Whilst there are existing EGR activities that take place at Cranfield Airport, given the MADG activities requirement for EGR of heavy aircraft, all available options will be explored with regards to mitigating and reducing any impacts.

3 Review of Potential Noise Impacts

3.1 This section addresses the potential impacts of the main sources of noise associated with MADGs activities from a potential relocation to Cranfield Airport.

3.2 The impact of the main noise issues will be fully considered as part of the formal planning application, however based on NCL's experience of other similar developments, and understanding of Cranfield's existing environs and communities, the potential magnitude of the noise impacts is discussed below. Where necessary, appropriate noise management and mitigation methodologies summarised.

Aircraft Air Noise

3.3 The annual number of aircraft movements at Cranfield Airport in 2017 was in the order of 23,000 movements, which could double to 46,000 movements in 2027 with the development of the consented Air Park facility, with no restrictions on aircraft type or operating times.

3.4 The aircraft associated with the Air Park include ultra-long range and heavy jet aircraft, consistent with some of those proposed as part of the MADG proposals. Whilst the heavy aircraft associated with the MADG activities, such as the Lockheed C-130 Hercules, do not currently operate from Cranfield Airport, the level of movements of these aircraft are relatively low in comparison to existing and consented movement restriction.

3.5 The aircraft associated with MADG activities are likely to be more noticeable and noisier than the typical fleet mix operating from Cranfield Airport. However, due to MADG's typical working hours, it is most likely that aircraft events would operate during daytime hours rather than night-time periods.

3.6 Given the relatively low number of aircraft movements associated with MADG's operations, and the existing aircraft operations at Cranfield Airport, it is unlikely that air noise would be a major issue or result in a major impact.

Aircraft Ground Noise

3.7 Impacts from aircraft ground noise activity is generally localised, and any adverse impacts would be concentrated at those communities closest to the airfield, such as Cranfield and Wharley End. These communities already experience ground noise from aircraft activities, and the likely number of additional movements is unlikely to result in any major noise issues.

3.8 As part of MADG's activities, once an aircraft has landed, any further aircraft ground movement, for example as part of moving aircraft to and from an engine testing location, is usually carried with the aircraft under tow. This approach is best practice but also has the benefit of reduction aircraft ground noise.

3.9 Where there is a requirement for new or altered taxiways as part of the MADG proposals, specific consideration of any additional appreciable noise impacts will be undertaken. If mitigation is required, physical mitigation measures such boundary treatments i.e. landscaping and barriers are potential measures along with the design of the infrastructure itself including the siting and orientation of hold points. The detailed airfield design work has yet to be undertaken to allow detailed assessment of impacts.

Engine Ground Running (EGR) Noise

3.10 EGR is a critical activity for the MADG proposals, and whilst existing EGR activities take place at Cranfield Airport, the level of EGR noise from the proposed activities has the potential to result in increased levels of EGR noise in the surrounding communities than currently experienced.

3.11 For this Position Statement an informative representation of the potential noise exposure from MADG EGR activity in isolation has been undertaken. A noise modelling exercise has assumed a GRE location in the northern area of the airfield, with dimensions commensurate with those considered for other sites, i.e.three or four-sided GRE and 12 metre walls.

3.12 The specific location for GRE and along with its dimensions and configuration will be determined as part of a micro-siting process, following agreement on the noise assessment scope and methodology with Local Authority representatives.

3.13 **Figure 2** is presented in **Appendix A1** and shows the area within which noise exposure from engine testing should be avoided. This has been based on assessment thresholds used as part of assessments undertaken of MADG activity at Cambridge Airport. Based on an early masterplan and assumptions, **Figure 2** indicates that there are communities located to the east and south-east of the airfield that could potentially experience levels of EGR noise which should normally be avoided.

3.14 The associated EGR noise impacts therefore have the potential to be an issue. However, the modelling indicates that it is possible to mitigate and reduce impacts in line with Government noise policy through micro-siting of EGR activity within the masterplan of MADG's facilities along with further refinement of GRE proposals. Other management measures may also be possible to mitigate impacts, such as restrictions on operating hours, the amount of testing undertaken and through other appropriate planning controls.

3.15 As outlined above, at this stage only noise from MADG activities has been considered. As EGR is a core part of existing activities at Cranfield Airport and is currently undertaken without any dedicated facility it is therefore possible that impacts from engine testing already occur. As such it is possible that the addition of a dedicated engine testing facility at the Airport could result in a net improvement in noise from this type of activity. Further consideration of this will be undertaken should Cranfield Airport be taken forward as the preferred option.

4 Conclusions

4.1 This report is a Position Statement with respect to the likely noise related issues should the Cranfield site be taken forward as the preferred option for the relocation of MADG activities. The Position Statement is intended to inform Local Authority representatives and other local stakeholders.

4.2 NCL's experience of MADG's activities and other similar developments has informed the identification of three main sources of noise requiring particular consideration. Each of the noise sources has been explored using qualitative or quantitative considerations, and the likely magnitude of impact has been estimated based on the surrounding communities existing sensitivity to noise and the type of the MADG proposals.

4.3 With regards to likely aircraft air noise and ground noise impacts, excluding EGR activities, it is unlikely that there will be a major issue or result in a major impact, noting the level of movements proposed would be substantially lower than consented under the Air Park proposals.

4.4 Ground noise emissions from Engine Ground Running do have the potential to result in higher noise levels in surrounding communities than those currently experienced, however it is possible to mitigate and reduce impacts in line with Government noise policy through micro-siting of EGR activity within the masterplan of MADG's facilities along with further refinement of any Ground Run Enclosure proposals, should they be proven necessary.

4.5 The outcome of the initial evaluation is that major noise related issues or major impacts are unlikely as noise will be specifically considered with the development of the MADG facilities masterplan, including the micro-siting of the EGR activity.

Next Steps

4.6 The evaluation process required for the identification of a preferred option requires further and continued consultation with Local Authorities and local stakeholders. This process will require an intensification as the design develops, in particular an agreement on the scope and noise assessment methodology in relation to noise policy.

5 Glossary

Ambient Sound	Totally encompassing sound in a given situation at a given time, usually composed of sound from many sources near and far
APU	Auxiliary Power Units
EGR	Engine Ground Running
FAAM	Facility for Airborne Atmospheric Measurements
GRE	Ground Running Enclosure
LTO	Landing and Take-off Cycle
MRO	Maintenance, Repair and Overhaul
Noise	Unwanted sound

6 Appendix A1

Figures

Figure 1 – Cranfield Airport and Communities

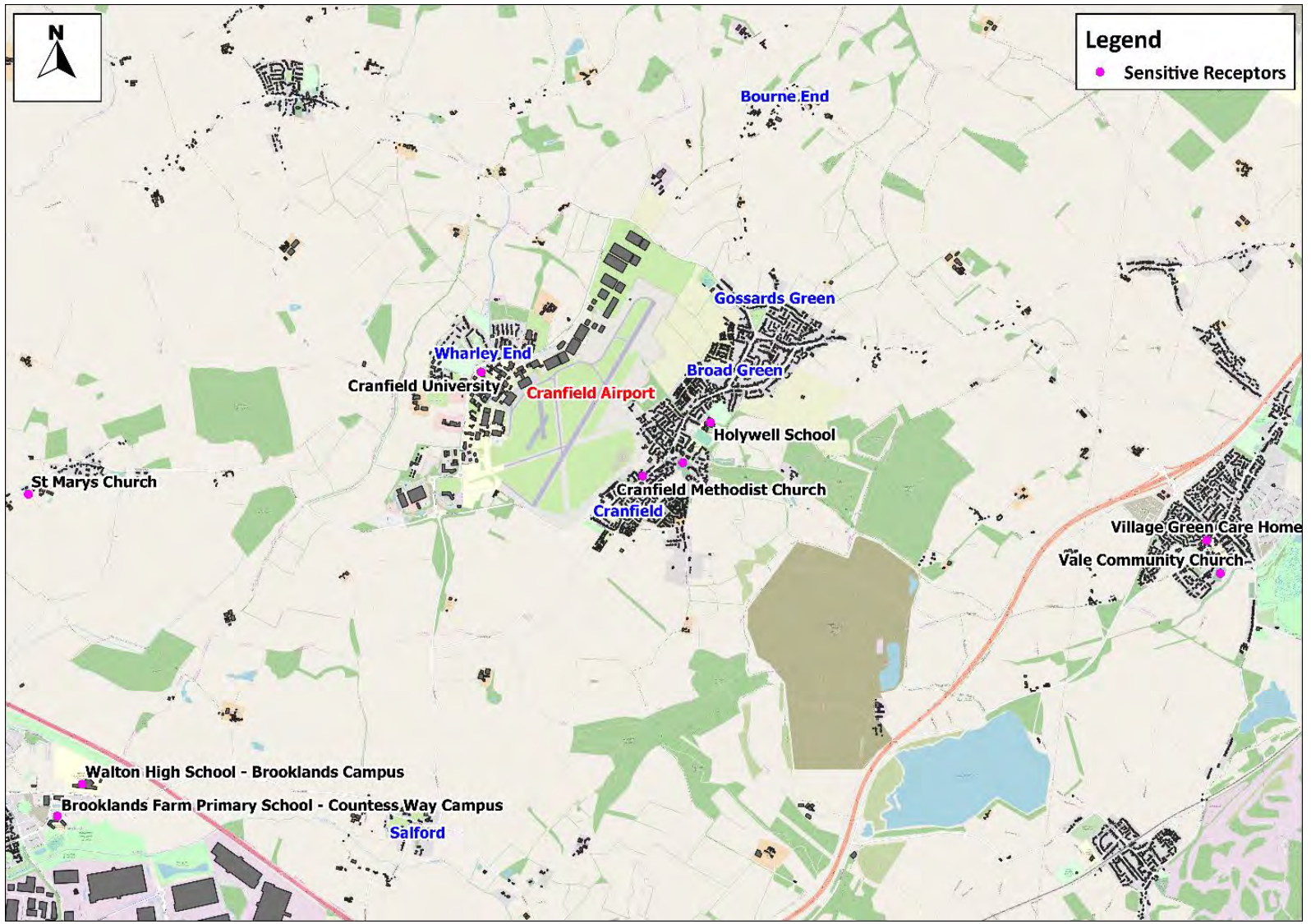
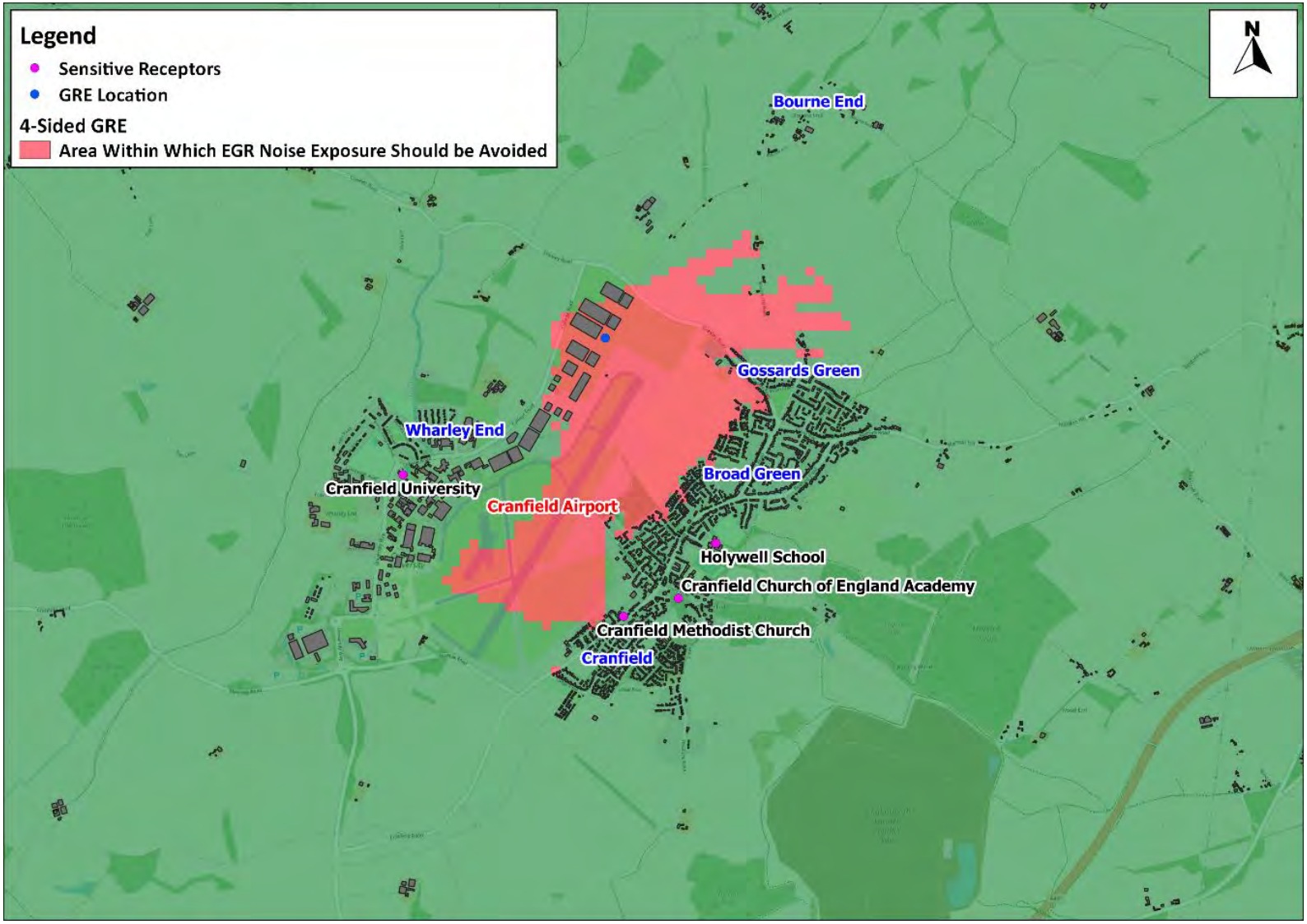


Figure 2 - Indicative 4-Sided GRE Location and Noise Emissions



Marshall

Relocation of Marshall Aerospace and Defence Group

marshalladg.com

MADG/B2

Marshall

This document has been prepared to provide you with information about our business, to help you understand the work we do and our plans for the future.

Marshall Aerospace and Defence Group (MADG) from its current base in Cambridge has established a unique position and reputation in its markets, and we are committed to increasing our investment in the business to build on that success. To realise our ambitions beyond the existing business planning cycle, we have concluded that we need to invest in new, state-of-the-art facilities so we can continue to focus on providing exceptional service to our customers in the UK and overseas.

We announced in May 2019 our intention to relocate our world class applied engineering services and technology business from Cambridge, as part of our commitment to invest in the long term future of this unique, private

We have shortlisted potential relocation sites at Cranfield, Duxford and Wyton, and we are now in an exploratory phase to understand the potential of each site to meet our business and customer needs.

I am personally committed to working with potential host local authorities, communities, organisations and businesses at each location, to ensure we are good neighbours, that the benefits of our relocation can be maximised, and that any impacts can be managed appropriately.

We very much welcome your views as we explore each option, noting our intention to be operating from the new site by around 2030.

Alistair McPhee
Chief Executive | Marshall Aerospace and Defence Group

C-130 Hercules Aircraft

Our Business

MADG is one of the largest independent aerospace and defence companies in the world, delivering innovation and excellence in engineering, support solutions and services in the air, on land and at sea.

Since 1909, we have been valued for our integrity, performance and customer focus which we have demonstrated through our innovative solutions and ability to deliver on time and to cost.

We specialise in the conversion and modification of military, civil and business aircraft, alongside defence vehicle engineering and shelter manufacture. Our capabilities include engineering design, manufacture, test and the provision of personnel, training and advice, whilst providing maintenance, complex systems integration and product support. We are a respected total solutions provider for both the military and commercial sectors.

MADG is part of the wider Marshall of Cambridge group of companies which employs around 6,000 people with a turnover in excess of £2.5bn.

Note that it is only MADG which is looking to relocate.

We have worked with the RAF supporting its C-130 Hercules military transport aircraft for over five decades during which time we have helped to drive significant efficiency whilst vastly improving the frontline availability of the fleet.

We have also enjoyed rapid growth with our international C-130 customers. In addition to our long-standing operation based in country, supporting the Royal Canadian Air Force and our 20-year association with Royal Netherlands Air Force, we currently support 13 other nations including Bangladesh, Bahrain, France and Sweden. This is an area of our business that continues to develop and we expect to grow our customer base further.

More recently, we have been awarded a contract by Boeing to support them in the conversion of a new E-7 Early Warning Fleet for the RAF. This is a very significant step for our business in terms of cementing our leadership position in heavy military aircraft.

Our Land Systems business is also enjoying significant success both in the UK and overseas, having recently been awarded two important contracts with the Netherlands and Danish military for the provision of a wide range of deployable shelters, which includes command and control shelters, workshops and storage units.

Our land business also produces mobile CT scanners, providing a fully deployable CT capability, as well as bomb disposal vehicles for the UK MOD.

As we continue to expand these capabilities, grow our order book and evolve the nature of our operations we have recognised the need to establish a new global headquarters befitting the world-leading business we are set to become.

‘protecting people in critical situations.’

Our Culture

Our independence is critical to our success, enabling us to move more quickly and decisively than many of our competitors and we like to think that we are not just agile in our responsiveness, but also in our thinking. We are always prepared to work that little bit harder to find the right solution for the toughest of challenges.

We believe that passion for doing a great job is what makes our business such a special place allowing us to innovate, evolve and grow in an increasingly competitive marketplace.

That's why we've built such an enviable reputation for saying yes to ground-breaking or complex projects that others may have shied away from.

As we look to identify our new home, ensuring that we create an environment that continues to bring out the very best in our people and where we can become a beneficial and valued part of the local community is a key driver for us.

We are also commited to building on our award-winning apprenticeship scheme which celebrates its 100th anniversary in 2020, to develop the next generation of skilled engineers, championing diversity and continuing to support Science, Technology, Engineeing and Mathematics (STEM) initiatives in the local community.

A close, mutually beneficial relationship with the local community has been key to the success of our business and the progression of our City since our founding in 1909. At our chosen site, we will once again be looking to be actively involved in the local community to help create, build and maintain new relationships.

'Wherever we are in the world, our people enjoy the same shared sense of pride and purpose in helping to set the standards for agility, innovation and collaborative working in our industry.'


mily Ansell
arshall

Our Proposals

To facilitate our relocation, we anticipate the following to be required at the new site:

- Modifications to the runway to ensure a usable runway length of circa. 1,800m.
- Development land adjoining the runway totalling up to 30 hectares (75 acres) to provide space for aircraft hangars, workshops, stores, offices, and other ancillary uses.
- A total of up to 90,000 sqm (c. 950,000 sq ft) of built floorspace, to be refined as we develop our more detailed proposals. We consider this to be a realistic upper end of what we may require.
- Additional land to provide space for aircraft parking, taxiways and any modifications to the airfield. This will vary site by site.
- As our new global headquarters, the development would need to accommodate up to 1,500 employees.

Aircraft movements and noise

Aircraft which undergo Maintenance, Repair and Overhaul (MRO) within our hangars are often in our care for several weeks or months. We view the runway as the gateway to our hangars, but it is not used with the kind of intensity of passenger airports such as Stansted. Our business model is completely different.

We anticipate that averaged over a year, there would be no more than one take off and one landing per day, and overall less than 1,000 ground movements per annum, the vast majority of which we expect to be during daylight hours in the working week.

Upon completion of our MRO activities, it is necessary for us to undertake engine ground running, including full power engine tests to prove the safety and airworthiness of aircraft before they depart. We recognise there can be noise impacts associated with engine testing. As we have for many years in Cambridge, we are committed to ensuring the noise associated with engine testing is managed appropriately, through operational controls and we will give consideration to the need to build a purpose built enclosure to reduce the noise impacts on our neighbours – whether they be residential properties, schools or other noise sensitive neighbours, depending on the needs of the site.

Transport Impacts

We are keen to understand how transport might be affected by the relocation to the potential sites.

We are committed to working with the local and strategic highway authorities to explore the transport opportunities which each site presents and how each area can best work to accommodate the travel needs of our workers, visitors and operations.

In Cambridge we have helped play our part in reducing our local traffic impact, operating a range of shift patterns, many of which help avoid the busiest times for traffic.

We have commissioned transport consultants to analyse in more detail the distribution of our workforce, the availability and opportunities for public transport, walking and cycling and how the relocation may impact the levels of local traffic.

Visual Impact

It is too early to get into detailed layouts of buildings on any of the shortlisted sites, and indeed the precise siting of buildings is still to be agreed with potential host aerodromes/airfields and landowners. We are commissioning work from specialist landscape architects to explore likely landscape visual impacts as well as ways this can be mitigated, for example through siting, design and layout, building materials and colours, or planting.

Environmental Impact Assessment

Whichever site we ultimately select, we will prepare a full Environmental Impact Assessment as part of any planning application, to ensure issues such as noise, air quality, traffic, landscape visual impacts, ecology and flood risk/drainage are factored into the design of any proposals, and that any impacts are understood and mitigated where possible.

'We view the runway as the gateway to our business, but it is not used with the kind of intensity of passenger airports such as Stansted. Our business model is completely different.'

MADG at Cranfield

Cranfield University has recently been granted planning permission for the development of an Air Park at the north-western end of the runway. The plans include a major employment development associated with aviation activities.

The detailed analysis of environmental impacts contained in the successful planning application's associated Environmental Statement has helped MADG to appreciate the issues that may arise from bringing forward a similar scale of development and to take these into account from the earliest stage in the design process.

MADG and Cranfield University have jointly identified strong synergies which could be gained from the co-location of the University and MADG operations, including training, research and employment opportunities. The Aerospace Technology Institute (ATI) and many global aerospace companies are located at the University.

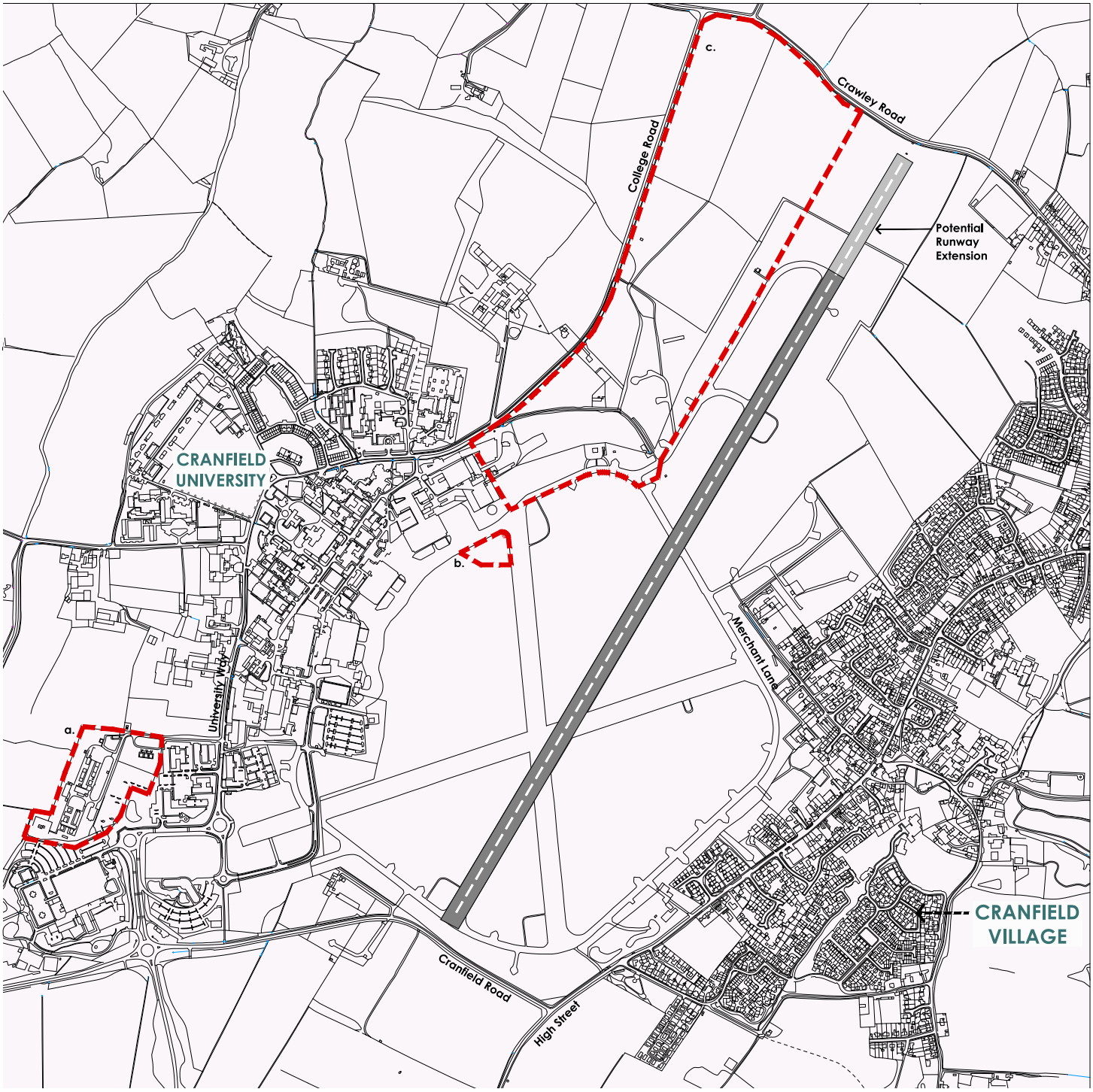
MADG operations would drive fewer aircraft movements - with a reduction in noise impact on local communities - than currently outlined in the Air Park proposal. MADG would also bring up to 1,500 employees to Central Bedfordshire with associated economic benefits to the local community.

We are exploring the potential of a minor extension to the runway to accommodate the types of aircraft which our business supports. Cranfield has an 1,800 m runway but its operational length is reduced in non-prevailing winds.

The visual impact of the development is being assessed and this will influence the design as it is developed. The impact of engine testing noise is also being assessed, with careful siting and the potential to employ a Ground Run Enclosure (GRE), as we have built on our current site, being looked at to mitigate any negative impacts.

We are undertaking a comprehensive assessment of transport impacts in consultation with local and strategic highway authorities to inform any transport mitigation strategies for the proposed development. The proposed Air Park's planning permission already contains transport enhancement schemes, such as cycle paths, a bridleway and a roundabout at the end of College Road.

The diagram (see right) shows the location of the airfield and the Areas of Investigation (outlined in red). As the development of proposals are at a very early stage, the diagram is intended to indicate the broad location for investigation and development only. The Area of Investigation covers 47 hectares and the eventual development will occupy up to 30 hectares, within this area.



a. Potential area of Land Systems

b. Potential alternate site for Engine Ground Running Enclosure

c. Main area of investigation (air park site with recently granted planning permission).

Next Steps

2019
Develop options with local stakeholders, landowners and airport operators

2020
Announce preferred site and commence preparation of outline planning application at preferred site. Undertake public consultation

2021-22
Obtain Outline Planning Permission at preferred site

2024-25
Prepare detailed design and reserved matters applications / discharge planning conditions

2026
Commence construction works (approx. 2-year build)

2028-30
Commence operations and progressive relocation from Cambridge

Provisional timeline

Your Views

Following announcement of the shortlist, we are now entering dialogue with the Airport operators, land owners, Local Authorities, Local Enterprise Partnerships and other key stakeholders to understand the implications of moving our business to each site, and to provide ourselves with assurance that each location is both deliverable and can work for our business.

The needs of our workforce have been central to our decision-making process to date and we are confident that any of the shortlisted sites have the potential to provide a long-term future home for our business.

We recognise that local people and other interest groups will have views about both the potential benefits and impacts that our operations can bring. We are, therefore, proposing to engage with key stakeholders, representing each of the sites so we can explain our emerging thinking and seek early feedback.

We will be in touch to find the most appropriate way of understanding key local issues to help shape our decisions.

In the meantime, if you have any comments or questions or wish to be involved in the consultation process, please contact:
community@marshalladg.com


KEEP CLEAR OF CARGO DOOR

Alistair McPhee
Chief Executive
Marshall Aerospace and Defence Group

Manny Coulon
Programme Director
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Marshall

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