



## Joint Development Control Committee

**Date:** Wednesday, 22 June 2022

**Time:** 10.00 am

**Venue:** Council Chamber, The Guildhall, Market Square, Cambridge, CB2 3QJ

**Contact:** democratic.services@cambridge.gov.uk, tel 01223 457000

### Agenda

- 1 Apologies
- 2 Declarations of Interest

### Applications

- 3 21/03224/FUL - Cambridge Airport Newmarket Road Cambridge (PAGES 3 - 218)
- 4 21/04036/REM - Lots S1 And S2, North West Cambridge Development Eddington Avenue Cambridge CB3 0LH (PAGES 219 - 300)
- 5 S/1355/17/FL - Land Immediately West Of The Electricity Pylon And Foul Pump Station Histon Road Impington, 07/0003/NMA2 - Land Between Huntingdon Road And Histon Road Cambridge Cambridgeshire CB3 0LE, S/0001/07/NMA1 - Land Immediately West Of The Electricity Pylon And Foul Pump Station Histon Road Impington (PAGES 301 - 336)

### **Joint Development Control Committee Members:**

**Cambridge City Council:** Cllrs Carling, Flaubert, Porrer, Scutt, S. Smith and Thornburrow, Alternates: D. Baigent, Gawthrope Wood, Nethsingha and Page-Croft

**South Cambridgeshire District Council:** Cllrs Bradnam, Cahn, Fane, Hawkins, Stobart and R.Williams, Alternates: Cone, Garvie, J.Williams and H.Williams

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# Agenda Item 3



<b>Planning Committee Date</b>	22 June 2022
<b>Report to</b>	Joint Development Control Committee
<b>Lead Officer</b>	Joint Director of Planning and Economic Development
<b>Reference</b>	21/03224/FUL
<b>Site</b>	Cambridge Airport, Newmarket Road, Cambridge
<b>Ward / Parish</b>	Abbey
<b>Proposal</b>	Dismantling and removal of two existing radars and construction of a new radar and other associated works.
<b>Applicant</b>	Marshall Group Properties Ltd.
<b>Presenting Officer</b>	Philippa Kelly, Strategic Sites Delivery Manager
<b>Reason Reported to Committee</b>	This is an application for major development within the JDCC administrative area.
<b>Member Site Visit Date</b>	13 June 2022
<b>Key Issues</b>	<ul style="list-style-type: none"><li>• Principle of development.</li><li>• Design and layout.</li><li>• Impact on site and surroundings, (including landscape and visual impact assessment and impact on landscape character).</li><li>• Other environmental considerations (including noise and shadow flicker).</li><li>• Impact on residential amenity.</li></ul>
<b>Recommendation</b>	<b>APPROVE</b> full planning permission subject to conditions.

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## 1.0 **Executive Summary**

- 1.1 The proposal is for a new primary surveillance radar on land at Cambridge Airport (the H17 Radar). It includes the removal of two existing radar structures - the AR15 Radar (located on land to the south of the existing main runway) and the H16 Radar (located to the west of Hangar 16 within the northern part of the Airport).
- 1.2 The new radar is required because the existing AR15 Radar is reaching the end of its operational life. The Applicant is also obligated to provide and bring into use an alternative radar solution to the AR15 Radar for safety and operational reasons, under the terms of the Section 106 Agreement for the Land North of Cherry Hinton (LNCH) outline planning permissions.
- 1.3 The existing H16 Radar was constructed under the Airport's permitted development rights and began to operate in the autumn of 2020. It was intended that this radar would replace the historic AR15 Radar. Since this time, complaints have been received from residents living in the vicinity of the H16 Radar. The complaints relate primarily to operational noise and shadow flicker. Noise mitigation measures undertaken by the Applicant resulted in measured noise improvements, although noise complaints have continued. The Applicant subsequently committed to re-locating the H16 Radar to an alternative, less intrusive location which will continue to provide an acceptable level of operational and safety performance. In the interim, the AR15 Radar continues to serve the Airport.
- 1.4 The risk to the Airport of being without an operational radar facility due to failure is high. This would have potentially serious implications and risks for the safety of aircraft operations and would severely constrain flying in certain weather conditions.
- 1.5 The application proposals are supported by an Environmental Statement (ES) under the Environmental Impact Assessment (EIA) Regulations 2017. Officers are satisfied that that the ES (including the Alternative Site Assessment (ASA)) and other additional information provided complies with the 2017 EIA Regulations, and that sufficient detailed environmental information has been provided by the Applicant enabling officers to assess the environmental impacts of the development proposals, in accordance with relevant legislative requirements and best practice guidelines.
- 1.6 This is a finely balanced decision. The proposed H17 Radar would generate significant adverse landscape and visual effects, including on the recreational users of Coldham's Common and the Common's landscape character. However, officers recognise that the development would also bring about substantial safety benefits, enabling the existing business operations at the Airport to continue until the planned closure of the Airport. It would also facilitate wider economic and social benefits by enabling the development of the Land North of Cherry Hinton (LNCH)

development site. On this basis, the benefits of the proposals are considered to weigh in favour of supporting the scheme.

- 1.7 A glossary of terms is provided as **Appendix A** to this report.
- 1.8 Officers recommend that the JDCC **Grant Planning Permission for the Application 21/03224/FUL**, subject to the conditions and informatives set out in **Appendix C** to this report, with authority delegated to officers to carry through minor amendments to those conditions and informatives (and include others considered appropriate and necessary) prior to the issuing of the planning permission.

## 2.0 **Site Description and Context**

- 2.1 The planning application relates to three locations within Cambridge Airport - the new site of the proposed radar (H17) and the sites where existing radar installations/structures (AR15 and H16) will be removed.
- 2.2 Cambridge City Airport ('the Airport') is located on the eastern fringe of the City of Cambridge, accessed off Newmarket Road (A1303) which connects to the A14 about 2km to the east of the Airport. To the north, west and south-west of the Airport are the outer fringes of Cambridge City, to the south is Chery Hinton and to the east is the village of Teversham.
- 2.3 The Airport occupies an area of approximately 174 hectares, and comprises the existing airfield, with associated offices, hangars and car parking. The main tenant is Marshall Aerospace and Defence Group (MADG), which specialises in the conversion, modification, maintenance and support of aircraft and defence solutions. The aircraft maintenance, repair and overhaul (MRO) work includes the planned and unplanned maintenance of the Royal Air Force's UK fleet of Hercules aircraft, as well as military aircraft of other nation states.
- 2.4 The Airport also supports various types of aircraft operations including general aviation, business aviation and the East Anglian Air Ambulance, as well as occasional commercial, and charter passenger flights. It is also home to a number of flying clubs and flying schools.
- 2.5 The existing AR15 Radar is located to the south of the runway, on existing grassland which is within the Airport's operational boundary.
- 2.6 On the northern side of the Airport are buildings associated with the aerospace operations, including hangar buildings and administrative offices and the Grade II listed control and office building which fronts Newmarket Road.
- 2.7 The H16 Radar is located to the west of Hangar 16 within the northern part of the Airport. This radar was constructed in Autumn 2020 under permitted development rights. This part of the application site comprises

an area of apron/hardstanding, which is surrounded by a security fence. Immediately north of the H16 Radar are residential properties on Sunnyside, The Westering and Mansfield Way.

- 2.8 On the north-west side of the Airport and to the west of Hangar 17, and north of the Ground Run Enclosure (GRE) aircraft testing facility, is an area of hard standing. This is the proposed location of the new H17 radar. This part of the application site forms part of a larger area of apron used for aircraft parking.
- 2.9 Immediately to the north of the site of the proposed H17 Radar is Barnwell Drive, beyond which is an industrial and commercial area including a Mercedes car dealership, Barnwell Business Park and The Quorum office complex. The majority of the Airport's hangars and buildings lie to the north-east of the proposed H17 Radar. To the east and south lies the expansive open grassland of the airfield including its main runway.
- 2.10 Beyond the commercial areas to the north of Barnwell Drive are residential areas, the nearest being Barnes Close, Sunnyside, Mansfield Way and The Westering and Peverel Road.
- 2.11 The distances to the closest building facades of properties near to the site of the proposed H17 Radar are as follows (Note - distances taken from Google Earth and have a margin of error of 5m).
- Barnes Close - 205 metres
  - Sunnyside - 230 metres
  - Mansfield Way - 250 metres
  - The Westering - 285 metres
  - Peverel Road - 240 metres
- 2.12 To the southeast of the Airport is the site known as Land North of Cherry Hinton (LNCH). This is a cross boundary site (the City Council and South Cambridgeshire District Council) which has outline planning permission for up to 1,200 dwellings and other facilities. The consented development of Marleigh (Land North of Newmarket Road/Wing) is located to the north, beyond the A1303, which has permission for 1,300 homes.
- 2.13 The Cambridge Green Belt wraps around the eastern edge of the Airport and extends across the airfield to create a green corridor encompassing Coldhams Common. The Common is situated approximately 170m west of the site of the proposed H17 Radar. It is registered Common Land, open access land, protected open space and Green Belt. Several linked Public Rights of Way (PROW) cross the Common, including two which form part of the Chisholm Trail shared cycling and walking route to/from Cambridge North station.
- 2.14 The application site is wholly within the administrative area of Cambridge City Council.

### 3.0 The Proposal

3.1 The application seeks full planning permission for three component parts:

- (i) Demolition and removal of the existing radar (the AR15 Radar) to the south of the runway. The AR15 Radar is 14m in height.
- (ii) Removal of the existing radar adjacent to Hangar 16, to the north of Hangar 17 (the H16 Radar). The H16 Radar is 38m in height (30m tower and 8m antennae). It will be dismantled and re-used in the construction of the H17 Radar.
- (iii) The construction of a new radar (the H17 Radar) and associated infrastructure on the north-west side of the airport, immediately to the west of Hangar 17, on an area of hard standing comprising unused apron space, east of Hangar 21 and north of the GRE. The H17 Radar would be just over 43.3m in height (35m tower, 8m antenna, 0.3m plinth).

	<b>Location</b>	<b>Height Above Adjacent Ground Level</b>	<b>Height Above Ordnance Datum</b>
<b>Existing AR15 Radar</b>	South of existing runway	14.2m in height	24.7m AOD
<b>Existing H16 Radar</b>	Adjacent existing Hangar 16	38m high (30m tower, 8m antennae)	53.5 AOD
<b>Proposed H17 Radar</b>	Immediately west of Hangar 17	43.3m high (35m tower, 8m antenna, 0.3m plinth)	54.1 AOD

**Table 1:** Comparison of heights of radars

#### The Proposed H17 Radar

3.2 The purpose of the proposed H17 Radar is to ensure the safe control of aircraft movements in the wider airspace above and around the Airport. This is achieved by the radar detecting the presence and position of aircraft in the airspace. This enables controllers to manage the safe co-ordination of landing and departing aircraft in the uncontrolled airspace.

- 3.3 The proposed H17 and existing H16 Radars include both primary and secondary radars, which is required to meet current Civil Aviation Authority (CAA) operational requirements. Primary surveillance radar illuminates a target with a transmitted microwave signal, which is then reflected and picked up by a receiving device. This type of radar is referred to as 'non-cooperative' because the 'target' it detects does not need to have its own radar transponder.
- 3.4 A secondary surveillance radar sends an interrogation signal, asking for aircraft identify, but relies on targets being equipped with a radar transponder. These aircraft targets respond to each interrogation signal by transmitting encoded data such as an identify code and the aircraft's altitude. This type of radar is referred to as 'co-operative' because it requires the target being detected to respond with the information requested.
- 3.5 Officers note that the AR15 Radar does not have secondary radar surveillance. The Airport instead uses a feed from a National Air Traffic Services (NATS) Radar elsewhere.
- Physical Structure
- 3.6 The proposed H17 Radar will comprise a lattice steel mast structure (re-using the tower from the existing H16 Radar), upon which is attached the radar. The square open lattice tower has an internal access stairwell, above which rests the radar mount, square access platform and motor housing cabin. The tower would be splayed for the first 10m above ground level, above which it would be straight. The total combined height of the structure will be 43.3m, comprising a 0.3m concrete plinth, 35m mast and 8m radar head.
- 3.7 The required height of the radar is dependent upon the relative ground level and the height of adjacent structures to ensure that the 'sterile zone' of the radar beam being formed is not adversely impacted by interference with the roofs of the adjacent hangars.
- 3.8 At 43m, the proposed height of the H17 structure is necessary in order for Airport operational requirements to be met and ensure acceptable performance. This is the minimum height required for the radar beam to form without being impeded by the adjacent hangar building, which is 27.6m high. It would be 5.3m taller than the existing H16 Radar, due primarily to the site ground level being lower than that of the H16 site.
- 3.9 The radar itself would comprise two dishes secured to the radar mount – an upper dish with an 8.5m rotating diameter and a second dish of just over 5m in diameter. They are to be coloured orange and white and will rotate at approximately 15 revolutions per minute.
- 3.10 The upper corners of the radar tower would be illuminated with two red obstacle warning lights for aircraft safety reasons. LED pedestrian lighting

would be installed on the stair of the radar tower but would be used only in emergencies.

- 3.11 The proposals also include a services cabin, diesel fuelled emergency generator and other ancillary equipment at ground level. The services cabin would measure approximately 9m long, 5m wide and 3.5m high. The radar mast, ground level cabin and generator will also be installed on a 0.3m concrete plinth.
- 3.12 A 2.4m high palisade security fencing would enclose the radar site. Minor re-configurations would be made to existing ground level drainage, whilst services such as telecoms and power would connect into Hangar 17.
- 3.13 In terms of access arrangements, no alterations to public roads outside the perimeter of the Airport are proposed, as the H17 Radar will be located airside. Only aircraft and other authorised vehicles operating at the Airport will be allowed to enter the facility. The proposed H17 Radar will reuse most of the parts of the recently constructed H16 Radar following its dismantling.
- 3.14 The proposed H17 Radar would be located approximately 200m from the nearest residential property in Barnes Close.

	<b>Existing H16 Radar</b>	<b>Proposed H17 Radar</b>
Distance to closest building façade of nearest residential property.	45m (22 Sunnyside)	205m (5 Barnes Close)
Distance to closest edge of garden of nearest residential property.	45m (22 Sunnyside) (this property has a single storey side extension extending to the boundary edge)	195m (5 Barnes Close)

**Table 2:** Distances to nearest residential properties.

- 3.15 The application supporting documentation advises that the specification of the radar has been led by latest standards in radar technology, and by MADG’s obligation with suppliers to manage the risk to life at a level deemed to be As Low as Reasonably Practicable (ALARP). The detailed design is driven by the site-specific location: the height of a radar is based on the relative ground level and height of structures in the vicinity.

- Proposed Operation of H17 Radar

3.16 The supporting documentation which accompanies the application advises that the proposed radar would be in continuous operation 24 hours per day, 7 days a week.

- Programme and Construction

3.17 The programme of works is estimated at approximately 13 months in total. Dismantling the H16 Radar and construction of the H17 Radar will take 6-7 months. The H17 Radar will then be commissioned and optimised to gain CAA approval, which will take 5 to 6 months. Demolition of the AR15 Radar will take approximately 1 month and will commence after the H17 radar has been approved by the CAA.

3.18 The supporting documentation advises that construction workforce and vehicles will access the Airport using the existing access from Barnwell Drive in the north-west of the Airport (Gate 13). A Construction Environmental Management Plan (CEMP) has been prepared and is submitted as an Appendix to the ES. It covers the controls on construction activities at all three sites to control construction impacts.

3.19 It is proposed that construction works would take place during normal daytime working hours.

#### Application Documents

3.20 In addition to the application forms, covering letter and drawings, the application is accompanied by the following supporting information:

- Planning Design and Access Statement, July 2021
- Statement of Community Involvement, July 2021
- Environmental Statement: Cambridge City Airport, Radar Replacement Project, July 2021
- Environmental Statement Appendices, including Alternative site assessment/report
- Environmental Statement Non-Technical Summary, July 2021
- Radar Safety Certification

3.21 The proposals have been discussed with Council officers as part of detailed pre-application dialogue. A developer presentation was also made to the JDCC at pre-application stage, on 23 June 2021.

3.22 Public consultation on the proposals was undertaken during May 2021. This was a virtual consultation due to COVID-19. It was advertised in the local press, and by letter to community leaders and stakeholder organisations. Nearly 600 local residents were also informed of the consultation by letter and accompanying leaflet. Details of the consultation activities and consideration of responses by the Applicant are contained in the submitted Statement of Community Involvement (SCI).

- 3.23 An update on the planning application proposals was provided to JDCC members at an officer-led briefing on 06 April 2022.
- 3.24 On 13 June 2022, a JDCC committee site visit took place. The purpose of the site visit was:
- To see the existing H16 Radar site.
  - To see the proposed H17 Radar site.
  - To observe the existing H16 Radar in operation.
  - To listen to the existing H16 Radar close up and at a distance.

#### Amended Plans and Additional Information

- 3.25 Following a request for further information under the EIA Regulations 2017 in relation to the ES, the following additional information was formally submitted under a covering letter from the Agent dated **20 October 2021**:
- Addendum to the Alternative Sites Assessment (ASA) (Appendix A3.1 of the ES):
    - Further constraints plan showing key constraints within the Airport boundary (such as the main and grass runways, and the clear and graded areas either side of these runways).
    - Letter from the Accountable Manager for the Aerodrome and Aviation Security Accountable at Cambridge City Airport, explaining the reasons for locating the radar within the Airport.
    - Further information supporting the choice of the H17 location of the radar in the area of land available in the north-west part of the Airport.
- 3.26 Following the statutory consultation period and initial officer assessment of the application, additional information was formally submitted to the Council by letter from the Agent dated **29 November 2021**. The additional information provided relates to the following:
- The location and design of the development proposals, including the effects of a radome radar design.
  - The choice of site, and decision to rule out an off-Airport radar location.
  - Health and Electromagnetic radiation.
  - Response to noise matters raised in the initial planning consultation response made by the City Council's Environmental Quality and Growth Service (report No J20- 12041B/1/F1 by Noise Consultants Ltd).
- 3.27 Further limited re-consultation was undertaken with regard to the amendments received in November 2021.

3.28 Further correspondence was formally submitted to the Council by letter from the Agent dated **10 March 2022**. The correspondence relates to the following:

- Confirmation of agreement to the Applicant seeking a temporary planning permission for a period of ten years, in view of the fact that the Applicant is progressing relocation plans away from Cambridge Airport.

3.29 Minor changes to the proposed H17 Radar ground works were submitted to the Council by letter from the Agent dated **25 April 2022**. The correspondence relates to the following:

- The position within the H17 compound of the standby back-up diesel generator (relocating it 6m to the east).
- Changes to the alignment of the compound fence line (to tie the northern and southern fence lines into Hangar 17).
- Changes to the routing of underground fibre optic and power cable feeds from Hangar 17 to the compound.

3.30 These changes were formalised following discussion with the planning case officer, who is satisfied that the proposed changes are modest and have no material effect on the findings of the EIA. No additional consultation was carried out.

#### 4.0 **Relevant Site History**

4.1 The relevant site history is as follows:

<b>Reference</b>	<b>Description</b>	<b>Outcome</b>
16/2212/FUL	Aircraft Engine Ground Running Enclosure and Supporting infrastructure works, including a new taxiway link and other associated works.	Approved December 2018.
S/1231/18/OL and 18/0481/OUT	Outline planning application (all matters reserved except for means of access in respect of junction arrangements onto Coldhams Lane, Cherry Hinton Road and Airport Way) for a maximum of 1200 residential dwellings (including retirement living facility (within Use Class C2/C3)), a local centre	Approved December 2020.

	<p>comprising uses within Use Class A1/A2/A3/A4/A5/B1a/D1/D2, primary and secondary schools, community facilities, open spaces, allotments, landscaping and associated infrastructure.</p>	
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## 5.0 Relevant Legislation

### 5.1 European EIA Directives and Regulations

European Union legislation with regard to environmental assessment and the planning regime remains unchanged having legislative application despite the UK leaving the European Union on 31 January 2020. The government passed secondary legislation in October 2018 to ensure the continued operation of the EIA regime.

An EIA is required by the 2017 EIA Regulations. The ES must identify and report the likely significant effects of the project on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short-term, medium-term and long term, permanent and temporary, positive and negative effects of the project. It must also report the mitigation measures that are proposed to avoid, reduce or remedy the likely significant effects. In cases where mitigation measures are not proposed or entirely effective, the EIA will identify any residual impacts and determine their significance.

### 5.2 The Conservation of Habitats and Species Regulations 2017

Consideration has been given to the application of the Conservation of Habitats and Species Regulations 2017 ('the Habitats Regulations'). Regulation 63 of the Habitats Regulations requires that the decision-making authority before deciding to...give permission...for a plan or project which is likely to have a significant effect on a European site and is not directly connected with or necessary to the management of that site, must make an 'appropriate assessment' of the implications of the plan or project for that site in view of the site's conservation objectives.

The Site is not in the vicinity of designated (European) sites of nature conservation importance and is not within such a designation. The Council is satisfied that the Application is unlikely to have a significant effect on a European designated site, either on its own or in combination with other projects and would not result in likely significant effects on European designated sites.

### **5.3 Planning and Compulsory Purchase Act 2004 (as amended)**

Section 38(6) of the Planning and Compulsory Purchase Act 2004 requires that applications are determined in accordance with the development plan unless material considerations indicate otherwise. The development plan for Cambridge City Council, as the Local Planning Authority (LPA), is the Cambridge Local Plan 2018.

### **5.4 Equalities Act 2010**

The Application has been assessed against the relevant sections of the Equalities Act 2010. It is not considered that the Applications discriminate against people with protected characteristics (age, gender reassignment, being married or in a civil partnership, being pregnant or on maternity leave, disability, race including colour, nationality, ethnic or national origin, religion or belief, sex, sexual orientation) specified in this Act.

### **5.5 National Guidance**

National Planning Policy Framework (NPPF) July 2021  
National Planning Practice Guidance (NPPG)  
National Design Guide (NDG)

### **5.6 Cambridge Local Plan (CLP) 2018**

Policy 1: The Presumption in Favour of Sustainable Development.  
Policy 3: Spatial Strategy for the Location of Residential Development.  
Policy 4: The Cambridge Green Belt.  
Policy 8: Setting of the City.  
Policy 13: Cambridge East.  
Policy 14: Areas of major change and opportunity areas – general principles.  
Policy 28: Carbon reduction, community energy networks, sustainable design and construction and water use.  
Policy 29: Renewable and low carbon energy generation.  
Policy 31: Integrated water management and the water cycle.  
Policy 32: Flood risk.  
Policy 33: Contaminated Land.  
Policy 34: Light Pollution Control.  
Policy 35: Protection of human health from noise and vibration.  
Policy 36: Air quality, odour and dust.  
Policy 37: Cambridge Airport Public Safety Zone and Safeguarding Zones.  
Policy 55: Responding to context.  
Policy 60: Tall buildings and the skyline in Cambridge.  
Policy 61: Conservation and Enhancement of Cambridge's Historic Environment.  
Policy 62: Local Heritage Assets.  
Policy 67: Protection of Open Space.  
Policy 69: Protection of sites of Local Nature Conservation Importance.

Policy 70: Protection of Priority Species and Habitats.  
Policy 81: Mitigating the transport impact of development  
Policy 83: Aviation Development.  
Policy 84: Telecommunications.

## 5.7 **Cambridge East Area Action Plan (CEAAP) 2008**

CE/1: Vision for East Cambridge  
CE/2 Development principles  
CE/3 The Site for Cambridge East  
CE/4 The Setting of Cambridge East  
CE/16 Biodiversity  
CE/17 Existing Biodiversity Features  
CE/18 Archaeology  
CE/22 Land Drainage, Water Conservation, Foul Drainage and Sewage Disposal  
CE/23 Telecommunications Infrastructure  
CE/24 Energy  
CE/25 Sustainable Building Methods and Materials  
CE/26 Noise  
CE/27 Air Quality

## 5.8 **Supplementary Planning Documents**

Greater Cambridge Shared Planning Sustainable Design and Construction SPD (2020).  
Cambridgeshire Flood and Water SPD (2016).  
Cambridgeshire and Peterborough Waste Partnership (RECAP): Waste Management Design Guide Supplementary Planning Document (2012).  
Cambridgeshire and Peterborough Minerals and Waste Core Strategy (2011).  
Cambridgeshire and Peterborough Minerals and Waste Site Specific Proposals Plan (2012).  
Cambridge East Area Action Plan (AAP) (2008) (excluding policies CE/3 and C/35 which are replaced by Policy 13: Cambridge East of the Cambridge Local Plan).  
Land North of Cherry Hinton SPD (2018).

## 5.9 **Noise Policy Context**

The proposed H17 Radar has the potential to give rise to noise impacts. An understanding of the relevant noise policy context is therefore considered essential. This is summarised in **Appendix B** of this report.

## 6.0 **Consultations**

### 6.1 **Cambridgeshire County Council (Highways Development Management)** – No objection.

- 6.2 **Cambridgeshire County Council Lead Local Flood Authority (LLFA)** – No objection. The proposed radar will be constructed on existing hard standing, served by an existing drainage network.
- 6.3 **Cambridgeshire County Council Archaeological Officer** – No objection.
- 6.4 **Greater Cambridge Shared Planning Service BNE Urban Design Team** – No objection. Comments. The Environmental Statement satisfies the relevant assessment criteria with regard to the visual impact of the proposed radar on the Cambridge skyline. Notes that a shadow flicker assessment has been undertaken, and that given the distance of the radar from residential properties and the presence of intervening vegetation, shadow flicker is likely to have a low impact on residential amenity.
- 6.5 **Greater Cambridge Shared Planning Service BNE Conservation Team** – No objection. Comments. Considers that there is adequate justification in support of the siting of the operational radar and that it will not harm the setting of nearby heritage assets including the Grade II listed Airport control and office building. Consider that the proposal will not harm the setting of nearby heritage assets.
- 6.6 **Greater Cambridge Shared Planning Service Landscape Officer** – Detailed comments provided. Whilst the methodology for the Landscape and Visual Impact Assessment (LVIA) is acceptable, the assessment of impact on the landscape character of Coldham’s Common and visual impact to the users of the Common is questioned.
- 6.7 **Cambridge City Nature Conservation Projects Officer** - No objection. Content with survey effort and conclusions of the Environmental Statement with regard to biodiversity.
- 6.8 **Cambridge City Sustainable Drainage Engineer** - No objection. Comments. The proposals indicate that there is no increase of impermeable area and new radar will be on a small area of existing hardstanding currently drained by a surface water system. Proposals for the new radar are resilient with sensitive infrastructure raised 300mm above ground levels. Proposals are supported in terms of drainage and flood risk. The proposed development should be constructed in accordance with the submitted information.
- 6.9 **Cambridge City Council Health and Environmental Services (Principal Environmental Health Officer)** - No objection.

Condition revision (response dated 8 June 2022): The development proposed is acceptable subject to the imposition of revised conditions/informatives wording relating to the following:

Unexpected Contamination  
Construction Environmental Management Plan & Working Hours

Standby Emergency Back Up Generator Operation  
H17 Radar - Noise Insulation Condition  
H17 Radar – Permitted Operational Sound Levels  
H17 Radar - Operational Sound Verification Assessment Report  
H17 Radar - Non-Compliance with Radar Sound Verification Assessment  
Noise Limits

Application as Amended (response dated 11 February 2022): The development proposed is acceptable subject to the imposition of conditions/informatives relating to unexpected contamination; a construction environmental management plan and working hours; H17 noise insulation; H17 radar operational sound verification assessment report; H17 radar operational noise compliance assessment process.

Detailed comments provided, executive summary as below:

We have reviewed the further information (additional information submitted under cover of a Vantage Planning letter dated 29th November 2021), together with the response and supplementary information previously provided on 20th October 2021 in response to a Great Cambridge Shared Planning (GCSP) service letter of 24th September 2021 requesting further information under the EIA Regulations 2017 in relation to the Environmental Statement (ES).

It is our view that the application is now fully in accordance with the EIA regulation requirements and the submitted ES with additional amendments / information etc includes all the necessary Env Health issues / topic area related information and impact assessments to allow us to make informed decision about the acceptability of the proposals.

The Environmental Quality and Growth (EQG) service fully support in principle the relocation of the existing H16 radar to the alternative H17 location as proposed, where it would be located further from local residential premises and will have less of an impact on local amenity / quality of life in terms of the main operational environmental impacts / effects such as shadow flicker and noise, when compared with the existing H16 radar when it was fully operating. Contaminated land and air quality impacts are negligible and acceptable.

We do not envisage any unacceptable adverse impacts on non-residential premises such as Commercial offices, other offices and work studios all of Barnwell Road / Drive, Peverel Road Allotment Gardens (Whitehill Allotment Society) and other recreational areas or areas of open space and the Abbey Meadows School.

In summary, having assessed the application submissions and having regard to the conclusions of the Council's '*Three Spires Report, Jan 2022 - EQG/CCC*' report it is our view that operational noise from the proposed H17 radar will not give rise to any significant adverse impacts on the health and the amenity / quality of life of nearby residential premises.

Based on national planning practice guidance on noise and the Government's Noise Policy Statement for England, it is concluded that the predicted H17 radar noise emissions at residential receptors are considered as being below a Lowest Observed Adverse Effect Level (LOAEL - level above which adverse effects on health and quality of life can be detected) at all times. At the most sensitive time of day at night-time, the levels are just below LOAEL.

At such an effect level the noise should not cause any change in the behaviour, attitude or other physiological responses. The radar noise may slightly affect the acoustic character of an area but not to the extent that there is a change in quality of life / amenity. If the noise exposure is at these levels the national planning guidance action / advice is that no additional specific measures are required to manage the proposed radar noise in the prevailing acoustic environment.

Therefore, it is concluded that the proposed development is in accordance with NPPF paragraphs 174 e) and 185 a) and Cambridge Local Plan 2018 policies 35: Protection of human health and quality of life from noise and vibration and 83: Aviation development.

However, to ensure that the radar noise complies with the predicted noise rating levels as detailed in the submitted ES and to protect the quality of life / amenity of local residents, a number of bespoke operational noise conditions are recommended.

Application as Submitted: It is not possible to fully comment on the proposed development. Requests additional information.

**To Note:** The EQG/Environmental Health service of Cambridge City Council also engaged the services of an acoustic consultant (Three Spires Acoustics Ltd) to independently assess and advise on the potential noise impacts of the existing H16 and proposed H17 radar.

The Council's acoustics consultants (Three Spires Acoustics Ltd) report 'Cambridge City Airport Radar Noise - Statutory Nuisance & Planning Assessment, Rev3 - 31/01/2022: Ref. No. TSA/ENA/2021/37' (the 'Three Spires Report' Jan 2022) is submitted alongside the City Council's Environmental Health response, and is considered relevant, and referred to throughout the 11 February 2022 response.

The full EQG consultation response and Three Spires Report Jan 2022 is included as **Appendices D and E** to this report.

- 6.10 **Cambridge City Council: Streets and Open Space** – No objection.
- 6.11 **South Cambridgeshire District Council, Development Officer, Health**  
– No objection.

Application as Amended: Comments. Having reviewed the revisions to the Health Chapter in relation to the effects of Electro Magnetic radiation, am satisfied that there will be no adverse impacts from the radar.

Application as Submitted: Comments in respect of the Health Impact Assessment report submitted as part of the Environmental Statement. Satisfied that the report is policy compliant. Agrees with methodology. Requests further information in respect of visual impact and electromagnetic radiation.

- 6.12 **Natural England** – No objection. Comments. Considers the proposed development will not have significant adverse impacts on statutorily protected nature conservation sites or landscapes.
- 6.13 **Historic England** – No objection. Comments. The lattice steel structure would potentially affect the setting of the scheduled monument Old Cheddar Lane Pumping Station, located 1.7km northwest of the Radar; the grade I listed Stourbridge Chapel, 1.3km to the north and the grade II listed Marshall's Cambridge Airport Control and Office building, located approximately 700m to the northeast. Having considered the *Environmental Statement* produced by Logica Consultants and the *Planning, Design and Access Statement* produced by Vantage Planning Ltd, satisfied that adequate justification has been provided in support of the proposed siting of the Radar, which is an essential operational requirement. Satisfied that would not cause harm to the setting of designated assets, the setting of conservation areas or non-designated areas.
- 6.14 **Environment Agency** - No objection. Recommends informative relating to removal of waste off-site.
- 6.15 **Cambridge City Airport** - No objection. Comments. The proposed development has been examined from an aerodrome safeguarding perspective and does not conflict with safeguarding criteria. Requests to be kept informed of any intended crane usage to ensure that this does not infringe safeguarded surfaces.
- 6.16 **Cambridgeshire Constabulary (Designing Out Crime Officer)** - No objection.
- 6.17 **Health and Safety Executive Advice** – Comments. The proposed development site does not currently lie within the consultation distance (CD) or a major hazard site or major hazard pipeline, therefore at present HSE does not need to be consulted on any developments on this site.

## 7.0 Representations

- 7.1 Over 110 third party representations were received from the owners/occupiers of the following addresses:

- 1a Sunnyside, Cambridge
- 6 Sunnyside, Cambridge
- 10 Sunnyside, Cambridge
- 11 Sunnyside, Cambridge
- 12 Sunnyside, Cambridge
- 14 Sunnyside, Cambridge
- 18 Sunnyside, Cambridge
- 4 Peverel Close, Cambridge
- 9 Peverel Close, Cambridge
- 10 Peverel Close, Cambridge
- 19 Peverel Road, Cambridge
- 40 Peverel Road, Cambridge
- 50 Peverel Road, Cambridge
- 54 Peverel Road, Cambridge
- 68 Peverel Road, Cambridge
- 90 Peverel Road, Cambridge
- 115 Peverel Road Cambridge
- 118 Peverel Road, Cambridge
- 170 Peverel Road, Cambridge
- 218 Peverel Road, Cambridge
- 7 The Westering, Cambridge
- 12 The Westering, Cambridge
- 14 The Westering, Cambridge
- 16 The Westering, Cambridge
- 20 The Westering, Cambridge
- 24 The Westering, Cambridge
- 25 The Westering, Cambridge
- 32 The Westering, Cambridge
- 36 The Westering, Cambridge
- 37 The Westering, Cambridge
- 43 The Westering, Cambridge
- 46 The Westering, Cambridge
- 47 The Westering, Cambridge
- 48 The Westering, Cambridge
- 52 The Westering, Cambridge
- 53 The Westering, Cambridge
- 58 The Westering, Cambridge
- 51 Whitehill Road, Cambridge
- 60 Whitehill Road, Cambridge
- 138a Whitehill Road, Cambridge
- 13 Barnes Close, Cambridge
- 81 Barnwell Road, Cambridge
- 83 Barnwell Road, Cambridge
- 125 Barnwell Road, Cambridge
- 139 Barnwell Road, Cambridge
- 11 Holyoake Court, Whitehill Road, Cambridge

- 46 Ainsworth Street Cambridge
- 43 Golding Road Cambridge
- 12 The Homing, Cambridge
- 21 The Homing, Cambridge
- 14 Lemur Drive, Cambridge
- 16 North Cottages, Cambridge
- 20 Hurst Park Avenue, Cambridge
- 208 Coldhams Lane, Cambridge
- 530 Coldhams Lane, Cambridge
- 3 Galfrid Close, Cambridge
- 4 Galfrid Road, Cambridge
- 3 Rawlyn Close, Cambridge
- 4 Haggis Gap, Fulbourn
- 4 Thorley Road, Cambridge
- 43 St Bartholomew's Court, Cambridge
- 5 Rayson Way, Cambridge
- 50 Cavendish Road, Cambridge
- 52 Stanley Road, Cambridge
- 6 Edward Street, Cambridge
- 6 Meadowlands Road, Cambridge
- 70 High Street, Cambridge
- 74 De Freville Avenue, Cambridge
- 74 Hartington Grove, Cambridge
- 41 Hurrell Road, Cambridge
- 96 Cavendish Road Cambridge
- 71 Stourbridge Grove, Cambridge
- 19 Stanesfield Road Cambridge
- 41 Stanesfield Road, Cambridge
- 576 Newmarket Road, Cambridge
- 603 Newmarket Road, Cambridge
- 344 Cherry Hinton Road, Cambridge
- 43 Priory Road, Cambridge
- The Paddocks, Wimbish Manor Estate, Fowlmere Road, Shepreth
- 18 March Lane
- 58 Whitehill Road

7.2 The representations can be summarised as follows:

**Objection** to the proposals for the following reasons:

- Principle of development:
  - Assessment of other sites not sufficiently detailed.
  - Choice of site not justified.
  - Site should be on land outside the Airport perimeter.
  - Alternative site assessment is misleading.
  - The Airport should disclose the 2015 NATS report relating to alternative radar locations.

- Design of the proposed radar:
  - A radome should be placed on the radar.
- Visual impact/impacts of proposed radar on the environment:
  - Impact on local environment, including Coldham's Common.
  - Will not improve visual amenity with respect to corridor extension from Coldham's Common towards Teversham.
  - Impact on long views. Does not enhance the Cambridge Skyline and will be visible up to 3km away.
  - Will not be camouflaged or designed sympathetically to minimise visual impact.
  - Will operate and rotate with lighting, drawing visual attention.
  - Visual impact assessment criteria disputed.
- Impact on existing residential amenity:
  - Noise: Long term, tonal and persistent low frequency noise disturbance. Dispute background noise measurements provided used in ES impact assessment – considered unreliable and not representative.
  - Rotating radar.
  - Health impacts: Physical and mental health impacts, loss of sleep, impact on family life, dogs barking, anxiety and stress.
  - Electromagnetic radiation: Insufficient information/lack of an independent report to confirm acceptability of the risk from electromagnetic radiation.
  - Impact on the enjoyment of private outdoor space.
  - Light disturbance and pollution.
- Adverse environmental impact on local roads, including Sunnyside, The Westering, The Homing, Peverel Road, Barnes Close, Latimer Close, Peverel Close, Barnwell Road, and Coldham's Common.
- Impact on wildlife.
- Impact on greenbelt corridor extension.

- Comments relating to the process for submitting the representations.
  - Statement of Community Involvement Report not within suite of documents available for inspection.
  - Impact on value and saleability of houses in the area.
- 7.3 In addition to the third-party representations summarised above, a noise report by the independent acoustic consultancy **MAS Environmental Ltd (January 2022)** was commissioned and submitted in January 2022 on behalf of the resident of 53 The Westering 'Marshall Radar Tower Noise - Planning App. Ref: 21/03224/FUL - Preliminary Findings in relation to noise relating to baseline background masking noise, dated 30<sup>th</sup> August 2021 (reference: MAS/Rep/Rev/Aug210813). This forms an additional community objection to the further noise information submitted by the Applicant to the Local Planning Authority in November 2021.

**Summary:** The report provides a detailed analysis of guidance, and states that the noise assessment methods adopted by the Applicant are not compliant. The report concludes that substantial reduction in noise emissions will be required to meet the Council's suggested noise limits; that there is a duty to minimise such noise when applying national planning guidance; and that the noise from the radar tower source can be further mitigated.

- 7.4 A representation was also received from **Cambridge Past Present and Future**. Comments: Welcomes that a Landscape and Visual Impact Assessment accompanies this application. Notes a significant visual impact of the mast on the recreational users of Coldham's Common, for which no mitigation or compensation is offered. In order to comply with local and national planning policy believe that mitigation or compensation is required to offset the harm.

## 8.0 Member Representations

- 8.1 Cllr Haf Davies (former Labour City Councillor for Abbey Ward) and Cllr Alex Bullat (County Councillor for Abbey Ward) have made a joint representation objecting to the application on the following grounds:
- Negative effect of existing H16 Radar on local community through noise, light, and visual impact issues.
  - Adverse impact of proposed H17 Radar on residential areas and adverse visual impact on Coldhams Common.
  - A location further away from residential areas should be sought.
- 8.2 Cllr Hannah Copley, Green Party Councillor for Abbey Ward has made a representation objecting to the application on the following grounds:

- Current location: Impact on quality of life through physical proximity, noise and visual disturbance; loss of sleep, damage to mental and physical wellbeing. Impact on quality of life negatively due to noise and visual effects. Impact on health wellbeing (physical and mental) and quality of life of residents of East Barnwell.
- Proposed location – Negative impact on a greater number of residents relating to noise, light, visual disturbance, size, height.
- Impact on visual amenity: does not improve visual amenity with respect to Protected Open Spaces and will permanently damage that and the future Green Belt Corridor extension from Coldham's Common towards Teversham.
- Proposed radar will operate and rotate with lighting on a 24/7 basis, drawing visual attention to the H17 high point on the skyline.
- Proposed radar will impact on local residential amenity and will subject local residents to long-term, tonal and persistent low frequency noise disturbance.
- Proposed radar will permanently blight local environment including Coldham's Common.
- Proposed radar will not enhance the Cambridge skyline, will be visible as far away as 3km and will breach the existing skyline.
- Proposed radar will have a significant adverse effect on the environment especially the roads: Sunnyside, The Westering, The Homing, Peveler Road, Barnes Close, Latimer Close, Peveler Close, Barnwell Road, and Coldham's Common.
- Proposed radar has not been camouflaged or designed sympathetically to minimise visual impact.
- The applicant should update the existing location for radar AR15.
- Requests sight of the NATS report to explore alternative locations for a new primary radar.

## 9.0 Local Groups

9.1 Radar Collective (Residents Against Airport Disturbance and Radar) has made a representation objecting to the application on the following grounds:

- Impact on residential amenity of existing and future residents, and users of Coldham's Common.

- Lack of community consultation and environmental impact assessment.
- Visual impact.
- Impact on Green Belt Corridor extension from Coldham's Common towards Teversham.
- Noise impacts arising from long term, tonal and persistent noise disturbance.
- Adverse effect on the local environment.
- Light impacts - shadow flicker and strobe effect.

9.2 The above representations are a summary of the comments that have been received. Full details of the representations are available on the Council's website.

## 10.0 Planning Background

- 10.1 The Airport's existing primary surveillance radar (the AR15 Radar) is located on land to the south of the existing main runway. This radar was acquired by the Applicant in 2000 and its hardware is nearly 50 years old.
- 10.2 The AR15 Radar is reaching the end of its operational life, and it is becoming increasingly difficult for the Applicant to secure replacement parts and components (the original equipment manufacturer support is no longer available). The performance and reliability of this radar is therefore sub-optimal.
- 10.3 At 14.5m (AOD) the height of the existing radar also compromises its performance. The presence of other nearby structures (including Airport hangars and nearby residential development) interferes with the radar's beam forming and detection capability, causing blind spots and shadows. Local windfarms also create detection issues, with the continuous rotation of blades generating false detection signals. This makes aircraft detection and warning more difficult for air traffic controllers and risks the Airport not having radar coverage. The loss of the radar would severely constrain flying in certain weather conditions and increase the risk of mid-air collision due to the lack of awareness of other aircraft operating within the Airport's uncontrolled Air Traffic Zone (ATZ).
- 10.4 The application supporting documentation advises that the risk to the Airport of being without an operational radar due to failure of the AR15 Radar is high. This would have potentially serious implications and risks for the safety of aircraft operations and would severely constrain flying to certain weather conditions. There would also be a risk to the sustainability of some businesses at the Airport, where unrestricted access to the runway is a requirement to meet the operational needs of customers aircraft, which may be needed at short notice.

Requirement To Relocate the Existing AR15 Radar

- 10.5 The Applicant is obligated to provide and bring into operational use an alternative radar solution to the AR15 Radar for Airport safety and operational reasons, under the terms of the Section 106 Agreement for the LNCH outline planning permissions.
- 10.6 LNCH is a cross boundary site which lies to the south-east of the Airport. Outline planning permission was granted in December 2020 for residential led, mixed-use development of up to 1200 dwellings, including a local centre, schools and community facilities.
- 10.7 The LNCH site was purchased in Spring 2021 and is being developed as a joint venture by Bellway Homes and Clarion Housing Group. The developer project team is in active pre-application discussions with officers regarding the delivery of this development.
- 10.8 The LNCH Section 106 Agreement (Schedule 16 (Airport) Part 3 (Radar Safeguarding Area) ) Part 3 restricts development of the site above permissible building heights until an alternative radar solution has been brought into use. The restriction includes a Sterile Zone surrounding 150m of the AR15 Radar where no permanent structures can be allowed. Without the relocation of the AR15 Radar, the development of the LNCH development site cannot be realised.
- 10.9 The LNCH report to the May 2019 meeting of JDCC noted that the Airport's primary surveillance radar would need to be replaced, and that a new radar would be positioned on the north side of the Airport. This references the H16 Radar which was subsequently constructed under the Airport's permitted development rights.

#### The Existing H16 Radar

- 10.10 A new primary surveillance radar (the H16 Radar) was erected and commissioned in 2019-2020 on the northern side of the Airport, to the west of Hangar 16. It began to operate in the autumn of 2020.
- 10.11 The H16 Radar was constructed under the Airport's permitted development rights, falling within Class G of Part 8 of GPDO and thus did not require planning permission. It was intended that this radar would replace the historic AR15 Radar.
- 10.12 Since this time, Cambridge City Council's Environmental Health Commercial Team have received complaints from residents living in the immediate vicinity of the H16 Radar. The complaints relate to operational noise (an audible tonal and fluctuating industrial-type mechanical noise) and shadow flicker. The noise complaints are about noise disturbance /annoyance experienced mainly during the evening and night-time periods and relate to adverse impacts on the use and enjoyment of properties (both inside and externally in gardens), with reported incidents of sleep disturbance and associated health and wellbeing impacts.

- 10.13 The Applicant has also directly received complaints about the H16 Radar from local residents. Following notification of the noise complaints, they engaged an acoustic consultant to assess and advise on the H16 Radar noise in liaison with the Council's Environmental Health service. A package of noise mitigation measures was undertaken to the upper H16 Radar motor cabin (the main noise source) to reduce the noise levels experienced by local residents.
- 10.14 Although the noise mitigation measures undertaken resulted in measured noise improvements, noise complaints have continued. The main source of the noise is two motors which rotate the H16 Radar antennae, which are located within the upper H16 Radar motor cabin immediately below the antennae.
- 10.15 The noise annoyance/disturbance is caused by a low level tonal mechanical motor-type noise, with a degree of amplitude modulation (varies up and down in volume). The character of the noise is such that it is readily identifiable and distinctive as the H16 Radar.
- 10.16 The Applicant subsequently committed to re-locating the H16 Radar to an alternative, less intrusive location which will continue to provide an acceptable level of operational and safety performance. In the interim, the AR15 Radar continues to serve the Airport.
- 10.17 The Applicant is now applying for full planning permission to dismantle and relocate the H16 Radar to a location on a site immediately to the west of Hangar 17 (the H17 Radar). After the new H17 Radar has been commissioned, the existing AR15 radar will be dismantled and removed. A relevant condition has been agreed (**Condition 3: Removal of AR15 Radar**).

#### Relocation of Marshall from Cambridge

- 10.18 In May 2019, Marshall Group announced its intention to relocate the Marshall Aerospace business from the Cambridge Airport site. In October 2020, following a site selection process, Marshall confirmed to the Council that it had secured an Option Agreement for a 35-hectare site at Cranfield Airport in Bedfordshire. In October 2021, following publication of the Local Plan First Proposals (which identified the Cambridge Airport site as a preferred location for growth), Marshall announced Cranfield Airport as the preferred location for the relocation of the Marshall Aerospace business.
- 10.19 In view of the stated intention to relocate by 2030 and recognising some uncertainty around the precise timescale of when this will be able to happen and be completed, the Applicant has confirmed the acceptability of a ten-year planning permission in respect of the proposed H17 Radar and associated structures and equipment (**Condition 2: Ten Year Permission**).

#### Consideration of Alternative Sites

10.20 The ES provides details of the proposed development, and a summary of the alternative sites considered as part of the site selection process for the relocated radar. The alternative assessment, including a more detailed Alternative Site Assessment (ASA), (Appendix 3.1 of the ES, as updated by an Addendum dated October 2021) reports on the alternative sites considered, and the reasons for the selection of the proposed site.

- Assessment Criteria

10.21 The ES identifies that the feasibility of alternative sites was identified and evaluated against key criteria (see Table 3 below). The potential to locate the proposed radar outside the Airport boundary was not considered within the ASA. This is because of the need to ensure compliance with CAA Regulations which cover the security of Airport Facilities.

<b>Tier 1 Criteria</b>	<b>Safety and operational requirements</b> Beam forming ability Obstacle limitation surfaces contours Presence and location of airport infrastructure Shadowing Impact of reflections Air space coverage of the radar image AR15 Radar and Very High Frequency Direction Finder (VDF)
<b>Tier 3 Criteria</b>	Noise
<b>Tier 3 Criteria</b>	Landscape and Visual Shadow Flicker
<b>Tier 4 Criteria</b>	Biodiversity Historic environment Hydrology and hydrogeology Land contamination
<b>Tier 5</b>	<b>Other environmental considerations</b> Air quality; traffic and transport Carbon and climate change Major accidents and disasters Human health.

**Table 3:** Key Assessment Criteria for Applicant’s Choice of Site

10.22 The main locational constraint informing this process is the need to site the radar within the confines of the Airport boundary, to ensure the protection and safety of the radar in the interests of public safety, and to facilitate its future maintenance.

- 10.23 The site selection process has also been informed by studies which were commissioned by the Applicant, relating to noise, landscape and visual impacts and shadow flicker.
- 10.24 In response to a request from the planning case officer under the EIA Regulations 2017, additional information was provided by letter dated 20 October 2021 concerning the choice of the H17 site over the alternatives. The Applicant's response includes photomontages to compare the visual impact on representative views, including from Coldham's Common and The Westering, and the assessment of the shadow flicker effects of radar on the alternative sites.
- On-Site Locations
- 10.25 The Addendum to the ASA identifies that the location selection prioritises the operational and safety requirements of the Airport. This includes radar operational optimisation (for example, not in the vicinity of the main runway and grass runway due to Obstacle Limitation Survey (OLS) contours and restrictions on the height of infrastructure) and noise (prevention of significant noise effects to sensitive receptors in the immediate vicinity of the Airport). Based on the information submitted, it is the Applicant's view that a location in the vicinity of Hangar 17 (north-west of the Airport), is the preferred option on-site within the Airport's physical boundaries
- 10.26 The ASA identifies that due to on-site constraints, the only potential area to site the radar is to the north-west of the Airport. Taking into account the existing hangars and infrastructure in this area, two potential locations within this area were studied for a number of environmental impacts – namely the car park of Hangar 21 (H21 site), and adjacent to Hangar 17 (H17 site).
- 10.27 The technical information undertaken to support the updated ASA demonstrates that the H17 site is preferable in comparison to the H21 site, by minimising any effects resulting from landscape, visual, and shadow flicker.
- Off Site Locations
- 10.28 As identified above, the main reason detailed by the Applicant for a preferred site within the confines of the Airport boundary is compliance with CAA Regulations covering the security of Airport Facilities.
- 10.29 As part of the additional information submitted in respect of the ASA, the Airport Director provided written confirmation that an off-site location would not offer the level of security assurance required to satisfy CAA Regulations relating to Airport security. On this basis, given that off-site locations are not reasonable alternatives, the Applicant's assessment of alternative sites has focused on on-Airport options only.

- 10.30 The application submission provides further details in respect of why an off-Airport location is less desirable. This includes ease of access of Airport personnel to undertake regular and emergency maintenance, as well as availability of utilities required both to serve the radar and data communications infrastructure connecting the radar to the Airport control tower.
- 10.31 Officers note third party representations which refer to a NATS report which was commissioned in 2015 in respect of radar performance in different locations, both on and off site. The Applicant has advised that this report was used principally as a basis for further detailed investigations of potential radar sites. Whilst the NATS report recommended the current site at Hangar 16 as the best option to be taken forward for further consideration, it did not cover wider safety or other security considerations or environmental acceptability.
- 10.32 The Applicant has advised that the NATS report has not informed the current position with regard to the choice of H17 Radar site. The document has not been shared and does not form part of the application documentation.
- Summary – Assessment of Alternative Sites
- 10.33 Under the EIA Regulations, an ES is required to provide details of the consideration of alternative sites, and the main reasons for the choice of site. Schedule 4 (Part 2) requires a description of the '*reasonable alternatives*' studied by the developer (for example in terms of development design, technology, location, size and scale), which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects between the sites considered. The EIA Regulations do not require the environmental assessment of potential sites to be detailed.
- 10.34 The ES which has been submitted in respect of the development proposals states that alternative sites have been considered, identifies the alternative designs that have been considered, and the reasons for the choice of the proposed H17 site. A description of the reasonable alternatives has been provided, together with an indication of the main reasons for selecting the H17 Radar site. On this basis, officers are of the view that the proposals satisfy and comply with the requirements of the EIA Regulations with regard to the consideration of alternative sites.
- 10.35 Officers are satisfied that the assessment of alternative sites is compatible with the requirements of the EIA framework, which requires alternative sites to be explored. The application documentation confirms that the site selection process has followed a detailed evaluation. The development has been assessed on the basis of the application site for the H17 Radar as identified in the submitted scheme.

## 11.0 Planning Assessment

11.1 From the consultation responses and representations received and from an inspection of the site and the surroundings, the key issues are:

- Principle of development
- Design and layout
- Impact on Site and Surroundings, including Landscape and Visual Impact
- Other Environmental Considerations:
  - Air quality, odour and dust
  - Archaeology and the historic environment
  - Biodiversity
  - Ground conditions and soils
  - Human health (including shadow flicker)
  - Drainage and Flood Risk
  - Lighting
  - Noise
  - Traffic and transport
  - Cumulative effects
- Impact on residential amenity
- Third party issues
- Other Issues
- Planning balance
- Summary and conclusions

## 12.0 Principle of Development

12.1 Cambridge Airport was established as an aerodrome in 1938 and operates under licence from the Civil Aviation Authority. The Airport supports various types of aircraft operations, including general aviation, business aviation and the East Anglian Air Ambulance, as well as occasional commercial and charter passenger flights. It is also home to a number of flying clubs and flying schools.

12.2 Aircraft maintenance, repair and overhaul (MRO) operations are a core part of the Airport's operations. This is carried out by MADG, which specialises in the conversion, modification, maintenance and support of aircraft and defence solutions. The company has an international customer base which includes aircraft manufacturers, airlines and government military air forces.

12.3 The primary surveillance radar is an important piece of the Airport's infrastructure and is essential to maintaining a safe Airport and aircraft operations. This is because airspace around Cambridge Airport is 'uncontrolled' airspace, which means that aircraft manoeuvring through the airspace are not obliged to notify the Airport's air traffic controllers.

- 12.4 Primary surveillance radar is necessary to ensure the safe control of aircraft movements in the airspace above and around the Airport, by locating and identifying aircraft in the immediate airspace outside the ATZ.
- 12.5 The supporting documentation which accompanies the application states that the replacement of the AR15 Radar will not influence the scale of Airport operations. It does not facilitate air traffic or passenger growth at the Airport or allow the current operations to change in anyway.
- 12.6 The risk of being without an operating radar has significant implications for activities at the Airport, and risks in terms of aircraft operational safety, and the sustainability of some businesses at the Airport. The Applicant has an obligation as a supplier to the UK Ministry of Defence (MOD) contractor to manage the risk to life as part of the planned and unplanned maintenance to its UK aircraft fleet, and also for military aircraft from other nations.
- 12.7 Due to its age, the existing AR15 Radar is at increasing risk of failure, which in turn risks the Airport being in the unacceptable position of having no radar coverage. In those circumstances the loss of the radar would severely constrain flying in certain weather conditions and increase the risk of mid-air collision due to the lack of awareness of other aircraft operating within the Airport's uncontrolled ATZ.
- 12.8 Officers acknowledge that the proposed radar is an essential function of the operating Airport which is necessary to ensure the continued safety of the Airport's operations. On this basis, the principle of the proposed development is acceptable, subject to the following evaluation.

### **13.0 Design and Layout**

- 13.1 The design and layout of the proposed H17 Radar and associated infrastructure is constrained by its relationship with both surrounding context and functional requirements. The radar mast is utilitarian, comprising an exterior of lattice steelwork construction. For it to perform optimally, the radar needs to receive and emit radar beams without interference from other buildings. Given the prevalence of other tall structures at Cambridge Airport, and to ensure optimal performance, the base of the radar head is required to be above the height of the adjacent Hangar 17 building (27.6m). This consequently sets a minimum mast height below which its performance would be compromised.
- 13.2 The application supporting documentation advises that consideration was given to the installation of a radome on the radar head. This is a structural weatherproof enclosure, constructed of material transparent to radio waves, which protects radar equipment from external environmental considerations (notably extreme weather conditions). It does not reduce nose impacts or shadow flicker.

- 13.3 The Applicant has advised that a radome design solution was not pursued, on the basis that (amongst other things), it would not significantly reduce the visual impact of the structure. Whilst noting that Local Plan Policy 84 (Telecommunications), criterion (b), requires the visual impact of telecommunications development to be minimized through design and location, officers accept that the visual impact of the H17 Radar would not be mitigated through incorporation of a radome. In these particular circumstances, the visual impact of the design of the radar could not be designed out.
- 13.4 Given the functional requirements of the proposed radar, the design and layout of the proposals are considered in accordance with Policy 84 of the Cambridge Local Plan.

#### 14.0 **Impact on Site and Surroundings**

- 14.1 The proposed H17 radar tower would stand at a height of just over 43m. Although not a solid structure but of a lattice steelwork construction and therefore relatively permeable visually, the top part of the structure will necessarily rotate which will draw attention and make the structure more visible. The H17 Radar will be visible from the medium to short distance views and, at a proposed height of 43.3 metres the application triggers the application of the Cambridge Skyline Guidance (Appendix F of the Cambridge Local Plan 2018), which provides clarity on Policy 60: Tall buildings and the skyline in Cambridge.
- 14.2 Notwithstanding that Local Plan Policy 60 acknowledges Cambridge Airport as an exception within the Cambridge skyline, the impact on medium to short distance views as assessed within the submitted ES satisfies the relevant assessment criteria set out in Appendix F of the Local Plan. In accordance with the requirements of Appendix F, the application is accompanied by written and illustrative material which provides the evidence base and policy justification for the proposed H17 Radar.
- 14.3 The application submission demonstrates that an options appraisal process was undertaken to determine a site location which meets the operational and safety requirements of the development proposals, whilst minimising the visual impact of the proposal. The alternative sites and the justification for the choice of the H17 Radar application site is set out in the 'Consideration of Alternative Sites' section of this report (Paragraphs 10.19 to 10.34).

#### Landscape and Visual Impact Assessment (LVIA)

- 14.4 The ES includes an LVIA which describes the existing landscape and visual baseline environments; assesses their sensitivity to change; describes the key landscape and visual related aspects of the proposal; describes the nature of the anticipated change upon both the landscape

and visual environments; and assesses the long-term effects during construction, operation and removal.

- 14.5 The LVIA is based on a 3km diameter study area centred on the site of the proposed H17 Radar and derived from the 'zone of theoretical visibility' (ZTF). The LVIA sets out the existing landscape character, topography and the designated and protected landscapes within the 3km study area.
- 14.6 The potential visibility of the H17 Radar, as identified by the ZTV would extend beyond the 3 kilometres study area, across open Fenland, although these views would be reduced by intervening buildings and trees. The ZTV also identifies that there are nearer and more significant views within the settled northern edge of Chery Hinton, as well as small pockets of visibility within the open areas at Cherry Hinton Recreation Ground.
- 14.7 To the south-west visibility extends to the residential edge of Cambridge. To the west visibility extends approximately 1.2 kilometre across Coldham's Common to the railway line. Beyond this, visibility is limited with the exception of the area of open space around Jesus College/Midsummer Common, approximately 2.6km away.
- 14.8 The LVIA includes an assessment of the impact of the development on the landscape character and on visual receptors (the different groups of people who may experience views of the development) within the study area and presents 12 representative views which may be affected by the development. The study area, visual receptors and key views were agreed with Council officers during pre-application dialogue.
- 14.9 The methodology for the LVIA (including the ZTV), has been reviewed by the GCSP Landscape Officer, who considers the methodology to be thorough and in line with current UK guidelines for LVIA (GLVIA, 3<sup>rd</sup> Edition, 2013).

- **Baseline Landscape Character and Context**

- 14.10 The development site is located on the eastern edge of Cambridge in a flat area between the edge of Cambridge and the Fen. The land to the north and south of the Airport is mainly residential in use, but a business park and other commercial buildings are located immediately northwest of the Airport on Barnwell Drive. Fields and farmland are located to the east of the Airport. The Green Belt wraps around the eastern edge of the Airport and extends across the airfield to create a green corridor encompassing Coldhams Common. The Common is Registered common land, open access land and includes public rights of way, sports, play and allotments.
- 14.11 The LVIA uses Landscape and townscape character areas defined in the Cambridge Inner Green Belt Study 2015 which formed part of the evidence base for the 2018 Cambridge Local Plan. The study area includes a number of landscape character areas and townscape character areas:

### **Landscape Areas:**

Fen  
Fen edge  
Chalk hills  
River valleys

### **Townscape Areas:**

Airport  
Historic core  
Bespoke houses, colleges and university buildings  
Green spaces and corridors  
Victorian and Edwardian terraced housing  
Large scale commercial, industrial and service development  
Post ward suburban housing  
21<sup>st</sup> century mixed use development

- **Impact on Visual Receptors**

14.12 Chapter 13.1 of the ES sets out the follow visual receptors and key routes located within the study area:

- Recreational users of Coldham's Common
- Residents and users of local roads around Sunnyside, Mansfield Way and The Westering
- Residents, users of local roads and green space around Peverel Road
- Workers and users of the Barnwell Drive commercial area
- Users of the A1303 (Newmarket Road)
- Users of the A1134 (Barnwell Road)

14.13 Eight views are presented in the LVIA and represent each of the primary visual receptors in a 1km radius area centred on the site and listed above. Four long distance views are also presented, and address two views from the eastern edge of the Airport, a view from the River Cam and a view from Midsummer Common. The long-distance views include Strategic View 10 from the CLP Appendix F.

14.14 Table 13.1 of the LVIA section of the ES summarises the effects on visual receptor groups and key routes. A summary of the impacts on the visual receptors is provided below.

14.15 **The recreational users of Coldham's Common** (user group identified as a high-medium sensitivity) would be the only receptors receiving a significant, adverse impact from the development. Although the existing H16 Radar is currently partially visible from the Common, visibility of the proposed H17 Radar would be higher and more prominent, because it is nearer to the Common and the radar tower is higher. The proposed H17 Radar would be clearly visible from across the Common and would stand above the trees and the airfield buildings. The visual effects resultant from

the removal of the H16 Radar and construction of the H17 Radar on the users of Coldhams Common are identified as '*long-term, of medium scale, occurring across a wide extent of the area*'. Effects would be of '*medium magnitude, major-moderate (significant) and adverse*'.

**14.16 Residents, users of local roads and green space around Peverel Road:** The ES concludes that the visual effect on the residents within and around Peverel Road, Latimer Close and Barnes Close will be '*long term effects of medium-small scale and occurring across a wide-intermediate extent of the area*'. Effects would range from '*medium to medium-low magnitude*', and on balance would be '*moderate (not significant) and adverse*'. Since the nearest residential property is on Barnes Close, some 200m distance from the H17 Radar, the assessment considers that the visual effects would not be overbearing or intrusive

**14.17 Residents, and users of local roads around Sunnyside, Mansfield Way and The Westering:** Visibility of the proposed H17 radar from Sunnyside, Mansfield Way, the corner of The Westering and Sunnyside and from the rear of the properties on the eastern sides of The Westering would be less than views of existing H16 Radar. There would be a higher level of visibility of H17 from the northern end of The Westering, although it would become increasingly screened by the properties and intervening vegetation towards Sunnyside and Mansfield Way. The H17 Radar is unlikely to be visible from public areas of Meadowlands and The Homing, as well as Sunnyside, due to the orientation of the road, and the screening effect of adjacent houses/vegetation. The LVIA summarises the visual effects of the removal of the H16 Radar and its replacement by the H17 Radar on the residential areas to the north as: '*medium-small scale, occurring across an Intermediate extent of the area*. The effects would be of '*medium-low magnitude, moderate (not significant) and adverse*'.

**14.18 Workers and users of the Barnwell Drive commercial area:** The LVIA report states that the greatest, large-scale visual effects would be in the vicinity of Barnwell Drive, due to its close proximity to the site of the H17 Radar. The visual effect on the commercial area users on Barnwell Drive from the H17 Radar is identified as a '*long-term effect on users of this area, of medium scale, occurring across a wide extent of the area*'. Effects are assessed to be of '*medium magnitude, slight (not significant) and adverse*'.

**14.19 Cherry Hinton:** The visual effects on the residential properties on the northern and western edge of Cherry Hinton where they face across the airfield are judged to be '*long term and of small scale, occurring across an intermediate-localised extent of the area*'. The effects would be of '*low magnitude, slight (not significant) and adverse*'.

**14.20** Officers broadly agree with the conclusions of the LVIA with regard the impact on visual receptors, although are of the view that the duration of the impacts has been overstated. Given the future development plans for the wider site, and that the Applicant has confirmed agreement to the H17

Radar being removed from the site within ten years (**Condition 2: Ten Year Permission**), it is considered more appropriate to consider the duration of the impacts as medium-term rather than long-term.

- **Impact on Landscape Character**

14.21 The proposed H17 Radar would be situated in the large scale Commercial Industrial and Service Development Townscape Character Area (TCA) (as defined by the Cambridge Inner Green Belt Study), adjacent to the border of the Cambridge Airport Landscape Character area. The two-character areas include large scale Airport hangars and other buildings associated with the Airport, and the LVIA concludes that this area has *'Medium-Low susceptibility and limited value, leading to a low-negligible sensitivity'*.

14.22 The proposed H17 Radar will be located next to Hangar 17 which is 27.6m high and close to the GRE building which is 20m high. The LVIA concludes that the proposed H17 radar tower is compatible with the two character areas but there will be *'small scale, long-term'* effects on the character area. The overall effect is concluded to be *'low magnitude, slight-minimal (not significant) and neutral'*.

14.23 The residential areas immediately north and southwest of the Airport are part of the 1900-1945 Suburban Housing character area. The LVIA considers the effect on the landscape character of the suburban housing to the north and southwest to be of a *'small scale, long-term and arising across a limited extent of the character area'*. These effects would be of *'negligible magnitude, minimal (not significant) and adverse'*.

14.24 Officers do not agree with this conclusion, being of the view that the effects would have a slightly greater impact, because the radar is of an unusual appearance, and is higher than adjacent Airport structures and the surrounding housing. Notwithstanding this, officers agree that the increase in magnitude would not change the final conclusion of the LVIA, for a less than significant effect on these residential areas.

- **Impact on Landscape Character of Coldham's Common**

14.25 Coldhams Common is located in the Greenspaces and Corridors character area. It includes large amounts of natural areas including grazing land, grassland and artificial sports pitches, as well as areas of formal play. The landscape is predominantly flat and open with extensive panoramic views across the Common contained by the boundary vegetation.

14.26 Boundary vegetation encloses the Common and separates it from the surrounding suburbs and roads. A few views of housing are visible and there are other reminders that the area is in the city with views of the football stadium, Airport hangar buildings and some warehousing. The size of the Common and the amount of enclosing vegetation gives a

strong rural feel particularly as it links physically with Stourbridge Common to the north and open countryside visually, beyond the Airport, to the east.

14.27 The LVIA recognises Coldham's Common as an area well used by the local community and therefore of high community value, leading to a '*medium sensitivity*'. No large-scale effects were identified on landscape character. The height and proximity of the H17 Radar was judged to have '*medium scale effects (adverse)*' on the Common because it would form a noticeable feature and begin to impose on the openness of this character area. The detailed conclusion for the character area is that there would be '*medium scale, long term effects*' across a wide extent of the character area, through the removal of the H16 Radar and the construction of the proposed H17 Radar. The LVIA identifies these effects to be of '*medium magnitude, moderate (not significant) and adverse*'.

14.28 Officers do not agree with the LVIA assessment of the impact on the landscape character of Coldhams Common and are of the view that the degree of change (the scale) to the landscape character of the Common, as set out in the methodology, is greater than as stated in the ES. Officers note that the proposed H17 Radar would be set against other Airport structures and partially obscured by those buildings or by vegetation. However, it would be taller than the adjacent hangar buildings, and whilst in the backdrop of the Airport, would differ in form from the surrounding Airport buildings. The structure would therefore be more obvious and intrusive to the landscape character of the Coldham's Common.

- Impact on the Fen Edge Character Area

14.29 The fen edge area lies to the east of the site and is a flat, expansive landscape used for farming. The LVIA concludes that the character area is of '*medium susceptibility and community value, leading to a sensitivity of Medium-Low*'. The proposed H17 radar tower viewed from the east would sit amongst other large structures in the Airport and so would not be highly visible. The LVIA concludes that the effects of the proposed radar would be '*negligible in scale, long-term and occurring across a limited extent of the receptor area. The effects would be of negligible magnitude and neutral*'.

14.30 Officers are in agreement with the LVIA assessment of the impact on views and character on the Fen Edge Character Area, and that the degree of change (the scale) to the landscape character of the Fen Edge is as stated in the ES.

### **Conclusion – Impact on Site and Surroundings**

14.31 Officers broadly agree with the conclusions of the LVIA, except for the impact on Coldham's Common. Officers do not agree with the LVIA assessment of the impact on the landscape character of Coldhams Common and are of the view that the degree of change (the scale) to the landscape character of the Common, as set out in the methodology, is

greater than as stated in the ES. This is a result of the proposed H17 Radar's close proximity to the Common, its height and form and the fact that it rotates and will sometimes be lit. Construction of the H17 Radar would therefore be an alteration to the openness of the Common in such a way that it will change the character of the Common. This would also impact upon its recreational value to users and its amenity value.

- 14.32 However, having considered the visual effects of the proposed H17 Radar as identified in the ES, and mindful of future plans to relocate the Airport, officers are of the view that the duration of the impacts has been overstated. It is therefore considered more appropriate to consider the duration of the impacts as medium-term.
- 14.33 The proposed H17 Radar is considered to change the landscape character to such an extent as to have a significant visual impact on the wider landscape. Based on the submitted LVIA assessment, officers are of the view that the development proposals would generate significant adverse landscape and visual effects on the 'Recreational users of Coldham's Common' receptor group and the Common's landscape character, due to the sensitivity of the receptor, its proximity to the proposed H17 Radar and the extent of effects. Officers acknowledge that given the comprehensive alternative site assessment which was carried out by the Applicant, no further safeguards or mitigation measures can be taken to mitigate the visual appearance of the proposed H17 Radar, beyond the ten year planning permission secured through recommended condition 2.
- 14.34 The landscape and visual effects would be contrary to Paragraph 174 of the NPPF, which sets out that planning decisions should '*contribute to and enhance the natural and local environment by protecting and enhancing valued landscapes, in a matter commensurate with their statutory status or identified quality in the development plan*'.
- 14.35 By failing to conserve and enhance the setting and special character of the City, the proposals would also be contrary to Cambridge Local Plan Policy 8 (Setting of the City), and Policy 60 (Tall Buildings and Skyline in Cambridge) which seeks to ensure that proposals which break the existing skyline fit within the existing landscape and townscape with no adverse impact. The proposals would also conflict with Local Plan Policy 67 (Protection of Open Space), by causing harm to the character of open space of Coldham's Common, which has recreational importance.

## 15.0 Other Environmental Considerations

### Air quality, Odour and Dust

- 15.1 Cambridge City Council has declared an Air Quality Management Areas (AQMAs) owing to exceedances of the annual mean nitrogen dioxide air quality objective in Cambridge city centre and along the main radial routes

into the city. The ES reviews and assesses the potential impact of the proposed dismantling and relocation of the radars at both the construction and operational phases of the development, on both the Airport and the surrounding area, in terms of the consequences for air quality, odour and dust.

- 15.2 The development proposals will not generate additional vehicular movements other than for occasional servicing or maintenance. The assessment concludes that the impact on air quality associated with vehicle emissions will not be significant.
- 15.3 Measures to mitigate dust emissions during the construction phase will be controlled and managed via a Dust Management Plan which will form part of the Construction Environment Management Plan (CEMP) condition. Measures will include ensuring easy to find contact details for the construction manager, implementing a Dust Management Plan, carrying out inspections, and erecting barriers where required. A relevant planning condition has been recommended (**Condition 7: Construction Environmental Management Plan and Working Hours**).
- 15.4 It is proposed that an emergency diesel generator sited immediately adjacent the proposed H17 Radar will be used in the event of any short-term mains power failure. The generator will be tested weekly for 5 to 10 minutes. Given the distance of the generator from sensitive receptors, officers agree with the conclusion of the ES in as much there will be no significant adverse effects. In accordance with the advice offered by the Environmental Health Officer, a condition has been recommended to control the operational hours of the generator (**Condition 9: H17 Radar Noise Insulation Condition**).
- 15.5 With these measures in place, officers are satisfied that there will be no significant effects on air quality or dust emissions as a result of the development proposals, either during removal of the H16 and AR15 Radars, and the construction and operation of the H17 Radar.
- 15.6 On the basis of the above evaluation, and subject to the inclusion of recommended conditions as outline above, the proposed development is considered acceptable with regard to air quality and odour.

### **Archaeology and the Historic Environment**

- **Above Ground Heritage Assets**

- 15.7 A number of heritage assets are situated within 2km of the application site. These include the following:
- Old Cheddar Lane Pumping Station (a Scheduled Ancient Monument) – 1.7km to the northwest.
  - Stourbridge Chapel (Grade 1 listed) – 1.3km to the north; and

- Marshall's Cambridge Airport Control and Office building (Grade II Listed) – 700m to the north-east.

15.8 The impacts on these above ground heritage assets have been assessed as part of the application. The ES concludes that due to the distance between the development proposals and these specified above ground heritage assets, and the intervening screening (due to topography and existing buildings), there will be no significant effect on their respective settings. These impacts have been assessed as 'neutral', with a degree of effect as negligible and consequently not significant.

15.9 Consultation comments from Historic England and the Council's Conservation Officer confirms the acceptability of the approach which has been undertaken in assessing the development proposals affecting these heritage assets, and to the conclusions as set out in the ES.

15.10 Further clarification was sought from the Council's Conservation Officer with regard to the impact of the proposal on Coldham's Common heritage asset, which was judged in the ES as neutral. The degree of effect has been rated as negligible, and consequently not significant. The Conservation Officer has confirmed the acceptability of the assessment of the potential impacts on Coldham's Common as a heritage asset and agrees with the conclusion of the ES in this respect.

- **Below Ground Heritage Assets**

15.11 No below ground works are proposed at the H16 and AR15 radars, and therefore there is no potential to disturb below ground assets at these specified locations. With regard to the H17 Radar location, this has previously been disturbed by other Airport related construction, and consequently any below-ground heritage assets within the area where the H17 Radar is proposed to be located will already have potentially been damaged or lost. The Cambridgeshire Historic Environment Team has advised that no mitigation is required.

15.12 On the basis of the above evaluation, officers are of the view that the proposed H17 Radar would not cause harm to the setting of above and below ground designated heritage assets. In reaching this conclusion, officers have had regard to the consultation advice offered by Historic England, which states that the proposed H17 Radar would not cause harm to the setting of the specified designated heritage assets or non-designated assets. The proposals are therefore in accordance with Local Plan Policies 60, 61 and 62 with regard to heritage assets, and the NPPF.

### **Biodiversity**

15.13 There are no European (Natura 2000) designated sites within 10km, or Sites of Special Scientific Interest and other UK protected sites within 2km of the proposed H17 Radar location. Three County Wildlife Sites (Airport Way Roadside Verge, Coldham's Common, and the River Cam) and five

Local Nature Reserves (Barnwell East and West, Coldham's Common, Logans Meadow and Stourbridge Common) are situated within 2km of the proposed H17 Radar location.

- 15.14 A Phase 1 Habitat Survey was undertaken to establish the baseline biodiversity starting point of all parts of the application site and was submitted as part of the ES. This identifies that the development relates to existing hard standing areas, which have very limited potential to support any species of value for biodiversity.
- 15.15 The biodiversity assessment of the proposed development included a desk study and Phase 1 habitat survey to describe the ecological baseline within the development area, with an assessment of the impacts on nature conservation. No significant ecological impacts from the proposed development are predicted on designated statutory and non-statutory sites of nature conservation value, nor on the conservation status of any habitats or species.
- 15.16 The potential for bats to occur in the building associated with the existing AR15 Radar is considered to be very low. As a matter of precaution, a pre-demolition check will be required to be undertaken, which would be secured by planning condition (**Condition 5: Pre-demolition check for bats**).
- 15.17 Noise modelling undertaken of the H17 Radar shows that noise generated at the nearest important sites for biodiversity (Barnwell East and West Local Nature Reserves) will be very low. Given that the background sound level is already influenced by Barnwell Road and existing Airport noise, officers agree with the conclusions of the ES: that it is considered that the radar will be mostly inaudible, and as such will constitute a negligible and not significant effect on biodiversity.
- 15.18 The proposals have been reviewed by the Council's Ecologist, who is satisfied with the application, subject to the inclusion of the recommended Condition 5. On this basis, the development is considered acceptable with regard to biodiversity, and in accordance with Local Plan policies 69 and 70.

### **Drainage and Flood Risk**

- 15.19 The proposed site of the H17 Radar is located in Flood Zone 1 and is therefore at low risk from fluvial flooding. The site is, however at risk of localised surface water flooding following an extreme heavy rainfall event. The 1 in 100 year surface water map shows that flood depths in this scenario would be less than 300mm.
- 15.20 The proposed H17 Radar, associated cabin and generator will be constructed upon a plinth on an existing hard standing, which would raise the infrastructure 300mm above ground level. It would be served by an

existing surface water drainage network. There would be no increase in impermeable area as a result of the proposed development.

- 15.21 The proposals have been considered by Cambridgeshire County Council as the Lead Local Flood Authority and the City Drainage Officer, neither of whom raise objection to the proposals.
- 15.22 On the basis of this evaluation, officers are satisfied that the proposed development complies with Policy 32 of the Cambridge Local Plan 2018 with regard to drainage and flood risk.

### **Ground Conditions and Soils**

- 15.23 The contaminated land assessment for the wider Airport site shows that the application site has a low risk of contamination. Construction activities would comprise relatively shallow excavations to construct foundations (at approximately 1.5m in depth). The potential for encountering contamination at the site is therefore viewed as low.
- 15.24 Appropriate construction techniques can be employed to ensure that there will be no pollution incidents resulting from the proposed work. An unexpected contamination protocol will be implemented if any visual or olfactory evidence of contamination is encountered during works **(Condition 6: Unexpected Contamination)**. This will ensure that any additional risks are managed at the construction stage.
- 15.25 On the basis of this evaluation, officers are satisfied that the proposals are acceptable with regard to ground contamination.

### **Human Health**

- 15.26 The health and wellbeing outcomes of members of the population living close to the Airport have been considered by the Applicant. The likely significant effects of the proposals on the surrounding population in terms of health are identified and reported in Chapter 11 of the ES. This chapter also incorporates the requirement for a Health Impact Assessment (HIA) under Policy 83 (Aviation Development) of the Cambridge Local Plan 2018, to demonstrate that the potential impacts on health and well-being have been considered at the planning and design stage.
- 15.27 Officers agree that the main potential impacts of the proposed H17 Radar on human health and well-being, as identified in the HIA section of the ES are:
- Annoyance, anxiety, and stress from noise and visual impact.
  - Annoyance and the potential for epileptic seizure arising from shadow flicker; and
  - Electromagnetic radiation.

- **Health Impacts from Noise**

- 15.28 There is a growing amount of evidence relating to the health impacts of noise, and on the relationship between the dose noise response (the reaction to increasing noise exposure) and health. Recent studies have identified a number of causal links between noise exposure and health impacts.
- 15.29 Where exposure to noise becomes noticeable or significant, this can result in changes to people's behaviour, attitude or other physiological responses. Should the level of noise exposure become unacceptable, the impacts can affect quality of life and amenity issues - potentially resulting in health and stress related problems and negative impacts on productivity and learning.
- 15.30 The submitted ES uses BS 4142 (Noise Assessments and Methods) to assess the significance of any noise impact/ effects. The main impacts likely to arise are on amenity and quality of life, which typically affects people in two ways: annoyance, and sleep disturbance.
- 15.31 Annoyance is when noise impact disturbs a person's daily life (for example, through interrupting a conversation or causing distraction whilst resting or sleep disturbance). Annoyance typically increases as noise exposure increases, though changes in the character of the noise tonal can also increase annoyance.
- 15.32 Sleep disturbance is one of the most common impacts described by people living with unacceptable levels of noise exposure as having potential for a significant impact on quality of life.
- 15.33 In terms of physical and psychological health impacts, these tend to be linked to hypertension and mental health. There is emerging research evidence on this matter for transport environmental noise, although there is currently nothing conclusive for industrial noise dose-response relationships.
- 15.34 The links between certain noise and hypertension are well established for transport noise sources, with research finding that exposure to noise events can place the body under stress, even if there is no conscious reaction to the noise. Links between noise exposure, annoyance and mental health have also been suggested, with studies identifying anxiety and depression as the most likely psychological symptoms. However, most of the research to date is inconclusive, suggesting that further research is needed in this area.
- 15.35 Whilst there are clearly negative health impacts arising from industrial type noise exposure, there is also a great deal of uncertainty about the precise quantification of these impacts and at what dose (noise levels and character) such health impacts are likely to occur. Health impacts are more likely to be primarily associated with late evening and night-time noise should they arise.

- 15.36 The noise impact assessment undertaken for the proposed H17 Radar as an industrial-type noise focuses on the quality of life/amenity effects (e.g. outcomes or changes to people's behaviour, attitude or other physiological responses) as a result of noise. This identifies that during the daytime, evening and night-time periods, the predicted H17 Radar noise rating levels at all receptors (inclusive of a rating penalty for tonal characteristics) are lower than the associated derived background sound levels.
- 15.37 The highest predicted external night-time radar noise rating levels at the closest receptors are all below a rating level of 35dB, and assuming a reduction of approximately 10 to 15dB across an openable window, this is likely to result in internal night-time noise levels of 20 to 25dB (as worst). The City Environmental Health Officer considers that these are low absolute noise levels even for noise that is industrial / commercial in nature.
- 15.38 Having regard to the comprehensive consultation advice offered by the Environmental Health Officer, officers are of the view that significant adverse health effects arising from noise associated with the propose H17 Radar are unlikely. Any residual adverse effects on sleep are considered unlikely to arise at such low levels of predicated external H17 Radar noise. It is therefore concluded that there is no evidence base to indicate that unacceptable health impacts will arise because of the relocation of the radar to the H17 Radar site.

- **Shadow Flicker**

- 15.39 Under certain combinations of geographical position and time of day, the sun may pass behind a radar structure and cast a shadow over neighbouring properties. When the radar rotates, the shadow flicks on and off. This effect is known as 'shadow flicker'.
- 15.40 In a room with a window facing the light source, such shadows can result in a momentary reduction in the intensity of the available natural light. The likelihood of this occurring and the duration of such an effect depends on various factors, including the direction of the property relative to the radar; the distance from the radar; the radar height and diameter; the time of year; the proportion of daylight hours in which the radar operations; the frequency of sunshine and cloudless skies and the prevailing wind direction.
- 15.41 Shadow flicker generally only occurs in relative proximity to sites, and those properties within 130 degrees either side of north, relative to the source can be affected at these latitudes in the UK. Long shadows are not cast on the southern side.
- 15.42 Good practice resource guidance in respect of shadow flicker is limited in the UK. An accepted industry standard in relation to wind turbines, which create similar shadow flicker effects, recommends that shadow flicker at

properties within 500m do not exceed 30 hours per year or 30 minutes per day (Northern Irish Planning Policy Statement 18 (Renewable Energy) (2009)).

- 15.43 For the purposes of the assessment of shadow flicker, the ES takes a precautionary approach, namely that the limit on the levels of acceptable shadow flicker effect should be a maximum of 30 hours per year or 30 minutes on the worst affected day. Therefore, the effect of shadow flicker will be considered significant if the maximum hours per year or number of minutes on the worst affected day are exceeded.
- 15.44 A model was constructed to quantify the potential effects of shadow flicker arising from the proposed H17 Radar. This takes a worst-case scenario and assumes full sunshine throughout the year. The potential receptors of the H17 Radar were confirmed through a desk-based assessment, review of satellite imagery, and site visit to verify the receptors. Receptors identified include the Mercedes Garage, The Quorum, Barnwell Business Units, Barnwell House, and four residential properties (considered as one receptor group), on Barnwell Road.
- 15.45 The modelling shows that the H17 Radar would cause shadow flicker to neighbouring buildings. However, the majority of flicker would be shielded by the adjacent hangar structure. The results of the modelling exercise identify that the maximum amount of shadow flicker during any one day occurs at a commercial property and is 18 minutes per day, for a maximum number of hours per year of 6 hours 39 minutes. The maximum amount of shadow flicker at the worst affected residential receptor located on Barnwell Road is for a maximum of 9 minutes per day with effects on 15 days a year, all in the early morning during winter, and for a maximum of 1hr 30 mins per year.
- 15.46 These levels of worst-case shadow flicker are all below the recognised levels of significance as identified in recognised industry good practice (30 hours per annum). The actual shadow flicker that will occur during these identified time periods will be dependent upon cloud cover (or lack of) and other factors. As a worst-case scenario, actual shadow flicker will be likely to be lower than that modelled – the ES identifies that once typical meteorological conditions are factored in, this impact is likely to be significantly reduced.
- 15.47 Modelling shows that there will be no significant effects of shadow flicker on any of the identified receptors. Given the distance of the proposed H17 Radar from sensitive receptors and the presence of intervening trees, vegetation and other structures that will affect how the shadow flicker is experienced, officers agree with the conclusions of the ES with regard to shadow flicker. Significant adverse effects arising from shadow flicker associated with the proposed H17 Radar are not considered significant for health due to the short duration, low exposure and small-scale effects.

- **Electro-Magnetic Radiation**

- 15.48 Electromagnetic radiation is a form of non-ionising radiation which can be dangerous for the human body and radio frequency fields (such as those from radar) can cause molecules in tissue to vibrate and generate heat. Possible health effects include the induction of eye cataracts and various physiological and thermoregulatory responses as body temperature increases.
- 15.49 The effects of electromagnetic radiation are well established and form the scientific basis for restricting occupational and public exposure to radio frequency fields. Whilst there are no specific regulations covering electromagnetic fields (EMFs), the Health and Safety at Work etc Act 1974 and the Management of Health and Safety at Work Regulations 1999 are applicable to the development proposals. These Regulations place clear duties on employers to provide adequate information, instruction, training and supervision for their employees, to undertake risk assessments and in general terms to safeguard so far as is reasonably practicable the health and safety of employees and others.
- 15.50 Local Plan Policy 84 (Telecommunications) criteria (e) requires applications for new masts to be accompanied by a statement that self certifies that, when operational, these guidelines will be met.
- 15.51 The approach taken in the ES to assessing potential health issues related to the radar and generation of electromagnetic fields (EMFs), associated with the proposed radar, is based on the principles established under Local Plan Policy 84 for telecommunication/mobile phone masts application. This policy requires the submission of an 'International Commission for Non-Ionising Radiation Protection (ICNIRP) certificate of compliance', demonstrating compliance with maximum recommended levels of EMF radiation for base stations. ICNIRP Guidelines on Limiting Exposure to Electromagnetic Fields are for the protection of humans exposed to radiofrequency electromagnetic fields (RF) in the range 100 kHz to 300 GHz.
- 15.52 The ES advises that, based on simulations, there is no risk at ground level to the public or Airport employees from electromagnetic radiation at any distance from the H17 Radar. The basis for this is that the radar antenna will be installed at the top of a tower 35m high, and that the radar beam forming area will be horizontal at this height. At antenna height (where the radiated power density is maximum), the minimum distances to be respected remain relatively low but must be taken into account, with no facilities or workplace within 24m at a similar height.
- 15.53 Officers further note that reference EMF / radiation levels (both in average and peak values) are never achieved/exceeded at ground level. Furthermore, given that the H17 Radar is to be located a minimum of 70m inside the Airport boundary, there will be no effects of radiation occurring outside of the Airport boundary, as the potential area of influence is restricted to 24m.

- 15.54 During the course of the application, Chapter 11 (Health) of the ES was updated. A Radar Safety Certification (Impact of Electromagnetic Radiation on Personnel Safety) report was provided as an Appendix. In addition, graphics are included in Chapter 11 showing the electromagnetic radiation field/beam and coverage pattern. The assessment reaffirms that there is no risk presented to the public or Airport employees from electromagnetic radiation.
- 15.55 The submitted Radar Safety Certification is a similar type of document to that required under Policy 84 and fulfils the same purpose. It provides details of the certified safety of the radar by the radar manufacturer (Thales), which demonstrates that ICNIRP has been met. It certifies that the STAR radar presents no risk at ground level for personnel, workers or public, at any distance from radar. This is a radar equivalent to a declaration for telecommunications development.
- 15.56 In terms of the potential for cumulative effects due to electromagnetic radiation the ES states that notwithstanding that there is no receptor within the zone where electromagnetic radiation will occur (i.e. within 24m at the height of the beam forming area), there is also no other infrastructure (for example Airport infrastructure, electricity pylons etc), which emits electromagnetic radiation which is located within that zone. Officers agree with the conclusions of the ES – that there will be no cumulative effects relating to electromagnetic radiation.
- 15.57 The Radar Safety Certification demonstrate that EMF generation by the proposed H17 Radar is within the standards set by international legislation, and that any EMFs associated with the radar are very unlikely to be a health risk to Airport personnel, other employees off-site at Barnwell Drive or the general public in the area. On this basis, officers are satisfied that the proposals are acceptable with regard to electromagnetic radiation.

### **Impact on Human Health – Summary**

- 15.58 On the basis of the above assessment, officers are satisfied that the application proposals comply with Local Plan Policies 83 and 84 with regard to impact on human health.

### **Lighting**

- 15.59 The effects of the proposals from artificial lighting perspectives are considered under the Landscape and Visual Chapter of the ES (Potential Night-time Effects and Lighting). The application submission identifies that the proposed H17 Radar will be illuminated in the same way as the existing H16 Radar (to include two red obstacle lights on the top of the H17 Radar, to ensure no collision with aircraft).

- 15.60 Additional pedestrian lighting would be located on the stair of the H17 Radar tower which would only be used 'on demand' in exceptional circumstances. Low intensity green LED lights form part of the additional pedestrian lights. It is anticipated that access to the H17 Radar would be required once every three months and would be carried out during daylight hours. Any access after dark would be for fault rectification only and would be unlikely to occur after 1800hrs due to a lack of night shift cover.
- 15.61 The Environmental Health Officer has reviewed the impacts in terms of artificial lighting and agrees with the assessment of artificial lighting impacts on human receptors, and the conclusion that under normal operating circumstances effects from the lighting would be negligible.
- 15.62 Due to the distance of approximately 200m to the nearest residential receptor, it is not envisaged that there would be any unacceptable intrusive artificial lighting spill or impacts on quality of life/amenity as a result of the normal operating lighting conditions detailed, which are very low level (eg the use of red obstacle lights on top of the H17 Radar).
- 15.63 On the basis of the above evaluation, the proposals are considered acceptable with regard to artificial lighting.

## **Noise**

- 15.64 The existing H16 Radar when in full operation has given rise to local noise complaints both to the Applicant and the Commercial Environmental Health service of the Council.
- 15.65 Given local concern about the radar noise emissions from the Airport and the complexity of the nature and character of the noise from the H16 Radar (and therefore potentially the proposed H17 Radar), the EQG / Environmental Health service of the Council engaged the services of a specialist acoustic consultant (Three Spires Acoustics Ltd) to independently assess and advise on the potential noise impacts of both the existing H16 Radar and proposed H17 Radar.
- 15.66 Officers note the third-party objections to the proposed H17 Radar which relate to concerns regarding unacceptable noise impacts. This includes the submission of independent reports by MAS Environmental (an acoustic consultancy acting on behalf of some objectors). The reports challenge the acceptability/robustness of the application submission, and the associated noise impact assessment. These matters are considered in detail below.

## **Noise Impact Assessment Methodology**

- 15.67 Chapter 14 (Noise) of the ES reports the assessment of likely effects of the proposals on the surrounding area in terms of noise and vibration arising from the demolition proposals, new construction work and the

operational phases. Where appropriate, it also identifies measures to prevent, minimise or control likely adverse effects arising from noise.

- 15.68 In the specific case of the application proposals, officers consider that BS4142 (Noise Assessments and Methods) is the most appropriate 'significance of noise' impact assessment methodology for the proposed H17 Radar, given that the radar is an industrial noise source.
- 15.69 BS 4142 describes the methodology for rating and assessing sound of an industrial and/or commercial nature - existing, proposed, new, modified or additional source(s). The methods described use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside premises used for residential purposes upon which sound is incident.
- 15.70 The standard describes the recommended methodology to measure and determine ambient, background and residual sound levels, and the rating levels of industrial/commercial sound. BS 4142 requires consideration of the level of uncertainty in the data and associated calculations.
- 15.71 BS 4142 refers to the sound produced by an assessed source at a sensitive receptor (e.g. outside a façade of a residential building) as 'specific' sound, in this case the proposed main source of noise the radar motor cabin enclosure. The specific sound level (radar cabin noise) is determined by calculating or measuring the equivalent continuous A-weighted sound pressure level of the source over the assessment time period 'T' (LAeq,T). The full BS 4142 assessments for the day, evening and night-time period for various receptors are included in Appendix A14.10 of the ES.
- 15.72 Having reviewed in detail the noise impact assessments which have been undertaken by the Applicant, and by the Councils' own noise consultant, Three Spires Acoustics Ltd, the Council's own Environmental Health Officer (EHO) is satisfied that the long-term operational noise associated with the proposed H17 Radar has been thoroughly assessed within the submitted ES and that the assessment complies with EIA Regulations.
- 15.73 The ES noise impact assessment has been undertaken substantively in accordance with industry noise impact assessment methodologies/standards with acceptable professional judgement being applied as necessary and allows an informed decision/judgement to be made about the acceptability of the proposals. The Council's EHO is also satisfied that any uncertainty in the data and the associated calculations in the ES assessment has been adequately considered. The Council's EHO has also confirmed that the ES Noise Chapter derived background sound levels are representative and typical of the given circumstances to allow a robust noise impact assessment to be undertaken.
- 15.74 The EHO agrees that reasonable worst-case assumptions have been adopted for the noise modelling inputs, such as hard ground surface

attenuation, downwind propagation to all receptors at all times, and 'worst-case' noise source directional orientation of the radar cabin. All these factors combined have allowed for a 'worst case scenario' predictive approach for radar noise rating levels at the residential receptors considered.

### **Demolition/Construction Noise Impacts**

- 15.75 There is the potential for adverse noise and vibration effects during both the demolition/dismantling of the H16 Radar and AR15 Radar, and the construction of the proposed H17 Radar.
- 15.76 The ES advises that the appointed construction contractor will be required to comply with the provisions of a Construction Environment Management Plan (CEMP) which includes details of construction traffic access and management, working hours, temporary hoarding, and waste management.
- 15.77 In addition, the CEMP includes recommendations that represent best practicable means (BPM) which will be applied during construction works at all times to minimise noise (including vibration) at neighbouring residential properties and other sensitive receptors. In accordance with the advice offered by the Environmental Health Officer, an appropriate condition is recommended, to ensure compliance with the CEMP **(Condition 7: Construction Environmental Management Plan and Working Hours)**.
- 15.78 Given the relatively low impact nature of demolition/construction and short duration of the works involved, officers are satisfied that there should be no unacceptable adverse noise impacts during the construction and demolition phase, subject to recommended planning condition 7.

### **Operational Noise Impacts**

- 15.79 The main potential operational noise sources that make up the proposed development include the following:
- H17 Radar Motor enclosure cabin.
  - H17 Back-up diesel generator (ground height).
  - Four heat exchangers outside the H17 Radar electronic cabin.
  - Four air conditioning units inside the H17 Radar electronic cabin.
  - Electronic cooling fans inside the electronic cabin.
- 15.80 The dominant source of noise is in relation to the H17 motor enclosure cabin. This noise source has been the main focus of the noise impact assessment. With regard to the other noise sources, due to a combination of physical shielding, adequate distance separation and hours of use, no unacceptable adverse noise impact is considered to arise.

15.81 The assessment of noise effects from the proposed H17 Radar has been informed by the development of a noise model. The robustness of the model is benefited by the fact that the motor enclosure cabin for the existing H16 Radar will be retained for use as the proposed H17 Radar, and therefore the sound emission characteristics will be very similar and informed by measurements undertaken whilst in the H16 Radar location.

15.82 The development of the noise model, and in particular the sound emissions from the motor enclosure cabin, have been informed by measurements of sound emissions from the operation of the actual H16 Radar, both in close proximity to the radar and at locations within the community. The measurements have been used to inform the sound source quantification.

15.83 The propagation of sound levels arising from the operation of the H17 Radar has been determined through noise modelling. This uses a calculation method which is based on an acceptable industry standard. The calculation results are considered in the ES to be worst-case as they assume downwind propagation, which in reality would not occur at all times due to changes in wind direction.

15.84 The noise model used incorporates a recognised industry standard ISO 9613 (Acoustics – Attenuation of sound during propagation outdoors) which is widely used for noise impact assessments and allows for precise acoustic modelling of particular noise sources to predict noise emissions levels at receptors from proposed sources of noise such as the H17 Radar.

15.85 The EHO agrees with the noise impact assessment methodology with regard to operational noise, and that reasonable worst-case assumptions have been adopted for the noise modelling inputs. The predictive radar noise modelling which has been undertaken is considered robust and officers have a high degree of confidence in the predicted noise rating levels at receptors. This position is also supported by the Council's acoustic consultant, Three Spires Acoustics Ltd.

- **Three Spires Acoustic Report (Council's Acoustic Consultant)**

15.86 In their report to the City Council Environmental Quality and Growth team, Three Spires Acoustics provide an opinion on the proposed relocation of the radar to the H17 location and its likely impact. This refers to a technical assessment which included background noise surveys undertaken at a number of locations around the H17 site, with the application of results to noise measurements taken at the existing H16 radar site.

15.87 The technical assessment found that when the acoustic information modelled was compared against the relevant section of the GCSPS Sustainable Design and Construction: Supplementary Planning Document (SPD, 2020) (Table 3.11: New Noise Generating Development - External

Noise Standards for non-anonymous noise), the daytime and evening outcomes indicates a 'no significance risk' and a 'no observable effect' level. The night-time BS4142 outcome results in 'minimal significance of risk' and within the range of 'no observable effect' to the 'lowest observable adverse effect level'.

- 15.88 Based on this assessment, the Three Spires Report concludes that the relocation of the radar to the H17 site is unlikely to result in any unacceptable noise impact to the closest residential receptors in Peverel Road and Barnes Close. For properties further away such as those on the southern side of Sunnyside and The Westering, the operational noise impact will be even lower due to the greater separation distance involved. Unacceptable adverse noise impact is not envisaged at any of these locations.

### **MAS Environmental Reports (Objectors' Acoustic Consultant)**

#### Noise Impact Assessment Methodology

- 15.89 MAS Environmental, acting for some of the objectors, does not agree with the noise impact assessment that has been undertaken, based on what is considered non-compliance with various noise measurement methodologies such as British Standards, and is of the view that at certain receptors in the area behind 9 – 12 Barnes Close (the nearest residential receptors identified in the ES), such as the blocks 13 to 18 and 1 to 4 Barnes Close, representative background noise levels are likely to be around 30dB.
- 15.90 Such level of 30dB would be 6dB lower than the levels considered by the Applicant and Councils' noise consultant to be representative. If used, this would result in greater significance of noise impact. For example, at the most critical time of day night-time with the highest predicted BS 4142 rating levels of 34dB (inclusive of a +2dB correction for tonal character) this would result in a BS 4142 margin by which the rating level of the specific sound source exceeds the existing representative background sound level of +4dB (e.g. less likely it is that the specific sound source will have an adverse impact or a significant adverse impact).
- 15.91 In terms of BS 4142, this would still be below an adverse impact of +5dB (depending on context). However, in terms of the GCSP-SPD (2020) this would be considered a 'Medium' Noise Significance Risk, with a Noise Significance of Effect: LOAEL to SOEL which is a rating level of  $> 0$  &  $\leq +5$ . For such a Medium Noise Significance Risk, the GCSP SPD (2020) states that: *'this indicates that the proposed NGD is less likely to be acceptable from a noise perspective and will be context dependent, i.e. extent and effect on noise sensitive receivers (externally and internally). Compliance within this range is typically only applicable to non-sensitive sites or where there are overriding other reasons why development should be considered. It will typically be necessary for the applicant to confirm how adverse impacts from the NGD will be mitigated and minimised. It is*

*less likely that planning consent will be granted. Acceptable only if there are overriding economic or social reasons for development to proceed.'*

- 15.92 The Council's EHO does not agree with the MAS Environmental position on background noise levels, which appears to be based on a small data set. It is also noted that operational noise at properties further away are likely to be lower due to increased separation distances. Officers are of the considered view that the background noise levels as used in the ES are representative. This has been confirmed by the Three Spires Noise Assessment background noise monitoring close to Barnes Close taken over a one-week duration.
- 15.93 Officers also note that context is an important consideration in reaching the overall significance of noise impact outcome. As advocated in BS4142 (Noise Assessments and Methods), NPPG - Noise and Para. 3.6.105 of the GCSP-SPD (2020), when considering the overall impacts/effects of noise, due regard should be given to the context in which the noise occurs, which depends on how various factors combine in any particular situation.
- 15.94 The BS41424 difference between the rating level and the background sound level only provides an indication of the impact; context must be considered before any conclusions can be drawn about the magnitude of any impacts. All pertinent contextual considerations should be taken into account, including the following:
- The absolute level of the sound / noise;
  - The character and level of the residual sound compared to the character and level of the specific sound;
  - For a new noise making source, how the noise from it relates to the existing sound environment.
- 15.95 For the night-time period (2300 to 0700hrs), which is considered the most sensitive time of day, context is paramount in reaching an overall conclusion on effects. BS 4142 (Noise Assessments and Methods) states that '*absolute levels may be as, or more, important than relative outcomes where background and rating levels are low*'. The relatively low absolute levels of the sound/noise at receptor façades is a key factor in this mixed commercial/industrial urban area adjacent to an operational Airport. In this case the highest predicted BS 4142 rating level of 34dB (inclusive of a +2dB correction for tonal character) at the nearest residential receptors identified in the ES - 9 to 12 Barnes Close is considered a very low absolute level for the area. At all other receptors the levels are likely to be lower due to further distance separation from the proposed H17 Radar.
- 15.96 In terms of assessing potential internal noise impacts, the acoustic performance of receptor façades can also be considered. Assuming a partially opened window providing either a 10 dB (conservative) or 15 dB (relaxed for urban type areas) attenuation from outside to inside, having regard to predicted worst case external façade noise rating level of 34dB (inclusive of a tonal correction of +2dB), the calculated internal noise

levels would be below 24 to 19dB in all instances, which are significantly below the BS8233:2014 'Guidance on Sound Insulation and Noise Reduction for Buildings' desirable internal noise criterion of 30 dB LAeq,T and the relaxed criterion of 35 dB LAeq, T for a bedroom at night. The internal noise levels would be even further below the BS 8233 (2014) criterion if consideration was given to closed windows, or the average time that windows are open / closed.

- 15.97 In summary, officers consider that the predicted night-time internal noise levels at the nearest receptors are extremely low, and thus unlikely to result in any unacceptable adverse impacts when having regard to industry standards and best practice technical guidance recommended acceptable internal noise standards. The noise levels are shown in the main to be significantly below desirable internal noise levels of 30 dB for bedrooms at night, as recommended in World Health Organisation community guidelines.
- 15.98 The third-party concerns are noted which seek to challenge the methodology upon which the noise assessment has been undertaken and state that standards such as BS 8233:2014 (Sound Insulation and Noise Reduction) are not directly applicable to the application proposals and industrial noise sources such as the radar noise. However, given that the predicted noise levels are significantly below recommended internal levels, officers are of the view that unacceptable noise adverse impacts are unlikely to arise.
- 15.99 The EHO agrees with the conclusion of the ES - that operational noise levels associated with the proposed H17 Radar will not give rise to any significant adverse noise impacts/effects on the health and quality of life/amenity both externally and internally at residential receptors.

#### Duty to Minimise Noise Emissions

- 15.100 MAS Environmental indicates that under the NPPF and Local Plan Policy 35, there is an absolute duty to minimise noise emission adverse impacts from new noise sources and are of the view that this has not been achieved in this case.
- 15.101 With regard to noise, the NPPF (paragraph 185) states that: '*Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:*
- a) *mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life.*

- 15.102 In this case, the EHO concludes that operational noise levels are likely to be below the Lowest Observed Adverse Effect Level (LOAEL - level above which adverse effects on health and quality of life can be detected), at all times. Given this position, national planning practice guidance on noise: *'Noise Exposure Hierarchy Table'*, states that the likely response is that the noise may be *'present and not note intrusive'* with the example outcome that *'Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life'* with the advisory action of *'no specific measures required'*.
- 15.103 Only when the noise impact/response is at, or above LOAEL and between SOAEL does the advisory action become *'mitigate and reduce to a minimum'*. This position is also consistent with the government's *'Noise Policy Statement for England (NPSE), March 2010'* which also states that *'The second aim of the NPSE refers to the situation where the impact lies somewhere between LOAEL and SOAEL. It requires that all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development (paragraph 1.8). This does not mean that such adverse effects cannot occur.'*
- 15.104 Officers note that following a request for further information on the effectiveness of the proposed embedded noise mitigation and consideration of additional noise mitigation measures to improve and reduce radar cabin noise breakout/generation (to make the proposals more acceptable in terms of operational noise impacts), the Applicant provided additional information in November 2021 (*'Response: Planning Consultation Response. Planning Ref. 21/03224/FUL - November 2021, report No J20- 12041B/1/F1: Noise Consultants Ltd'*).
- 15.105 The November 2021 submission includes a *'Hoare Lea Report (November 2021, Appendix A5)'* which reports on the acoustic improvements / reductions achieved pre-works and post-works to the proposed H17 radar cabin noise mitigation scenarios including the overall performance and workmanship. In considering the mitigation measures implemented at the H16 Radar to date (and which will be inherent in the design of the proposed H17 Radar), Hoare Lea LLP conclude that *"...these measures represent the limit of what can be done within the current height restrictions and without significant redesign of the radar tower."*
- 15.106 The November 2021 submission states that further mitigation, through redesign of the radar, would risk undermining the manufacturer's warranty, and proposes no further mitigation actions. It is, however, stated that the relocation of the radar will present the opportunity, when the cabin is at ground level, to refit the acoustic insulating material and other seals that were installed with the cabin in situ in January and April/May 2021, which could offer some further slight improvements in acoustic performance.

- 15.107 Having regard to the low absolute level of radar noise predictions at all receptors and the fact that the noise rating levels at all assessed residential receptors are below the Lowest Observed Adverse Effect Level (LOAEL), the EHO does not envisage any unacceptable adverse noise impacts and the inherent embedded noise mitigation as detailed is considered acceptable. In terms of national noise policy, the NPSE or national or local planning policy, it is also the EHO view that there is no justification for requiring any additional noise mitigation to that proposed, and that it would be neither necessary nor reasonable to do so.
- 15.108 A bespoke condition, has, however, been recommended to ensure the noise insulation and mitigation attenuation measures to the upper H17 Radar motor cabin enclosure are fully implemented and retained at all times (**Condition 9: H17 Radar Noise Insulation Condition**).

### **Significance of Noise Impact – Summary**

- 15.109 The procedure contained in BS 4142 \*Noise Assessments and Methods) gives an indication of the degree of significance of any potential impact of sound by determining the margin by which the rating level of the specific sound source exceeds the existing representative background sound level, examining also the context in which the sound occurs or will occur. Where the calculated noise rating level is below the derived background sound level, a negative BS 4142 value will occur. The greater the negative value, the less likely it is that the specific sound source will have an adverse impact or significant adverse impact. There is a decrease in the significance as the negative value (-) difference increases.
- 15.110 The standard states (with emphasis):
- A difference of around **+10 dB or more** is likely to be an **indication of a significant adverse impact**, depending on the context.
  - A difference of around **+5 dB** is likely to be an **indication of an adverse impact**, depending on the context.
  - The lower the rating level is relative to the measured background sound level (**+4dB and lower**), **the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact**.
  - Where the rating level does not exceed the background sound level (**0dB and below i.e. a minus level -1 to -5 to -10 and downwards**), this is an indication of the specific sound source having **a low impact, depending on the context**.
- 15.111 In summary the significance of noise impact arising from the proposed H17 Radar is considered as follows:
- **Day Assessment Period (0700 – 1800) – external in amenity areas/gardens:**

- 15.112 Calculated noise levels are more than 5 dB below the background sound level (considered below LOAEL – level above which adverse effects on health and quality of life can be detected) at all 55 receptors, and more than 10 dB below the background sound level (considered No Observed Adverse Effect Level ( NOAEL) at all but six receptors (R2, R3, R4, R5, R6 and R16).
- 15.113 BS4142 margins / differences range from -7.0 to -16.8 dB in the Barnes Close, Barnwell Road / Peverel Road area and -9.3 to -24.1dB in the Sunnyside/ The Westering / Mansfield Way area. **In terms of BS4142 these are considered indicative of very low impacts.** There is a decrease in the significance of impact as the – (negative) value difference increases (is higher numerically).
- 15.114 Further consideration of operational noise effects has been informed by the New Noise Generating Development (NGD) - External Noise Standards for 'non- anonymous noise' contained in the GCSP Sustainable Design and Construction SPD 2020.
- 15.115 **In terms of the GCSP SPD (2020) the outcome is a Noise Significance Risk: 'None' to 'Minimal' with a Noise Significance of Effect: from 'NOEL ( $\leq -10$  dB) to LOAEL ( $> -10$  &  $\leq -5$ )' for all receptors.** For these outcomes, the SPD (2020) planning advice is that the proposed development is likely acceptable from a noise perspective. The SPD goes on to advise that the LPA will seek this level of compliance in most noise sensitive areas and / or where there is a requirement to mitigate creeping background effects.
- 15.116 **In terms of Planning Practice Guidance (PPG) 'Noise Exposure Hierarchy Table', the likely response is that the noise may be 'present and not note intrusive' with the example outcome that 'Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life'.**
- **Evening Assessment Period (1900 – 2300) – external in amenity areas/gardens:**
- 15.117 Calculated noise levels are more than 5 dB below the background sound level (considered below LOAEL) at all 55 receptors but three (R2, R3 and R4).
- 15.118 BS4142 margins / differences range from -4.0 to -16.8 dB in the Barnes Close, Barnwell Road / Peverel Road area and -6.3 to -17.1 dB in the Sunnyside/ The Westering / Mansfield Way area.
- 15.119 **In terms of the GCSP-SPD (2020), all but three receptors are in the 'None' or 'Minimal' Noise Significance Risk, with the remaining in the 'Low' category.**

15.120 For 'Low', the Design and Construction SPD (2020) advises that: *'this indicates that the proposed NGD may be acceptable from a noise perspective but will be more context dependent, i.e. extent and effect on noise sensitive receivers (externally and internally). Compliance within this range is more applicable to less sensitive sites or where there is no requirement to mitigate creeping background effects.'*

- **Night Assessment Period (2300-0700) – external at residential façades:**

15.121 Calculated noise levels are below the background sound level (considered below LOAEL) at all 55 receptors assessed.

15.122 BS4142 margins / differences range from -2.0 to -3.4 dB in the Barnes Close, Barnwell Road / Peverel Road area and -2 to -12.5 dB in the Sunnyside/ The Westering / Mansfield Way area.

15.123 In terms of the GCSP-SPD (2020), all but three receptors are in the 'None' or 'Minimal' Noise Significance Risk, with the remaining in the 'Low' category' with a Noise Significance of Effect: NOEL to LOAEL which is  $> -5$  &  $\leq 0$ ) for all of the receptors.

15.124 For 'Low', the GCSP SPD (2020) states *'this indicates that the proposed NGD may be acceptable from a noise perspective but will be more context dependent, i.e. extent and effect on noise sensitive receivers (externally and internally). Compliance within this range is more applicable to less sensitive sites or where there is no requirement to mitigate creeping background effects.'*

15.125 The final overall significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the existing representative background sound levels and the context in which the sound occurs or will occur.

15.126 The predicted radar noise rating levels (inclusive of a correction of +2dB for tonal character) at receptors are considered low in absolute noise level terms during the day/evening (**ranges from 19 to 36 dB externally in gardens/amenity areas**) and night- time (**ranges for 20 to 34 dB externally at facades**) periods.

15.127 In terms of national planning guidance on noise, it is concluded that no unacceptable adverse effect is likely to arise, as the noise exposure / levels as predicted at receptors and as assessed are considered to be below the '**Lowest Observed Adverse Effect Level (LOAEL)**' at all times.

15.128 Predicted internal noise levels at the nearest receptors at night-time range from 10 to 24dB under a worst-case prediction scenario just assuming a 10 dB reduction across a partially open window (external to internal). These levels are considered extremely low and are unlikely to result in any

unacceptable adverse impact when having regard to industry standards and best practice technical guidance recommended acceptable internal noise standards. The noise levels are shown in the main to be significantly below BS 8233 Sound Insulation and Noise Reduction (2014) desirable internal noise levels of 30 for bedrooms at night, as recommended in World Health Organisation community guidelines.

15.129 Although it could be argued that standards such as BS 8233 (2014) are not directly applicable to the application proposals and industrial noise sources such as the proposed H17 Radar noise, the levels as stated are significantly below recommended internal levels and give sufficient comfort that unacceptable adverse impacts are unlikely to arise.

15.130 In addition, having regard to the Three Spires Acoustics noise assessment, officers are confident that any radar noise, including any tonal character is unlikely to be audible internally or result in any unacceptable adverse impact having regard to recommended internal noise levels and Noise Rating (NR) curves. The character of the area around the Airport is mixed urban residential / industrial and these noise levels are not considered unacceptable in the existing prevailing acoustic environment.

#### **Noise Issues - Conclusion**

15.131 The noise impact of the proposed H17 Radar has been comprehensively assessed, and in terms of the most relevant impact assessment standard for industrial / commercial noise (BS 4142:2014 Methods for Rating and Assessing Industrial and Commercial Sound), the overall significance of noise impact is predicted to be indicative of a '*low to very low*' impact, with the radar noise below the existing representative background sound levels at all relevant closest residential receptors.

15.132 The predicted radar noise rating levels (inclusive of a correction of +2dB for tonal character) at receptors are considered low in absolute noise level terms during the day/evening (ranges from 19 to 36 dB externally in gardens/amenity areas) and during night-time (ranges for 20 to 34 dB externally at facades) periods.

15.133 In terms of national planning guidance on noise it is concluded that no unacceptable adverse effect is likely to arise as the noise exposure / levels as predicted at receptors and as assessed are considered to be below the Lowest Observed Adverse Effect Level (LOAEL – level above which adverse effects on health and quality of life can be detected) at all times.

15.134 Predicted internal noise levels at the nearest receptors at night-time range from 10 to 24dB under a worst-case prediction scenario assuming a 10 dB reduction across a partially open window (external to internal). Based on the Three Spires noise assessment officers are confident that any radar noise, including any tonal character is unlikely to be audible internally or result in any unacceptable adverse impact having regard to recommended

internal noise levels and noise rating curves. The character of the area around the Airport is mixed urban residential / industrial meaning these noise levels are not considered unacceptable in the existing prevailing acoustic environment.

- 15.135 Based on national planning guidance it is concluded that the H17 Radar noise may just be audible externally at times but this should not cause any change in behaviour, attitude or other physiological responses to human life. The radar noise may slightly affect the acoustic character of an area but not to the extent that there is a change in quality of life/amenity. At this noise exposure level national planning guidance advises there is no additional specific measures required to manage the proposed (radar) noise in the prevailing acoustic environment. This conclusion is supported and confirmed by the Council's own noise consultant Three Spires Acoustics Ltd.
- 15.136 On the basis of the above evaluation, officers are of the view that the proposed development is acceptable with regard to noise and is in accordance with NPPF paragraphs 174 e) and 185 a) and Cambridge Local Plan 2018 policies 35: Protection of human health and quality of life from noise and vibration and 83: Aviation Development.
- 15.137 To ensure that the radar noise complies with the predicted noise rating levels as detailed in the ES and to protect the quality of life/amenity a number of bespoke operational noise conditions are recommended: **Condition 9: H17 Radar Noise Insultation; Condition 10: H17 Radar – Permitted Operational Sound Levels; Condition 11: H17 Radar Operational Sound Verification Assessment Report; Condition 12: Non-Compliance with Radar Sound Verification Assessment Noise Limits.** These operational noise conditions have been formulated and agreed in consultation with the Applicants' acoustic consultant and are considered highly precautionary. They have been agreed by the Applicant.

#### **Other Environmental Issues – Conclusion**

- 15.138 The environmental implications of the Application have been comprehensively assessed through the ES and other supporting documentation and considered fully by officers.
- 15.139 The environmental impacts with regard to air quality, odour and dust; archaeology and the historic environment; biodiversity; ground conditions and soils; human health; drainage and flood risk, lighting and noise are all considered to be acceptable in planning terms, and in accordance with both the Cambridge Local Plan and the NPPF subject to the inclusion of the recommended planning conditions as described above.

#### **16.0 Traffic and Transport**

16.1 The proposed development involves the erection of a new radar and removal of existing radars elsewhere on the Airport. The operation of the new radar will not generate any traffic, except for occasional maintenance activities akin to existing operations. It will not therefore have any effect on the nature or volume of operational traffic generated by the Airport on a day-to-day basis. On this basis, officers are satisfied that the proposed development complies with Policy 81 of the Local Plan.

## **17.0 Impact on Residential Amenity**

17.1 In considering the impact of the development proposals on residential amenity, regard should be had to Policy 83 of the Cambridge Local Plan, which advises that aviation development at Cambridge Airport will only be supported where it will not have an adverse impact on residential amenity.

17.2 The impact of the proposed H17 Radar on residential amenity in terms of health and noise has been fully assessed and reported in the ES (as updated). This includes the submission of a Health Impact Assessment, as requirement by Policy 83.

17.3 The third-party concerns regarding the impacts of the development proposals on existing residential amenity are noted. The impacts arising from the construction and operational phases of the development (including anticipated noise from the proposed H17 Radar) has been assessed as part of the updated ES.

17.4 Officers are of the view that the impact of the proposed H17 Radar will not compromise existing residential amenity to such an extent as to warrant the refusal of the application on these grounds. This is nevertheless subject to the inclusion of the recommended planning conditions relating to the construction process and the control of noise.

### **Impact on Residential Amenity – Conclusion**

17.5 On the basis of the above evaluation, and subject to the inclusion of the recommended appropriate conditions as described, the Application is considered acceptable with regard to the impacts on residential amenity. The proposals are therefore in accordance with policies 35 and 83 of the Cambridge Local Plan and the NPPF.

## **18.0 Cumulative Impacts**

18.1 The cumulative effects of the development in combination with other planned major development in proximity to the application site have been considered by the Applicant, using a methodology which was agreed in advance with officers. The results of the assessment are reported in Chapter 19 – Cumulative, In-combination and Interactive Effects of the updated ES.

18.2 The assessment finds that the major developments within the study area are unlikely to result in significant adverse cumulative effects when assessed in combination with these application proposals. Although construction works on developments in the study area (including the LNCH development site) may overlap with the proposed development, the minor nature of the construction activities associated with the application proposals have negligible potential for cumulative effects and therefore no further assessment is/was required.

18.3 Officers have considered the cumulative impact assessment and agree with the conclusions reported in the updated ES, that no significant cumulative impacts are likely to arise, assuming the other development opportunities envisaged are largely delivered as presently anticipated.

### 19.0 **Third Party Issues**

19.1 The third-party representations received during consultation of the Application raised a number of issues. These have been addressed within this report, as summarized in the table below.

<b>Issue</b>	<b>Officer Response/Report Section</b>
<b>Principle of Development</b>	The 'Principle of Development' section (Section 12 of report) deals with the principle of the proposed development, which has been considered and found to be acceptable in planning terms, given the essential function of ensuring the continued safety of the Airport's operations.
<b>Choice of Site</b>	The Section 'Consideration of Alternative Sites' (Paras. 10.19 – 10.34) summarises the assessment made for alternative sites, against criteria associated with safety and operational requirements; noise; landscape and visual impact; natural and historic environment; shadow flicker and other environmental aspects.
<b>Design of Radar</b>	The design of the proposed radar is described in Section 13 (Design and Layout) which notes that the proposed H17 Radar is broadly constrained by technical requirements.

<b>Visual Impact</b>	The 'Impact on Site and Surroundings' Section (Section 14) deals with landscape and visual impact assessment of the proposals, concluding that the proposed H17 Radar would generate significant adverse landscape and visual effects on the recreational users of Coldham's Common receptor group and the Common's landscape character.
<b>Impact on existing residential amenity</b>	Different sections of the report deal with impact on residential amenity. Specific matters relating to impacts on air quality, human health and noise are dealt with as part of the environmental issues section (Section 15).  Section 18 deals specifically with Impact on Residential Amenity, concluding the development would not compromise existing residential amenity so as to warrant the refusal of the application, subject to recommended conditions.
<b>Impact on local roads</b>	Section 17 'Traffic and Transport' deals with the impact on local roads, concluding the proposed development complies with Policy 81 of the Cambridge Local Plan.
<b>Impact on greenbelt</b>	The Impact on Site and Surroundings Section (Section 14) recognizes in Para 14.10 that the Green Belt forms part of a green corridor from the eastern edge of the Airport to Coldham's Common.
<b>Impact on wildlife</b>	The Biodiversity Section (from Paragraph 16.13) deals with impact on wildlife, concluding that given the characteristics of the existing site, no significant ecological impacts from the proposed development are predicted.
<b>Process for submitting representations</b>	The process for submitting representations was in accordance with the Cambridge City Statement of Community Involvement, and related legislation.
<b>Documentation not available to view online</b>	The documentation relating with the application has been publicized in accordance with the Cambridge City

	Statement of Community Involvement, and related legislation.
<b>Impact on house prices</b>	This not a material consideration and has not been considered in this report. The updated ES assesses wider socioeconomic matters, such as employment.

**Table:** Summary of Third-Party Issues

## 20.0 Other Issues

### Statutory Noise Nuisance

- 20.1 The statutory nuisance regime is a basic safeguarding standard intended to deal with the most excessive emissions and impacts. The operational noise from the existing H16 Radar has been investigated by officers from the City Council Environmental Quality and Growth team, as a potential statutory noise nuisance under the Environmental Protection Act 1990. This is a separate matter which is dealt with under a different legislative framework to that under which this planning application must be assessed.
- 20.2 The planning regime is proactive with the overarching aim of identifying challenges and unacceptable adverse impacts in advance and resolving and preventing them arising in the first place. The statutory nuisance regime is primarily reactive.
- 20.3 It is important to note that whilst statutory nuisance type issues such as noise can be considered alongside a broad range of factors that can impact on the pleasantness of a place, the planning policy standard of protection is safeguarding health and local quality of life / amenity which is usually a higher standard than for statutory nuisance. Statutory nuisance does not equate to loss of quality of life / amenity. Significant loss of amenity will often occur at lower levels of noise, than would constitute a statutory nuisance.
- 20.4 It is therefore important to consider properly, loss of amenity and impacts on quality of life from noise emissions in the planning process in its wider context and not from the narrow perspective of potential future statutory nuisance. The nuisance planning regimes have different aims and objectives and should not influence planning decisions. Ultimately the grant of planning permission does not authorise the commission of a statutory nuisance.

## 21.0 Planning Balance

21.1 The Planning and Compulsory Purchase Act 2004 S38 (6) directs that planning decisions must be taken in accordance with the development plan, unless material considerations indicate otherwise. The NPPF represents current government planning policy and is a material planning consideration which must be taken into account where it is relevant to a planning application. This includes the presumption in favour of sustainable development, which requires a decision-taker approving development proposals which accord with an up-to-date development plan without delay.

21.2 The NPPF lists the three dimensions to sustainable development as: (i) economic, (ii) social and (iii) environmental. These dimensions are interdependent and need to be pursued in mutually supportive ways to achieve sustainable development. The benefits and dis-benefits of the development proposals have been evaluated against the objectives of the NPPF and the presumption in favour of sustainable development, as summarised below.

- **Economic Role**

21.3 NPPF places a clear emphasis on the importance of economic growth and delivering economic benefits as a key component of sustainable development. A number of direct and indirect economic benefits will be generated from the construction and operational phases of the proposed H17 Radar.

21.4 The proposals would bring direct economic benefits, by enabling the continued operation of Marshall's MRO operations, as well as other important roles played by the Airport, including as a base for private and commercial business flying – the application supporting documentation confirms that the Applicant is a major employer, employing over 1,250 staff at the Airport.

21.5 The development would also ensure the development of LNCH without constraining building heights, thus realising the economic benefits of the consented development.

21.6 Officers consider that the direct and indirect positive economic benefits which the development would generate in terms of its construction and operational phases are of major significance, to which weight should be given.

- **Social Role**

21.7 The proposed radar would bring significant social benefits, by enabling the continued safety of the Airport and its operations, to the benefit of aircraft and crew/passengers. The maintenance of safe aircraft operations would also have wider public safety benefits, protecting communities and people living in the vicinity of the Airport, in accordance with Paragraph 95 of the NPPF, which concerns the promotion of public safety.

21.8 By ensuring the development of LNCH in accordance with the terms of the Section 106 agreement (by enabling development of the LNCH site above permissible building heights, including within an existing sterile zone within which no permanent structures are currently allowed), the proposed development would also in-directly enable other social benefits to be realised (including the provision of affordable and market housing, education and community facilities)

21.9 Officers consider that the direct and indirect positive social benefits of the development in terms of its construction and operational phases are of major significance.

- **Environmental Role**

21.10 In relation to the environmental role of sustainability, it is acknowledged by officers that the proposed H17 Radar would generate significant adverse landscape and visual effects on the landscape character of Coldham's Common, and its recreational users. This would be contrary to Paragraph 174 (a) of the NPPF which seeks to ensure that planning decisions protect and enhance valued landscapes.

21.11 By failing to conserve and enhance the setting and special character of the City, the proposed H17 Radar would also be contrary Local Plan Policies 8 and 60, which seek to ensure that proposals which break the existing skyline fit within the existing landscape and townscape with no adverse impact. The proposals would also conflict with Local Plan Policy 67 by causing harm to the character of the open space of Coldham's Common.

21.12 Significant weight can be attached to the harm the development would cause to the existing landscape and local character. The environmental dis-benefits of the proposals outweigh any environmental benefits arising from the re-use of the existing H16 radar tower.

## 22.0 **Summary and Conclusion**

22.1 This is a finely balanced decision. Overall, the proposed development will bring significant economic and social benefits which accord with the three dimensions of sustainable development set out in the NPPF. However, the proposed H17 Radar would also bring environmental dis-benefits through significant adverse landscape and visual effects for recreational users of Coldham's Common, which has recreational importance, and the Common's landscape character. Whilst these impacts cannot be avoided, the ten-year planning permission secured through recommended condition 2 will mean that long term impacts are mitigated. The development is not considered to result in any other significant harmful, permanent, or temporary effects on other environmental considerations.

22.2 The proposed H17 Radar would be contrary to Local Plan Policy 55 (Responding to Context), Policy 67 (Protection of Open Space) and would also conflict with Policy 83 (Aviation Development) which advises that aviation development at Cambridge Airport will only be supported where it would not have a significant adverse impact on the environment. However, officers recognise that the applicant has taken all reasonable steps to ensure that the visual impact of the proposed H17 Radar is minimised, by its location within the only part of the Airport where it could be sited consistent with safety, operational and noise constraints, and given there are no other alternative on or off Airport sites that would offer lesser visual impacts.

22.3 The proposed development would bring about substantial safety benefits, enable existing business operations at the Airport to continue, and facilitate the development of the LNCH site. When read as a whole, the proposal is considered to comply with local plan policies and guidance in the NNPF. On this basis, officers are of the view that the benefits of the proposals tip the balance in favour of supporting the scheme, resulting in the recommendation below at Paragraph 23.1.

### 23.0 Recommendation

23.1 **Grant Planning Permission for Application 21/03224/FUL**, subject to:

- (i) The conditions and informatives set out in **Appendix C** to this report, and
- (ii) With delegated authority to officers to carry through minor amendments to those conditions and informatives (and include others considered appropriate and necessary) prior to the issuing of the planning permission.

### Appendices:

Appendix A: Glossary

Appendix B: Noise Policy Context

Appendix C: Proposed Planning Conditions and Informatives

Appendix D: Consultation Response on behalf of Cambridge City Council  
Environmental Quality and Growth Team

Appendix E: Three Spires Acoustic Report

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## **21.03224.FUL: Appendix A – Glossary of Terms**

AAP – Area Action Plan  
ALARP – As Low as Reasonably Practicable  
AOD – Above Ordnance Datum  
ASA – Alternative Site Assessment  
ATZ – Air Traffic Zone  
BNE – Built and Natural Environment  
BPM – Best practicable means  
BS – British Standard  
CAA – Civil Aviation Authority  
CCC – Cambridge City Council  
CD – Consultation distance  
CEAL – Cambridge East Area Action Plan  
CEMP – Construction Environmental Management Plan  
CIL – Community Infrastructure Levy  
CLP – Cambridge Local Plan  
COVID-19 – 2019 (novel) Corona Virus Disease  
EHO – Environmental Health Officer  
EIA – Environmental Impact Assessment  
EMF – Electro-magnetic field  
EQG – Environmental Quality and Growth  
ES – Environmental Statement  
EU – European Union  
GCSP(S) – Great Cambridge Shared (Service)  
GDPO – Town and Country Planning (General Permitted Development) Order  
GRE – Ground Run Enclosure  
HIA – Health Impact Assessment  
HSE – Health and Safety Executive  
ICNIRP – International Commission on Non-Ionizing Radiation Protection  
JDCC – Joint Development Control Committee  
LAeq,T – A-weighted equivalent continuous sound level

LED – Light Emitting Diode  
LLFA – Lead Local Flood Authority  
LNCH – Land North of Cherry Hinton  
LOAEL – Lowest Observed Adverse Effect Level  
LPA – Local Planning Authority  
LVIA – Landscape and Visual Impact Assessment  
MADG – Marshall Aerospace and Defence Group  
MOD – Ministry of Defence  
MRO – Maintenance, repair and overhaul  
NATS – National Air Traffic Services  
NGD – Noise Generating Development  
NPPF – National Planning Policy Framework  
NPPG – National Planning Practice Guidance  
NDG – National Design Guide  
NOAEL – No Observed Adverse Effect Level  
OLS – Obstacle Limitation Survey  
PPA – Planning Performance Agreement  
PROW – Public Rights of Way  
SCI – Statement of Community Involvement  
SPD – Supplementary Planning Document  
STAR – Solid-state Approach Radar  
TCA – Townscape Character  
UK – United Kingdom  
VDF – Very High Frequency Direction Finder  
WHO – World Health Organization  
ZTV – Zone of Theoretical Visibility

## 21.03224.FUL: Appendix B – Noise Policy Context

### National Noise Policy

Noise Policy Statement for England, Department for Environment, Food & Rural Affairs, 2010 (NPSE, 2010)

### National Planning Policy Framework (NPPF)

The original National Planning Policy Framework (NPPF) was published in March 2012 with revised versions published in 2019 and July 2021. It replaced previous national planning policies such as Planning Policy Guidance PPG24: Planning and Noise. In terms of noise, the most relevant paragraphs are:

- **Paragraph 174** which states, “*Planning policies and decisions should contribute to and enhance the natural and local environment by:*
  - (e) *preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of .. noise pollution ...*”
- **Paragraph 185** which states, “*Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from this development. In doing so they should:*
  - (a) *mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;*”

### Planning Practice Guidance (PPG) – Noise (Government Guidance)

The Government launched the PPG March 2014 and refreshed it in July 2019. The section on noise (PPG-Noise) provides tabulated descriptions of likely human response to noise exposure and example outcomes based on the noise effect categories introduced in the NPSE, 2010 based on the likely average response e.g. for No Observed Effect Level (NOEL), the Lowest Observed Adverse Effect Level (LOAEL) and the Significant Observed Adverse Effect Level (SOAEL). It also adds a fourth category termed Unacceptable Adverse Effect (UAE).

The PPG-Noise recognises that due to the subjective nature of noise there is not a simple relationship between measured or predicted noise levels and the resultant impact, and that this will depend on how various factors combine. Factors which are considered most of relevance to this application are:

- The source and absolute level of the noise together with the time of day it occurs.
- The spectral content of the noise (i.e. whether or not the noise contains particular high or low frequency content) and the general character of the noise (i.e. whether or not the noise contains particular tonal characteristics or other particular features).
- The local topology and topography – local arrangement of buildings, surfaces and the extent to which it reflects or absorbs noise.
- The existing or, where appropriate, planned character of the area.
- The cumulative impacts of more than one source of noise.
- Whether any adverse internal effects can be completely removed by closing windows and, in the case of new residential development, if the proposed mitigation relies on windows being kept closed most of the time (and the effect this may have on living conditions). In both cases a suitable alternative means of ventilation is likely to be necessary.
- In cases where existing noise sensitive locations already experience high noise levels, a development that is expected to cause even a small increase in the overall noise level may result in a significant adverse effect occurring even though little to no change in behaviour would be likely to occur.

The NPSE also states that it is not possible to have a single objective noise-based measure that defines SOAEL an indeed LOAEL or NOAEL that are mandatory and applicable to all sources of noise in all situations. Consequently, the SOAEL etc is likely to be different for different noise sources, for different receptors, in different locations (due to varying background noise levels) and at different times. It is acknowledged that further research is required to increase the understanding of what may constitute a significant adverse impact on health and quality of life from noise.

### Local Noise Policy

- Cambridge City Council –Cambridge Local Plan 2018: Policy 35
- Greater Cambridge Shared Planning – Sustainable Design and Construction: Supplementary Planning Document (GCSP-SPD, 2020) – relevant noise sections.
- Local Plan - Policy 83: Aviation Development
- Cambridge East Area Action Plan (2008) - Policy CE/26: Noise

### Technical Guidance – Noise

- British Standard 5228-1:2009+A1:2014 ‘Code of practice for noise and vibration control on construction and open sites. Part 1: Noise’ (2014).

- British Standard 5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites. Part 2: Vibration' (2014).
- British Standard 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound' (BS 4142).
- British Standard 8233:2014 'Guidance on Sound Insulation and Noise Reduction for Buildings' and
- World Health Organization 'Guidelines for Community Noise'

#### Noise Impact Assessment Methodology/Standard

- **BS4142:2014+A1:2019**

In the circumstances of this planning application, BS 4142 is considered the most appropriate significance of noise impact assessment methodology: the proposed radar is an industrial noise source.

BS 4142 describes the methodology for rating and assessing sound of an industrial and/or commercial nature - existing, proposed, new, modified or additional source(s). The methods described use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.

The standard describes the recommended methodology to measure and determine ambient, background and residual sound levels, and the rating levels of industrial/commercial sound. BS 4142: 2014 requires consideration of the level of uncertainty in the data and associated calculations.

BS 4142 refers to the sound produced by an assessed source at a sensitive receptor (e.g. outside a façade of a residential building) as 'specific' sound, in this case the proposed main source of noise the radar motor cabin enclosure. The specific sound level (radar cabin noise) is determined by calculating or measuring the equivalent continuous A-weighted sound pressure level of the source over the assessment time period 'T' (LAeq,T).

Where certain acoustic features are present in the source's sound at the assessment location, the Standard requires an acoustic feature correction to be added to the specific sound level to obtain the 'rating level'. Corrections can be included for any of the following acoustic features / characteristics of the sound:

- tonality,
- impulsivity,
- intermittency, and
- other sound characteristics that make it "readily distinctive".

The procedure contained in BS 4142 gives an indication of the degree of significance of any potential impact of sound by determining the margin by which

the rating level of the specific sound source exceeds the existing representative background sound level, examining also the context in which the sound occurs or will occur. The following key parameters are relevant:

- **Specific sound source** is the sound source being assessed.
- **Specific sound level** is the sound pressure level produced by the specific sound source at the assessment location over a given reference time interval,  $T_r$ .
- **Residual sound** is defined in BS 4142: 2014 as "*ambient sound remaining at the assessment location when the specific sound source is suppressed to such a degree that it does not contribute to the ambient sound*". (without specific).
- **Ambient sound** is defined in BS 4142: 2014 as "*totally encompassing sound in a given situation at a given time, usually composed of sound from many sources near and far*". It comprises the residual sound and the specific sound when present.
- **Rating level** is the specific sound level plus any adjustment for the characteristics of the sound (tone, impulse, intermittent or other acoustic feature). The standard describes subjective and objective methods to establish the appropriate adjustment.
- **Background noise** is the sound level at a given location and time, measured in the absence of intermittent noises, any other extraneous or sound sources under consideration.

The background sound level is the  $LA_{90, T}$  of the residual sound level, and is the underlying level of sound. Measurements of background sound level should be undertaken at the assessment location where possible or at a comparable location.

The magnitude / significance of any impact is assessed by comparing the rating level of the specific sound source with the background sound level. Typically, the greater the difference the greater the magnitude of the impact, depending on the context. The standard states:

- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.
- The lower the rating level is relative to the measured background sound level (+4dB and lower), the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact.

- Where the rating level does not exceed the background sound level (0dB and below i.e. a minus level -1 to -5 to -10 and downwards), this is an indication of the specific sound source having a low impact, depending on the context.
- **Greater Cambridge Shared Planning – Sustainable Design and Construction: Supplementary Planning Document (GCSP-SPD, 2020)**

With respect to Noise Generating Development (NGD), including industrial sound sources such as the proposed radar, Table 3.11 of the Greater Cambridge Shared Planning – Sustainable Design and Construction: Supplementary Planning Document (GCSP-SPD, 2020) which relates to new noise generating development – external noise standards for ‘non anonymous noise’ sets local ‘Noise Significance Risk’ and ‘Noise Significance of Effect’ categories, having regard to the principles of BS 4142 outcome criteria and adopting the terminology advocated in the NPSE (2010) and PPG-Noise i.e. for No Observed Effect Level (NOEL), Lowest Observed Adverse Effect Level (LOAEL) and Significant Observed Adverse Effect Level (SOAEL).

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# 21.03224.FUL: Appendix C – Proposed Planning Conditions and Informatives

## 1. Time Limits

The development hereby permitted shall be begun before the expiration of three years from the date of this permission.

**Reason:** In accordance with the requirements of Section 91 of the Town and Country Planning Act 1990 (as amended by Section 1 of the Planning and Compulsory Purchase Act 2004).

## 2. 10-year permission

No later than 10 years from the date of this permission the H17 Radar and all associated structures and equipment as identified on the plans hereby approved shall be decommissioned and removed from the site, and the site restored in accordance with a restoration scheme and programme of works (including a timetable for the decommissioning work) which shall have been submitted to the Local Planning Authority for its written approval no later than three months before the commencement of the decommissioning process.

**Reason:** To ensure the removal of the H17 Radar when it is no longer required for the safe operation of the airport.

## 3. Removal of AR15 Radars

Within three months of the first operation of the H17 Radar, the AR15 Radar (shown on the plans hereby approved) shall be removed from the site and the site shall be restored in accordance with the programme of work set out in Appendix A3.2 (Construction Environmental Management Plan) of the Environmental Statement: Cambridge City Airport, Radar Replacement Project, July 2021 and in accordance with drawing 20591-RPS-CBG-XX-DR-C-2003-P01 (AR15 Radar Site - Proposed Plan (Restored Site)).

**Reason:** In the interests of good planning and to ensure that the decommissioned AR15 Radar is removed from the site when the H17 Radar comes into first use.

## 4. Approved Drawings

The development hereby permitted shall be carried out in accordance with the following approved plans:

AR15 Radar:

- 20591-RPS-CBG-XX-DR-C-2002-P01 (AR15 Radar Site – Temporary Construction Plan)

- 20591-RPS-CBG-XX-DR-C-2003-P01 (AR15 Radar Site - Proposed Plan (Restored Site) )

H16 Radar:

- 20591-RPS-CBG-XX-DR-C-3002-P01 (H16 Radar Site - Temporary Construction Plan)
- 20591-RPS-CBG-XX-DR-C-3003-P01 (H16 Radar Site - Proposed Plan (Restored Site) )

H17 Radar:

- 20591-RPS-CBG-XX-DR-C-4002-P02 (H17 Radar Site Temporary Construction Plan Immediate Site)
- 20591-RPS-CBG-XX-DR-C-4003-P02 (H17 Radar Site Temporary Construction Plan Wider Context)
- 20591-RPS-CBG-XX-DR-C-4004-P02 (H17 Radar Site Proposed Site Plan)
- 20591-RPS-CBG-XX-DR-C-4005-P02 (H17 Radar Site Proposed Radar Mast Elevations and Plans)
- 20591-RPS-CBG-XX-DR-C-4006-P02 (H17 Radar Site Proposed Ground Level Facilities Elevations / Plans)
- 20591-RPS-CBG-XX-DR-C-4007-P03 (H17 Radar Site Proposed Drainage and Services)
- 20591-RPS-CBG-XX-DR-C-4010-P01 (H17 Radar Site - Elevated Cabin Proposed Noise Insulation Measures)

**Reason:** In the interests of good planning, for the avoidance of doubt and to facilitate any future applications to the Local Planning Authority under Section 73 of the Town and Country Planning Act 1990.

## 5. Pre-Demolition Check for Bats

Prior to the demolition / removal of the building immediately to the north of and associated with the AR15 Radar, as shown on application drawing 20591-RPS-CBG-XX-DR-C-2002 P01,

- a) A further precautionary inspection shall be undertaken by an appropriately qualified ecologist in accordance with para 8.57 of Environmental Statement dated XXX submitted as part of the application for the development to check the building for the presence of roosting or hibernating bats. The full inspection report shall be submitted to and approved in writing by the Local Planning Authority; and.
- b) If the results of the inspection identify any evidence of bats roosting or hibernating in the building, no demolition / removal of the building or any associated works shall take place until a mitigation scheme, licenced by Natural England if appropriate, identifying appropriate mitigation measures to ensure no harm to bats in accordance with National and European legislation for the protection to bats has been submitted to and approved in writing by the Local Planning Authority. Thereafter any demolition or removal of the building shall be carried out only in accordance with the approved mitigation scheme.

**Reason:** In accordance with Para 8.57 of the Environmental Statement, Policy 70 of the Cambridge Local Plan (2018) and to otherwise ensure compliance with legislation for protection of bats.

## **6. Unexpected Contamination**

If, during development, contamination not previously identified is found to be present at the site then no further development (unless otherwise agreed in writing with the Local Planning Authority) shall be carried out until the developer has submitted, and obtained written approval from the Local Planning Authority, for a remediation strategy detailing how this unexpected contamination shall be dealt with. The remediation strategy shall be implemented as approved, verified and reported to the satisfaction of the Local Planning Authority.

**Reason:** To ensure that any unexpected contamination is rendered harmless in the interests of environmental and public safety (Cambridge Local Plan 2018 policy 33).

## **7. Construction Environmental Management Plan & Working Hours**

Save for construction activities of electrical contractors undertaking electrical cabling works on the H16 and H17 Radar, and the cabin-fit on the H17 Radar (as identified by the plans hereby approved), all demolition and construction work shall only be carried out between 0800 hours to 1800 hours Monday to Friday inclusive, and/or between 0800 hours to 1300 hours on Saturdays and at no time on Sundays or Bank or Public Holidays.

In all other respects the demolition, dismantling and construction works associated with the development shall be carried out in accordance with the submitted CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN, date 17/05/2021 (Document Ref. No: RADAR/BD001CEMP, Version 01).

**Reason:** In the interests of safeguarding amenity in accordance with Policies 35 and 83 of the Cambridge Local Plan 2018.

## **8. Standby Emergency and Back Up Generator Operation**

Any emergency backup generator shall only operate as follows:

### **(i) Emergency Use Only**

Any emergency backup generator shall only be used in the event of standard mains electricity supply interruption / failure or in accordance with (ii) below. It shall not be used to supplement general energy demand, to feed electricity into the utility grid or as an alternative supply in the event of disconnection (whatever the reason) from the mains supply.

### **(ii) Hours of Running for Testing, Maintenance & Repair**

Running of any emergency (or other) backup generator as part of routine periodic testing, maintenance and repair shall only take place for the length of time specified by the manufacturer between the hours of 8am – 6pm Monday to Friday, 9am –1pm Saturday and at no time on Sunday or Public/Bank Holidays. Periodic testing, maintenance and repair shall only occur for a maximum duration of 20 hours in any calendar year. Accurate, detailed records of all testing shall be maintained kept on site and shall be available for inspection at the request of the local planning authority.

**Reason:** In the interests of safeguarding amenity in accordance with Policies 35 and 83 of the Cambridge Local Plan 2018.

## **9. H17 Radar Noise Insulation Condition**

- (a) The embedded noise / sound insulation and mitigation attenuation measures to the elevated upper H17 Radar motor cabin enclosure as detailed in the submitted 'Environmental Statement: Cambridge City Airport – Radar Replacement Project, July 2021' and 'Noise Consultants Ltd - Response: Planning Consultation Response. Planning Ref. 21/03224/FUL, November 2021' and all application drawings including 'rps drawing / document number. 20591-RPS-CBG-XX-DR-C-4010 P01 dated 01.07.2021 - titled H17 Radar Site - Elevated Cabin Proposed Noise Insulation Measures', shall be fully implemented and retained until such time as the development is decommissioned pursuant to condition 2 of this permission.
- (b) The H17 Radar motor cabin enclosure shall be positioned so that the cabin elevation facades B-C (as identified and detailed on submitted 'rps drawing / document number. 20591-RPS-CBG-XX-DR-C-4010 P01 dated 01.07.2021 - titled H17 Radar Site - Elevated Cabin Proposed Noise Insulation Measures') are orientated and facing in a southerly / south easterly direction, away from Noise Sensitive Receptors / Residential Premises at Barnes Close.

**Reason:** In the interests of safeguarding amenity in accordance with Policies 35 and 83 of the Cambridge Local Plan 2018.

## **10. H17 Radar – Permitted Operational Sound Levels**

The level of sound energy emitted from the H17 Radar tower and associated equipment and plant hereby approved, excluding that which is associated with the back-up generator, during any individual 15 minute period, whether measured, calculated or by a combination of both, shall not exceed 33dB LAeq(15 minutes) at any point 1m from any residential facade within 350m of the H17 Radar hereby approved, that existed at the time of approval of the development, at any height greater than 1.2 metres above the adjacent ground level. If the sound energy level is measured at 1m from a residential façade it shall be adjusted to remove the additional sound energy contribution from reflected surfaces other than from the ground adopting equivalent free-field adjustment methodologies advocated in BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound.

Where measurement at 1m from a residential façade is not possible, the sound energy level at the compliance assessment location or locations shall be determined through a combination of measurement and calculation. Acceptable methods of determining the level of sound energy in accordance with this condition include but are not restricted to those contained in BS7445: 2003: Description and measurement of environmental noise; ISO1996: Description, measurement and assessment of environmental noise; and ISO9613 - Attenuation of sound during propagation outdoors, save where they apply an arithmetic or logarithmic average of more than any one period of 15 minutes or where they use any decibel adjustment to rate character within the noise.

**Reason:** In the interests of safeguarding amenity in accordance with Policies 35 and 83 of the Cambridge Local Plan 2018.

### **11. H17 Radar Operational Sound Verification Assessment Report**

No later than two months prior to the commencement of operation of the H17 Radar (following commissioning) the methodology for a Radar Operational Sound Verification Assessment to demonstrate compliance with the H17 Radar Permitted Operational Sound Levels detailed in Condition 10 shall be submitted to and approved in writing by the Local Planning Authority

Written notification shall be provided to the Joint Director of Planning and Economic development of Cambridge City Council and South Cambridgeshire District Council at least 5 (five) working days before the H17 Radar becomes fully operational (following commissioning).

Within six months of the commencement of operation of the H17 Radar (following commissioning), the Radar Operational Sound Verification Assessment shall be undertaken in accordance with the approved methodology, and the results submitted in writing for approval by the Local Planning Authority as a Radar Operational Sound Verification Assessment Report.

**Reason:** In the interests of good environmental impact assessment practice, to verify the H17 Radar noise emissions stated in the environmental statement and to safeguard amenity in accordance with Policies 35 and 83 of the Cambridge Local Plan 2018.

### **12. Non-Compliance With Radar Sound Verification Assessment Noise Limits**

In the event that the Radar Operational Sound Verification Assessment Report prepared pursuant to Condition 11 identifies that the H17 Radar Permitted Operational Sound Levels detailed in Condition 10 are being exceeded, further investigations shall be undertaken, and a Verification Assessment Exceedance Report submitted in writing to the Local Planning Authority for approval within two (2) months of the submission and approval of the Radar Sound Verification Assessment Report.

The Verification Assessment Exceedance Report shall identify whether the H17 Permitted Radar Operational Sound Levels detailed in Condition 10 above are being exceeded, and the measures that shall be taken to ensure compliance, together with a timescale for their implementation.

Following the written approval by the Local Planning Authority of the Verification Assessment Exceedance Report, the compliance measures shall be implemented as proposed in accordance with the agreed timescale, and thereafter retained.

**Reason:** In the interests of safeguarding amenity in accordance with Policies 35 and 83 of the Cambridge Local Plan 2018.

## **INFORMATIVES:**

### **Informative 1:**

For the avoidance of doubt, the compliance assessment locations referred to in Condition 10 above includes any point at 1m from any residential façade within 350m of the H17 Radar hereby approved, as identified by the circle on the plan below.



# 21.03224.FUL: Appendix D – Consultation Response on behalf of Cambridge City Council Environmental Quality and Growth Team

## PLANNING CONSULTATION RESPONSE

Responding Officer:	Greg Kearney
Date:	11-02-2022
Planning Ref No:	21/03224/FUL
Tascomi Ref No:	2204/21 & 2531/21
Description of Development:	<p>Cambridge Airport, Newmarket Road, Cambridge,</p> <p>Dismantling and removal of two existing radars and the construction of a new radar and other associated works.</p> <p><u>Environmental Impact Assessment Regulations 2017 (EIA Regs): Environmental Statement</u></p> <p><b>Amendment</b> - Further information has been received relating to:</p> <ol style="list-style-type: none"> <li>1. Letter in response to consultation comments</li> <li>2. Noise report</li> </ol>

### Cross one:

- The development proposed is **acceptable** subject to the imposition of the condition(s)/informative(s) outlined below.
- The development proposed is **unacceptable** and should be refused for the reason(s) set out below.
- It is not possible to fully comment on the proposed development and the additional information set out below will be required in order to provide comments.

This memo should be read in conjunction with our previous (Environmental Quality and Growth - EQG) planning consultation response memos dated the 28-10-2021 (Planning Ref No: 21/03224/FUL & Tascomi Ref No: 2204/21) and 18-11-2021 (Tascomi Ref No: 2204/21), which were completed prior to review of the most recent additional information submissions.

However, where necessary any relevant and final comments / conclusions previously provided have been included. Therefore, this response memo supersedes all previous EQG memos and should be considered our final response to all environmental health related matters / issues.

### **List of required conditions/Informatives**

- **Standard Condition:**

#### **CE05AS - Unexpected Contamination**

If unexpected contamination is encountered during the development works which has not previously been identified, all works shall cease immediately until the LPA has been notified in writing. Thereafter, works shall only restart with the written approval of the LPA following the submission and approval of a Phase 2 Intrusive Site Investigation Report and a Phase 3 Remediation Strategy specific to the newly discovered contamination.

The development shall thereafter be carried out in accordance with the approved Intrusive Site Investigation Report and Remediation Strategy.

Reason: To ensure that any unexpected contamination is rendered harmless in the interests of environmental and public safety (Cambridge Local Plan 2018 policy 33).'

- **Bespoke Conditions:**

#### **Demolition / Construction and Operational Noise**

##### **1. Construction Environmental Management Plan & Working Hours**

Save for construction activities of electrical contractors undertaking electrical cabling works on H16 and H17 radar, and cabin-fit on the H17 radar, all demolition and construction work shall only be carried out between 0800 hours to 1800 hours Monday to Friday inclusive, 0800 hours to 1300 hours on Saturdays and no time on Sundays, Bank or Public Holidays, except in instances that shall be agreed in advance in writing with the Local Planning Authority.

In all other respects, unless otherwise agreed in writing by the Local Planning Authority, the demolition, dismantling and construction works shall be carried out in accordance with the submitted CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN, date 17/05/2021 (Document Ref. No: RADAR/BD001CEMP, Version 01).

**Reason:** In the interests of safeguarding amenity in accordance with Policies 35 and 83 of the Cambridge Local Plan 2018.

##### **2. H17 Radar Noise Insulation Condition**

The embedded noise / sound insulation and mitigation attenuation measures to the elevated upper H17 radar motor cabin enclosure as detailed in the submitted 'Environmental Statement: Cambridge City Airport – Radar Replacement Project, July 2021' and 'Noise Consultants Ltd - Response: Planning Consultation Response. Planning Ref. 21/03224/FUL, November 2021' and all application drawings including 'rps drawing / document number. 20591-RPS-CBG-XX-DR-C-4010 P01 dated 01.07.2021 - titled H17 Radar Site - Elevated Cabin Proposed Noise Insulation Measures', shall be fully implemented and retained thereafter.

For the avoidance of doubt the H17 Radar motor cabin enclosure shall be positioned so that cabin elevation facades B-C (as identified and detailed on submitted 'rps drawing / document number. 20591-RPS-CBG-XX-DR-C-4010 P01 dated 01.07.2021 - titled H17 Radar Site - Elevated Cabin Proposed Noise Insulation Measures') are orientated and facing in a southerly / south easterly direction, away from Noise Sensitive Receptors / Residential Premises at Barnes Close.

**Reason:** In the interests of safeguarding amenity in accordance with Policies 35 and 83 of the Cambridge Local Plan 2018.

### 3. H17 Radar Operational Sound Verification Assessment Report

No later than two months prior to the commencement of operation of the H17 Radar (following commissioning) the methodology for a **Radar Operational Sound Verification Assessment** shall be submitted to and approved in writing by the Local Planning Authority

Within six months of the commencement of operation of the radar (following commissioning), the **Radar Operational Sound Verification Assessment** as approved shall be undertaken and the results submitted in writing for approval by the Local Planning Authority. The **Radar Operational Sound Verification Assessment** shall compare the Specific Sound Level,  $L_s$  arising from operation of the H17 Radar with the **Verification Noise Limits** set out in **Table 1** below.

Subject to access constraints, alternative measurement locations to those listed in **Table 1** can be used where the measurement locations are demonstrated to be equivalent in terms of H17 Radar noise immissions. This is subject to approval by the Local Planning Authority.

**Table 1 - Verification Noise Limits, dB  $L_{Aeq,T}$**

Location	Easting	Northing	Reference Time, $T_r$	Verification Noise Limit, $L_{s,T_r}$ averaged over Reference Time, $T_r$ dB
A	548076.1	258792.1	15-min	34 dB <sup>i</sup>
B	548256.9	258516.3	15-min	34 dB <sup>i</sup>

i – measurements at least 3.5m from acoustically reflecting facades and structures

This condition must be read in conjunction with **Informative(s) ['A' and 'B']**

If the **Radar Operational Sound Verification Assessment** identifies that there is sufficient reason to suggest that the **Verification Noise Limits** set out in **Table 1** are being regularly exceeded further investigations will be undertaken, and a report shall be submitted in writing to the Local Planning Authority for approval within two (2) months to consider whether the **Operational Rating Level Limits** set out in **Table 2 [Condition 4]** are being exceeded, and if so the measures that the Applicant proposes to take, employing the best practical means, to ensure compliance with the **Operational Rating Level Limits** set out in **Table 2 [Condition 4]** together with a timescale for their implementation.

**Reason for this Condition:** In the interests of good environmental impact assessment practice, and to verify the H17 Radar noise immissions stated in the environmental statement.

#### **4. H17 Radar Operational Noise Compliance Assessment Process**

Following written notification ('the written notification') from the Local Planning Authority, and with reference to the **Noise Compliance Assessment Process** set out in **Informative C**, the Applicant shall undertake a **Noise Compliance Assessment** to determine the compliance of actual rating levels arising from operation of the H17 Radar with the **Operational Rating Level Limits** set out in **Table 2**.

Specific **Operational Rating Level Limits** set out in **Table 2** are set for complainant's properties represented by Locations R1 – R33 [**Informative 'D'**].

The **Noise Compliance Assessment** shall be commenced within twenty one (21) days of the written notification. The Applicant shall provide to the Local Planning Authority a copy of a **Noise Compliance Assessment Report** within two (2) months of the written notification.

If the **Noise Compliance Assessment Report** confirms non-compliance with the **Operational Rating Level Limits** set out in **Table 2**, the Applicant shall submit in writing for approval by the Local Planning Authority within four (4) months of the written notification a **Compliance Noise Investigation Report** setting out the results of an investigation into the reasons why there are exceedances of the **Operational Rating Level Limits** set out in **Table 2**, and measures that it proposes to take, employing the best practical means, to ensure compliance with the **Operational Rating Level Limits** together with a timescale for their implementation.

Following the written approval by the Local Planning Authority of the **Noise Compliance Investigation Report** the measures shall be implemented as proposed and thereafter retained.

**Table 2 - Operational Rating Level Limits, dB L<sub>Ar,Tr</sub>**

Location	Period	Reference Time, T <sub>r</sub>	Operational Rating Level Limit, L <sub>Ar,Tr</sub> averaged over Reference Time, T <sub>r</sub> dB
Complainant's Property (R1-R16)	Daytime (0700-1900)	1-hour	43 dB <sup>i</sup>
	Evening (1900-2300)	1-hour	40 dB <sup>i</sup>
	Night (2300-0700)	15-min	36 dB <sup>ii</sup>
Complainant's Property (R17-R33)	Daytime (0700-1900)	1-hour	43 dB <sup>i</sup>
	Evening (1900-2300)	1-hour	36 dB <sup>i</sup>
	Night (2300-0700)	15-min	36 dB <sup>ii</sup>
Complainant's Properties Not Listed	Daytime (0700-1900)	1-hour	43 dB <sup>i</sup>
	Evening (1900-2300)	1-hour	36 dB <sup>i</sup>
	Night (2300-0700)	15-min	36 dB <sup>ii</sup>

i – free-field measurements at least 3.5m from the façade of the complainants property

ii – façade measurements above ground floor level, approximately 1m from the façade of the relevant floor of the building

This condition must be read in conjunction with **Informative(s) ['C', 'D' and 'E']**

**Reason:** In the interests of safeguarding amenity in accordance with Policies 35 and 83 of the Cambridge Local Plan 2018.

- **Bespoke Informative(s): A to E**

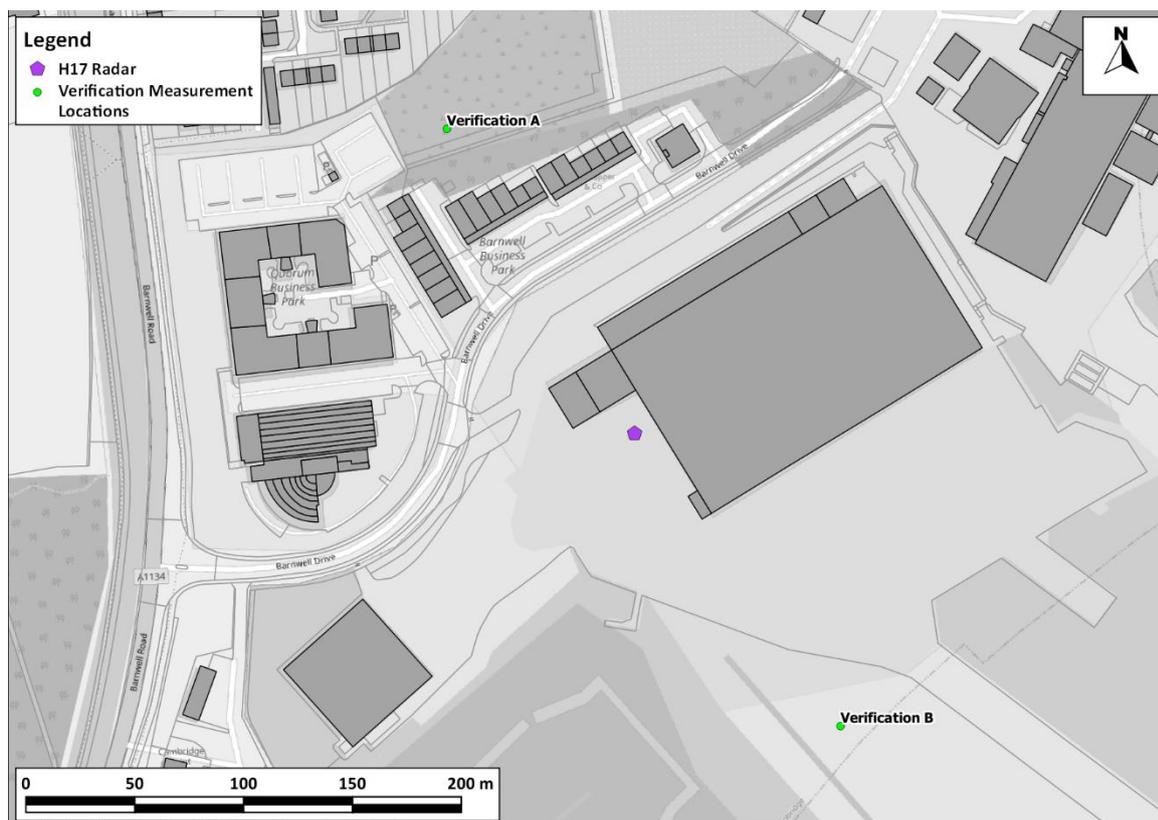
**Informative A: Measurement Procedure**

Measurement procedures should follow the methodologies set out in BS 4142:2014+A1:2019 'Methods for rating and assessment industrial and commercial sound', and shall include a record of meteorological conditions at appropriate times across the duration of the measurement. Meteorological data shall include wind speeds in metres per second, wind direction and rainfall.

Measurement equipment shall be enabled to collect data in one-third octave bands, including levels at 400Hz L<sub>Zeq</sub>.

The location of the **Verification Noise Limits** set out in **Table 1 [Condition 3]**, are shown in **Figure 1**.

**Figure 1 - Verification Noise Limits Monitoring Locations**



**Informative B: Verification Noise Level Determination**

Where necessary, the measured **Ambient Sound Level**,  $L_a = L_{Aeq,T}$  shall be corrected for influences of the **Residual Sound Level**,  $L_r$  to determine the **Specific Sound Level**,  $L_s$  arising from operation of the H17 Radar, adopting the procedures set out in BS 4142:2014+A1:2019 'Methods for rating and assessment industrial and commercial sound'.

**Informative C: Noise Compliance Assessment Process**

A **Noise Compliance Assessment** will only be required by the Local Planning Authority, if following an investigation by the Local Planning Authority, there is sufficient reason to suggest that the **Operational Rating Level Limits** set out in **Table 2 [Condition [4]]** are being exceeded at any dwelling which is lawfully existing or has planning permission at the date of this permission.

The **Local Planning Authority investigation** shall be undertaken by suitably qualified / competent officer(s) of the Local Planning Authority, and the investigation will include the completion of diary sheets, site visits and assessments, as required.

Should the **Local Planning Authority investigation(s)** identify that there is sufficient reason to suggest that the **Operational Rating Level Limits** set out in **Table 2 [Condition 4]** are being regularly exceeded at any dwelling which is lawfully existing or has planning permission at the date of this permission the requirements of **[Condition 4]** will then be instigated.

### **Informative D: Measurement Procedure**

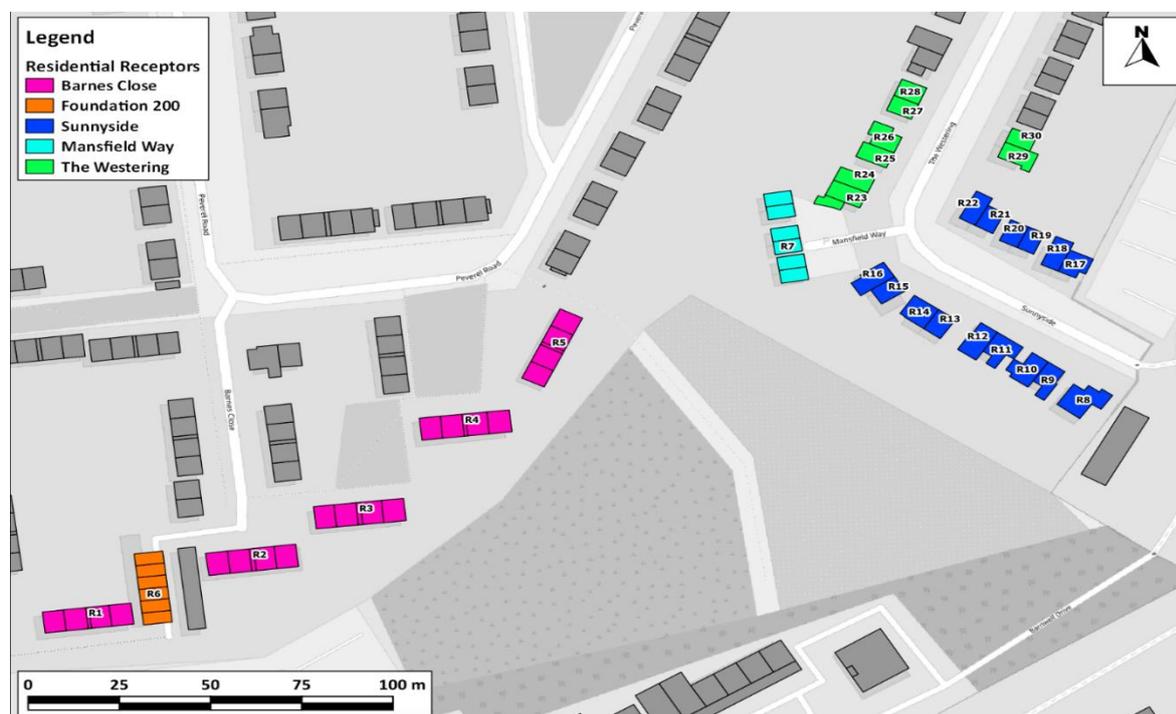
Measurement procedures should follow the methodologies set out in BS 4142:2014+A1:2019 'Methods for rating and assessment industrial and commercial sound' and shall include a record of meteorological conditions at appropriate times across the duration of the measurement. Meteorological data shall include wind speeds in metres per second, wind direction and rainfall.

**Operational Rating Level Limits**,  $L_{A,r,Tr}$  during the Daytime (0700-1900) and Evening (1900-2300) periods apply to external amenity areas at dwellings which are lawfully existing or has planning permission at the date of this permission. The Daytime (0700-1900) and Evening (1900-2300) measurement locations shall be at least 3.5m from the façade of the complainant's property.

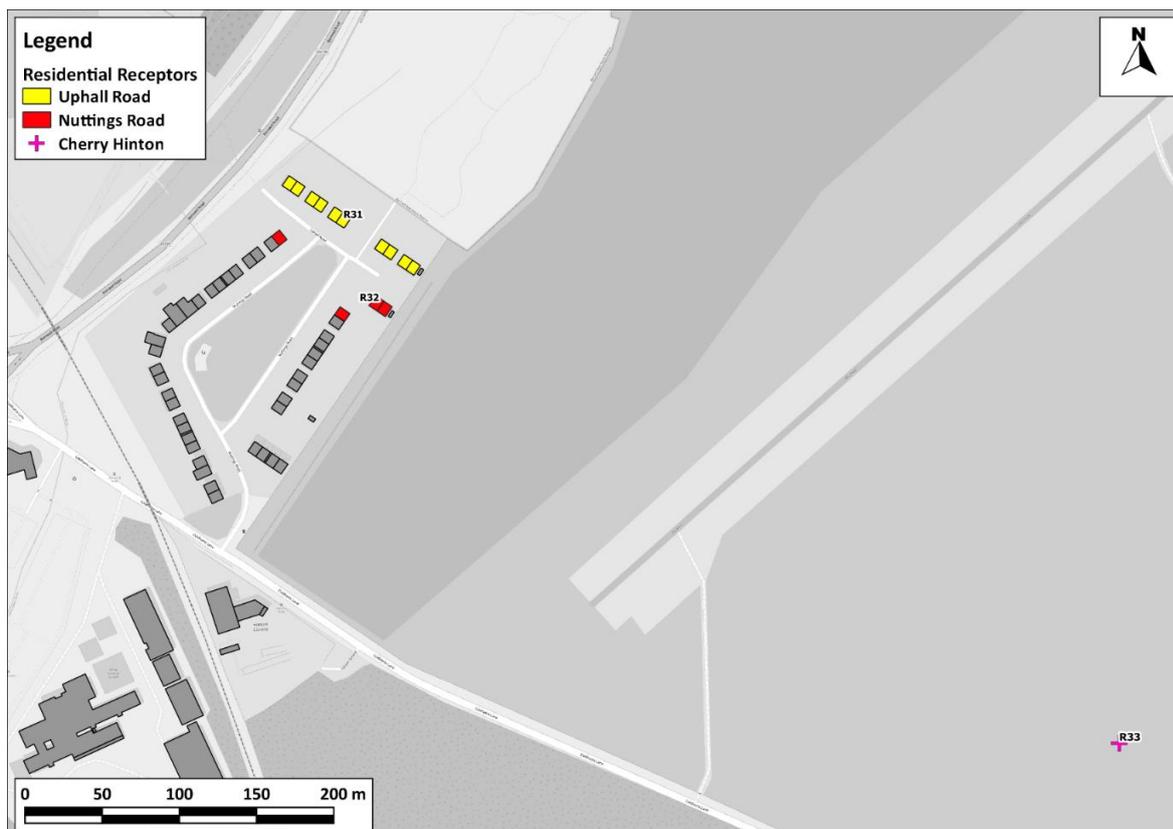
**Operational Rating Level Limits**,  $L_{A,r,Tr}$  during the Night-time (2300-0700) period apply to levels above ground floor level, approximately 1m from the façade of the relevant floor of the complainant's property.

The properties which have specific **Operational Rating Level Limits** set out in **Table 2 [Condition 4]**, represented by Locations R1 – R33, are shown in **Figure 2** and **Figure 3**.

**Figure 2 - Properties with Specified Operational Rating Level Limits**



**Figure 3 - Properties with Specified Operational Rating Level Limits (2)**



### **Informative E: Operational Rating Level Determination**

Where necessary, the measured **Ambient Sound Level**,  $L_a$  shall be corrected for influences of the **Residual Sound Level**,  $L_r$  to determine the **Specific Sound Level**,  $L_s$  arising from operation of the H17 Radar, adopting the procedures set out in BS 4142:2014+A1:2019 'Methods for rating and assessment industrial and commercial sound'.

The **Rating Level**,  $L_{Ar, Tr}$  shall be determined from the **Specific Sound Level**,  $L_s$  adopting methodology advocated in BS 4142:2014+A1:2019 'Methods for rating and assessment industrial and commercial sound'. A character correction of +2dB shall be adopted unless there is sufficient justification to suggest that an alternative character correction is appropriate.

#### **Notes:**

**Ambient sound level**,  $L_a = L_{Aeq, T}$  - equivalent continuous A-weighted sound pressure level of the totally encompassing sound in a given situation at a given time, over time interval, T.

**Residual sound level**,  $L_r = L_{Aeq, T}$  - equivalent continuous A-weighted sound pressure level of the residual sound over time interval, T.

**Specific sound level**,  $L_s = L_{Aeq, T}$  - equivalent continuous A-weighted sound pressure level of the specific sound source over reference time interval,  $T_r$ .

**Rating level**,  $L_{A,r,T_r}$  – specific sound level plus any adjustment for the characteristic features of the sound over reference time interval,  $T_r$ .

### **EIA Regulations 2017 – Amendment: further information / evidence**

In response to our planning consultation response memo dated the 28-10-2021 (Planning Ref No: 21/03224/FUL & Tascomi Ref No: 2204/21) which contained a number of requests for ‘*Additional Information, Clarifications, Justifications and Assessment*’, mainly in relation to noise, the following additional information has been submitted under cover of a Vantage Planning letter dated 29th November 2021:

#### **1. Vantage Planning Letter dated the 29<sup>th</sup> of November 2021, which provides specific response to the following matters which we requested clarification on:**

- Development Proposals (including Alternatives)
  - H16 Alternative
  - Radome
- Health and Electromagnetic Radiation
- Annex Further information explaining decision to rule out an off-airport radar location
  - An addendum to the Alternative Sites Assessment (Appendix A3.1 of the ES)

#### **2. Response: Planning Consultation Response. Planning Ref. 21/03224/FUL- November 2021, report No J20- 12041B/1/F1: Noise Consultants Ltd (noise related)**

### **Three Spires Acoustics Ltd – Radar Assessment**

In addition to the applicant’s additional submissions, we the EQG / Env Health service of Cambridge City Council have also engaged the services of an acoustic consultant (Three Spires Acoustics Ltd) to independently to assess and advise on the potential noise impacts of the existing H16 and proposed H17 radar.

This was considered necessary due to local concern about the radar noise immissions from Cambridge Airport and the complexity of the nature and character of the noise from the H16 radar and therefore potentially the proposed H17 radar. The H16 radar has separately given rise to local noise complaints both to both Marshalls and the Commercial Environmental Health service of Cambridge City Council when it was in full operation.

In addition, noise objections to this H17 radar application have been received from local residents including objections / concerns raised by MAS Environmental (an acoustic consultancy acting on behalf of some of the objectors) regarding the acceptability / robustness of the submissions and noise impact assessment that has

been undertaken as part of the application. Residents are concerned that the proposed H17 radar will result in ongoing unacceptable adverse noise impacts.

The Council's acoustics consultants (Three Spires Acoustics Ltd) report '*Cambridge City Airport Radar Noise - Statutory Nuisance & Planning Assessment, Rev3 - 31/01/2022: Ref. No. TSA/ENA/2021/37*' (hereafter referred to as the '*Three Spires Report, Jan 2022 - EQG/CCC*') is enclosed, as it is considered relevant and is referred to throughout this memo.

## **1.0 Executive Summary**

We have reviewed the further information set out above (additional information submitted under cover of a Vantage Planning letter dated 29th November 2021), together with the response and supplementary information previously provided on 20th October 2021 in response to a Great Cambridge Shared Planning (GCSP) service letter of 24th September 2021 requesting further information under the EIA Regulations 2017 in relation to the Environmental Statement (ES).

It is our view that the application is now fully in accordance with the EIA regulation requirements and the submitted ES with additional amendments / information etc includes all the necessary Env Health issues / topic area related information and impact assessments to allow us to make informed decision about the acceptability of the proposals.

The Environmental Quality and Growth (EQG) service fully support in principle the relocation of the existing H16 radar to the alternative H17 location as proposed, where it would be located further from local residential premises and will have less of an impact on local amenity / quality of life in terms of the main operational environmental impacts / effects such as shadow flicker and noise, when compared with the existing H16 radar when it was fully operating. Contaminated land and air quality impacts are negligible and acceptable.

We do not envisage any unacceptable adverse impacts on non-residential premises such as Commercial offices, other offices and work studios all of Barnwell Road / Drive, Peverel Road Allotment Gardens (Whitehill Allotment Society) and other recreational areas or areas of open space and the Abbey Meadows School.

In summary, having assessed the application submissions and having regard to the conclusions of the Councils' '*Three Spires Report, Jan 2022 - EQG/CCC*' report it is our view that operational noise from the proposed H17 radar will not give rise to any significant adverse impacts on the health and the amenity / quality of life of nearby residential premises.

Based on national planning practice guidance on noise it is concluded that the H17 radar noise immissions at residential receptors should not cause any change in the behaviour, attitude or other physiological responses. The radar noise may slightly affect the acoustic character of an area but not to the extent that there is a change in quality of life / amenity. If the noise exposure is at this level the national planning guidance action / advice is that no additional specific measures are required to manage the proposed radar noise in the prevailing acoustic environment.

Therefore, it is concluded that the proposed development is in accordance with NPPF paragraphs 174 e) and 185 a) and Cambridge Local Plan 2018 policies 35: Protection of human health and quality of life from noise and vibration and 83: Aviation development.

However, to ensure that the radar noise complies with the predicted noise rating levels as detailed in the submitted ES and to protect the quality of life / amenity of local residents, a number of bespoke operational noise conditions are recommended as detailed above.

## **2.0 Outline of the Proposals**

The development proposal is comprised of the following three component parts / stages:

- Demolition and removal of the existing radar (the 'AR15 Radar') that is currently located to the south of the runway;
- Removal of the radar (the 'H16 Radar') that was constructed in Autumn 2020. This is located in the northern part of the Airport adjacent to Hangar 16, to the north of Hangar 17; and
- The construction of a new radar and associated infrastructure in the north-west of the Airport, immediately / adjacent to the west of Hangar 17, on an area of hard standing comprising unused apron space (the 'H17 Radar'), east of Hangar 21 and north of the recently constructed Ground Run Enclosure (GRE).

The ES states that a fully operational radar system is critical for the safe operation of the Airport and the safety of neighbouring communities. It detects the presence and position of aircraft in the wider airspace around the Airport so that aircraft landing and taking off can be safely coordinated and controlled by the Airport's air traffic controllers. The radar is critical to safety because the Airport operates in 'uncontrolled airspace' e.g., aircraft in the vicinity do not need to notify the Airport tower should they wish to enter the airspace above.

### **2.1 H17 Radar: as proposed (east of Hangar 21 and north of the GRE)**

Marshall Aerospace and Defence Group Ltd (MADG) has undertaken an independent review of the radar siting, including looking at potential alternative locations to replace the H16 radar in the long-term. It is understood that at a residents' meeting on 25th January 2021, Marshall confirmed that whilst the H16 Radar was in the optimum location operationally, they recognised the concerns of residents and confirmed their intention to remove it (finding an alternative location) to reduce the effects that were occurring.

It is stated that the proposed replacement H17 radar will have no bearing on the capacity or number of flights using the Airport or overall operations, with a focus on the safety of aircraft and surrounding communities. The overarching purpose of the proposed replacement of the existing radar is to ensure the safe control of aircraft using the Airport and the airspace within the vicinity of the Airport.

Learning from the recent experience of complaints from local residents in relation to the H16 radar, Marshall commissioned detailed assessments / studies, including on

noise, landscape and visual impacts and shadow flicker. These studies have informed the decision on the siting of the proposed H17 radar, and it is concluded in the application submissions that it has been demonstrated that it will not give rise to unacceptable impacts on local residents and businesses and minimises any wider impacts on the environment.

These assessments, together with the assessment of other impacts are incorporated within an ES in support of the planning application.

Technical specialists have assessed the different impacts the proposals would have – covering the dismantling of the H16 radar, its reconstruction west of Hangar 17, the dismantling and removal of the AR15 Radar and the operational and land use effects of the proposed radar at its new site.

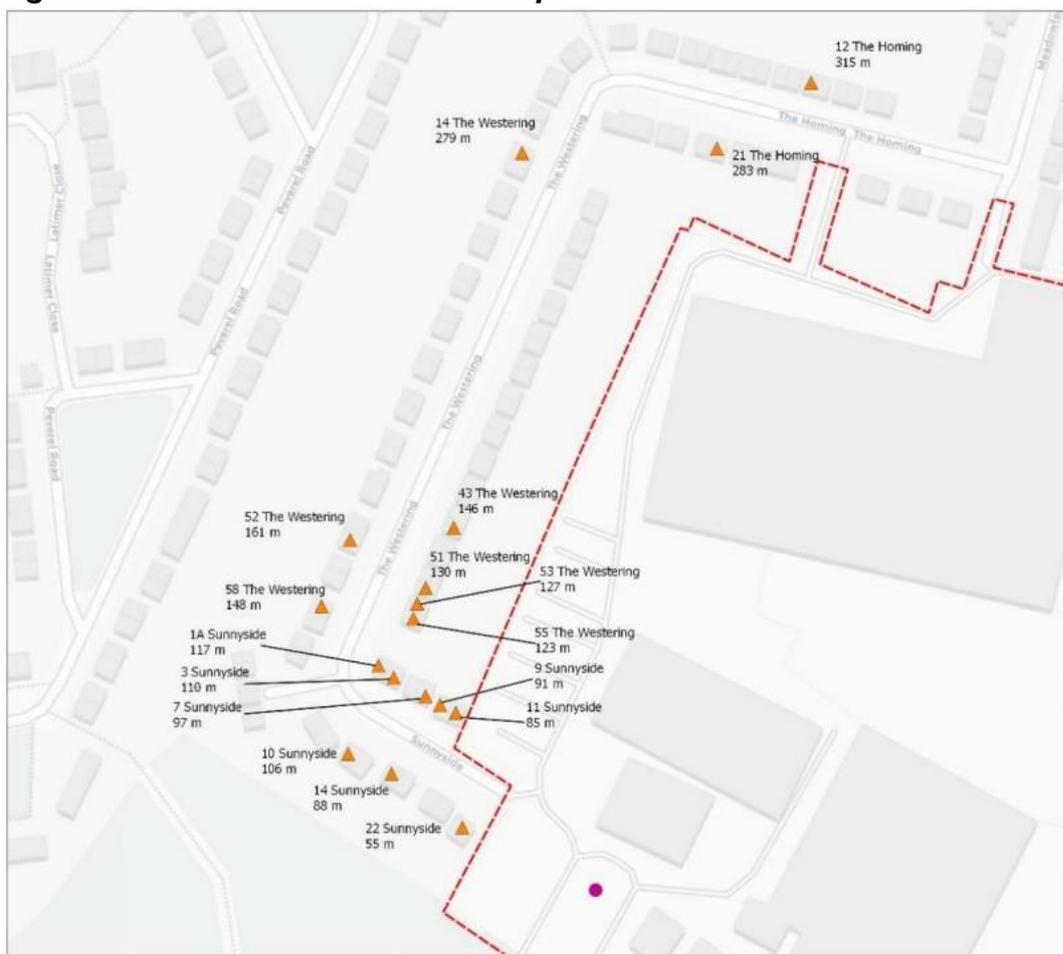
### **3.0 Environment Health Involvement to Date**

Since the erection and operation of the H16 radar in the Autumn of 2020, Cambridge City Council's Environmental Health Commercial Team have received 12 separate complaints from residents living in the immediate vicinity of the radar, mainly from The Westering (approx. 100m to nearest garden boundary from centre of radar base - 120m to facades) and Sunnyside (approx. 45m to nearest garden boundary from centre of radar base).

The complaints received to date relate to operational noise (an audible tonal and fluctuating industrial type mechanical noise) and shadow flicker. The noise complaints are about noise disturbance / annoyance experienced mainly during the evening and night-time periods (when background noise levels are lower and when noise can have greater prominence with greater potential for adverse impact). The complaints relate to adverse impacts on the use and enjoyment of properties both external in gardens and inside, with reported incidents of sleep disturbance and associated health and wellbeing impacts.

Marshalls have also directly received complaints about the radar from local residents. Figure 1 below recreated from the ES shows the location of residential complaints (received by Marshalls – consistent with Council complaints) and relative distances to the H16 radar.

**Figure 1: Relative distances of complaints to H16 Radar**



Following notification of the noise complaints to Marshalls, they engaged an acoustic consultant to assess and advise on the radar noise in liaison with our Environmental Health service, and a package of noise mitigation measures were undertaken to the upper radar motor cabin (the main noise source) to reduce the noise levels experienced by local residents. Although this has resulted in measured noise improvements, noise complaints continued, and some residents report very little noticeable improvement, and they maintain that unacceptable adverse noise impacts continue when the H16 radar is in full operation especially during the evening and night-time.

The main source of the noise is understood to be two motors that rotate the radar antennae, which are located within the upper radar motor cabin immediately below the antennae. The noise annoyance / disturbance is caused by a relatively low level (in absolute dB value) mechanical motor type noise that is tonal (380 to 400Hz dominant frequency) with a degree of amplitude modulation (varies up and down in volume). The character of the noise is such that it is readily identifiable and distinctive as the radar, and it can occur 24/7 when the H16 radar is operational.

The operational noise from the radar has been investigated separately as a potential statutory noise nuisance under separate legislation, the Environmental Protection Act 1990. However, to date it has not been possible to categorially establish that a noise

nuisance exists or is likely to occur. Although the H16 radar is currently not in constant use / full operation the potential for a statutory nuisance to arise continues and the matter remains open to investigation or could be reconsidered if circumstances change and the H16 becomes fully operational again.

It is important to emphasise that whilst statutory nuisance type issues such as noise can be considered alongside a broad range of factors that can impact on the pleasantness of a place, as part of general local quality of life / amenity, quality of life has a much lower threshold (higher protection standard) than that for statutory nuisance.

The statutory nuisance regime is not intended to secure a high level of amenity but is a basic safeguarding standard intended to deal with the most excessive emissions and impacts. Nuisance does not equate to loss of quality of life / amenity. Significant loss of amenity will often occur at lower levels of noise, than would constitute a statutory nuisance.

It is therefore important for planning authorities to consider properly, loss of amenity and impacts on quality of life from emissions in the planning process in its wider context and not from the narrow perspective of potential statutory nuisance. Broader quality of life / amenity issues therefore needs to be carefully considered under the planning regime.

There are opportunities to address problems like noise, given the duties placed on local authorities under the Environmental Protection Act 1990. Whilst this provides a good backstop option, it is certainly not ideal to start requiring alterations to recently completed developments in order to abate a nuisance when these could have been raised during the planning stage, with the aim of mitigating impacts to the higher standard of protection, that is the safeguarding of amenity / quality of life and ensuring any adverse impacts are mitigated to an acceptable level.

The planning regime is proactive whilst the statutory nuisance regime is mainly reactive.

#### **4.0 Chapter 3 – The Development Proposals (including Alternatives)**

Chapter 3 provides details of the proposed development itself and a summary of the alternatives considered.

The alternatives assessment including a more detailed Alternative Sites Assessment (Appendix 3.1) consider the following scenarios:

- Do Nothing
- Alternative Radar Siting
- Alternative Radar Design

#### **4.1 An addendum to the Alternative Sites Assessment (Appendix A3.1 - ES)**

Further to the Great Cambridge Shared Planning (GCSP) service letter of 24th September 2021 to the applicants planning agent requesting further information under the EIA Regulations 2017 in relation to the Environmental Statement, the following additional information was submitted under a covering letter dated 20<sup>th</sup> October 2021.

The Addendum includes:

- i) A further constraints plan showing key constraints within the airport boundary, such as the main and grass runways and the clear and graded areas either sides of these runways.
- ii) Further to paragraph 2.3 of the Alternative Sites Assessment, a letter from the Accountable Manager for the Aerodrome & Aviation Security Accountable at Cambridge City Airport, explaining the reasons for locating the radar within the airport (Appendix A1).
- iii) Further information supporting the choice of the H17 location of the radar in the area of land available in the north-west part of the airport over the alternative

#### **4.2 EQG Comment: Reasonable Alternatives - Radar Site Location / Design**

**The comments made previously in our planning consultation memo dated the 18-11-2021 (Tascomi Ref No: 2204/21) in relation to this matter remain the same and these were as follows:**

##### **'Alternative Site Assessment (ASA)**

*EQG are not technical experts in aviation matters such as air navigation services / air traffic flow management and in particular safety or security and other constraints of the airspace above and around Cambridge Airport, which are considered by the applicant as Tier 1 key operational constraints that influence the suitability of possible alternative locations.*

*However, we offer the following comments.*

##### **Alternative Outside / Off-airport Locations**

*A letter from the Cambridge City Airport Director who is the Airport's 'Accountable Manager for the Aerodrome & Aviation Security' with responsibilities for Airport Safety and Compliance including Security, has been submitted.*

*This letter provides additional reasoning and justification as to why alternative radar sites outside the boundary of the airport e.g., an off-airport location is not acceptable to the applicant in term of overriding security concerns and requirements, which are considered paramount.*

*The main reasons detailed for a preferred on-site within the confines of the Airport boundary is compliance with EU Regulation 373(2017) which has been incorporated into the UK Civil Aviation Authority (CAA) regulations covering the security of Airport Facilities which 'requires an Airport to ensure the security of their facilities and personnel so as to prevent unlawful interference with the provision of services; this includes the security of operational data they receive, or produce, or otherwise employ, so that access to it is restricted only to those authorised.'*

*It is the airport directors view that a location on an airfield is infinitely more secure than an off-site location, which would not offer the level of security assurance required to satisfy the above requirements under EU Regulation 373(2017).*

*Other reasons why an off-airport location is less desirable are also detailed, including ease of access of airport personnel to undertake regular and emergency maintenance, as well as*

availability of utilities required both to serve the radar and data communications infrastructure connecting the radar to the airport control tower.

*In our view, the reasoning provided is noted and whilst security is paramount it appears to indicate that an off-site location is not impossible. The security issues may indeed be more challenging but with careful risk assessment and a high level of security measures and monitoring in place it may be an achievable option.*

*Whilst security is indeed a factor, what is important is not a lack of consideration of the potential significant environmental impacts of any off-site location, that may be available.*

*Key in the circumstances is the need to comply with the EIA regulations and in particular regulation 18. '(3) An environmental statement is a statement which includes at least— (d) a description of the reasonable alternatives studied by the developer, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment;' and any additional information specified in Schedule 4 relevant to the specific characteristics of the particular development or type of development and to the environmental features likely to be significantly affected.*

*SCHEDULE 4 Information for Inclusion in ESs part 2, states, 'A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.'*

*An alternative off-airport location / site may for example totally negate any potential significant adverse impacts that may arise or reduce any potential residual adverse impacts further or to more overall acceptable levels when compared with the H17 radar. However, this is all unknown unless a comparison is undertaken.*

*The absence of detail in respect of the appropriateness of the sites scoped out of the ASA, or the acceptability of the evidence for or the need for a criteria-based comparison of the environmental effects, which demonstrates why the proposed H17 is the preferred location, requires the weighing up of the various determining factors under the EIA Regs requirements and is ultimately a difficult planning judgement.*

#### Alternative On-airport Locations / Sites (micro-siting)

*The document 'Cambridge City Airport Radar Replacement Project - Addendum to Alternative Sites Assessment, 15 October 2021' has previously been submitted as additional information.*

*The specific key constraints Tier 1: Safety and Operational Requirements - ensures location selection prioritises operational and safety requirements of the Airport e.g., radar operational optimisation (e.g. not in vicinity of the Main Runway and Grass Runway due to Obstacle Limitation Survey (OLS) contours and restrictions on the height of infrastructure) and Tier 2: Noise: prevent significant noise effects to sensitive receptors (noise buffer zone – considered minimum of 200m from any existing or consented residential property) in the immediate vicinity of the airport as detailed are noted and based on the evidence submitted, it is the applicants view that a location in the vicinity of Hangar 17 (within the far northwest of the Airport), is their preferred option on-site within the airport physical boundaries.*

*In terms of radar micro siting within the north-western area of the Airport that is considered the only suitable area for radar location on-site based on Tier 1 and 2 constraints, the Tier 3 environmental constraints of Landscape and Visual, and Shadow Flicker were also considered. Taking into account the existing hangars and infrastructure in this area, two potential locations within this north-western area were studied for landscape and visual and*

shadow flicker and impacts, namely the car park of Hangar 21, and adjacent to Hangar 17 as per Figure 2-3 Micro-Siting Locations of the recent submissions.

It is stated that technical modelling and photomontage comparisons both confirm that with regards to micro-siting within this north western area, the H17 Radar is preferable in comparison to the H21 Radar location, which minimises any effects resulting from landscape and visual, and shadow flicker.

However, notwithstanding the 200 m noise buffer and the additional noise information etc that we have requested under our memo dated the 28-10-2021, it appears the H21 location would also increase the distance between the radar and noise sensitive residential receptors (which may reduce the potential for adverse noise impacts to arise further). We would therefore also ask why a comparison of the operational noise impacts associated with H21 have not been undertaken as well, in accordance with EIA Regs requirements / principles, in addition to comparing and minimising any effects resulting from landscape and visual, and shadow flicker, which appears to have been undertaken.

In terms of operational noise impacts, as a minimum it remains our view that the H16 location should be considered as a reasonable alternative location under the EIA Regs and some form of comparison of the noise impacts / effects of its operation with the proposed H17 location should be included in the ES, as requested under our memo dated the 28-10-2021.

Ultimately, the acceptability of the reasoning provided in relation to alternative locations / sites or indeed alternative radar design type and the comparison of the various environmental impacts / effects, is a balanced planning judgement.'

## **5.0 Air Quality – Chapter 6**

**In summary, no concerns or objection on air quality grounds. No conditions required.**

**The air quality comments made previously in our planning consultation response memo dated the 28-10-2021 (Planning Ref No: 21/03224/FUL & Tascomi Ref No: 2204/21) remain the same and these were as follows:**

*'Chapter 6 – Air Quality of the 'Environmental Statement: Cambridge City Airport – Radar Replacement Project July 2021' (Ref: LJ1011A-30-R03-030F) reviews the potential impact of the proposed dismantling and relocation of the city airport radars at both the construction and operational phases of the development on the Airport and surrounding area in terms of Air Quality. The report concludes:*

- *Vehicle movements associated with the construction and operational phase are well below the screening criteria of 100 AADT, therefore a detailed assessment is not required. The report concludes that the impact on air quality associated with vehicle emissions is not significant.*
- *Measures to mitigate dust emissions during the construction phase will be dealt with via a Dust Management Plan which will form part of the proposed Construction Environment Management Plan (CEMP).*
- *Section 6.4 confirms that there will be an emergency generator on site for use during 'short term mains power failure' which will be tested weekly for 5-10 minutes. The generator is located at an acceptable distance away from sensitive receptors. We recommend that operational hours of the generator are controlled via a condition.*
- *Operational impacts of the development on air quality are not significant.*

**The report / chapter conclusions are considered acceptable. Therefore, we have no objections on air quality grounds.'**

## **6.0 Contaminated Land – Chapter 10 (Ground Conditions and Soils)**

In summary, no objection on contaminated land grounds. A standard ‘Unexpected Contamination’ condition is recommended.

The comments made previously in our planning consultation response memo dated the 28-10-2021 (Planning Ref No: 21/03224/FUL & Tascomi Ref No: 2204/21) remain the same and these were as follows:

*‘Chapter 10 - Ground Conditions and Soils of the submitted ‘Environmental Statement: Cambridge City Airport – Radar Replacement Project July 2021’ (Ref: LJ1011A-30-R03-030F) reports the assessment of likely significant effects of the Development Proposal, as described in Chapter 3: The Development Proposals, on the Airport and surrounding area in terms of Ground Conditions and Soils. The main focus of this Chapter is on potential effects as a result of the Development Proposal related to contaminated land.*

***The applicant engaged the City Council during pre-application and the issue of contamination was discussed. It is clear from these discussions, and from the application made here, that contamination is not a significant factor for this development.***

***However, the standard unexpected contamination condition is recommended as a highly precautionary measure.***

### Standard Condition:

#### *CE05AS - Unexpected Contamination*

*If unexpected contamination is encountered during the development works which has not previously been identified, all works shall cease immediately until the LPA has been notified in writing. Thereafter, works shall only restart with the written approval of the LPA following the submission and approval of a Phase 2 Intrusive Site Investigation Report and a Phase 3 Remediation Strategy specific to the newly discovered contamination.*

*The development shall thereafter be carried out in accordance with the approved Intrusive Site Investigation Report and Remediation Strategy.*

*Reason: To ensure that any unexpected contamination is rendered harmless in the interests of environmental and public safety (Cambridge Local Plan 2018 policy 33).’*

## **7.0 Health – Chapter 11**

This Chapter reports the assessment of likely significant effects of the Development Proposal on the surrounding population in terms of health. The Chapter incorporates the local policy requirement for a Health Impact Assessment (HIA) which is integrated within the Environmental Impact Assessment.

The potential health effects associated with the proposed replacement H17 radar which have been included in this Chapter are:

- Annoyance, anxiety, and stress from noise;
- Anxiety and stress from visual impact;
- Annoyance, and the potential for epileptic seizure, from shadow flicker; and

- Electromagnetic radiation from the radar

Where health effects occur from aspect areas / topics which are covered by the ES, for example noise, visual impact, shadow flicker and electromagnetic radiation from the radar, it is confirmed that health has already been dealt within the relevant aspect chapter and are referenced in the overall health impact proforma described in this chapter.

## **7.1 EQG Comment: Health and Noise**

It is agreed that the main potential impacts on human health are associated with in-combination health effects that could occur with specific regard to the principal in-combination effects of noise, visual, and shadow flicker.

We can only comment specifically on the potential health impacts associated with noise.

Chapter 11 and indeed Chapter 14 do not specifically detail the potential health impacts e.g. possible physical and psychological / mental wellbeing, that could arise if adverse noise impacts arise.

The various planning policies refer to potential noise impacts on “Health and quality of life”. The relationship between health and quality of life can be a complex one to explain. The Government’s Noise Policy Statement for England (NPSE, March 2010) states that:

*‘The World Health Organisation defines health as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity and recognises the enjoyment of the highest attainable standard of health as one of the fundamental rights of every human being.*

*It can be argued that quality of life contributes to our standard of health. However, in the NPSE it has been decided to **make a distinction between ‘quality of life’** which is a subjective measure that refers to people’s emotional, social and physical wellbeing and **‘health’** which refers to physical and mental wellbeing.*

Where exposure to noise becomes noticeable or significant, this can result in changes to people’s behaviour, attitude or other physiological responses. Should the level of noise exposure become unacceptable the impacts can become far-reaching, fundamentally affecting quality of life and amenity issues, and potentially resulting in serious health and stress related problems and negative impacts on productivity and learning. For these reasons, it is fundamental that the relationship between noise sources and noise sensitive development is effectively and appropriately managed through the planning system, with the NPSE confirming that the solution could be more than simply minimising the noise.

There is a growing amount of research / evidence relating to the health impacts of noise, and on the dose response (reaction to increasing noise exposure) relationship between noise and health. Recent studies have identified a number of causal links between noise exposure and health impacts.

The ES uses BS 4142 to assess the significance of any noise impact / effects. The main impacts that are likely to arise are on amenity and quality of life, which typically affects people in two ways: annoyance, and sleep disturbance.

Annoyance is when noise impact disturbs a person's daily life, for example, through interrupting a conversation or causing distraction whilst resting or sleep disturbance. As such, annoyance will typically increase as noise exposure increases, though changes in the character of the noise tonal can also increase annoyance.

Sleep disturbance is one of the most common impacts described by people living with unacceptable levels of noise exposure. It can have a significant impact on quality of life, and people can typically feel a strong resentment where it is felt that their sleep has been disturbed.

In terms of physical and psychological health impacts these tend to be linked to hypertension and mental health and there is emerging research evidence on this matter for transport environmental noise but nothing conclusive for industrial noise dose-response relationships.

The links between certain noise and hypertension are fairly well established for transport noise sources, with research finding that exposure to noise events can place the body under stress, even if there is no conscious reaction to the noise. When stressed, the body releases hormones that may to varying degrees increase heart rate and blood pressure, with the link between high blood pressure and cardiovascular diseases etc, already well established for certain types of noise mainly transport related noise e.g. aircraft and road traffic as per WHO guideline levels.

Links between noise exposure annoyance and mental health have also been theorised / suggested, with studies identifying anxiety and depression as the most likely psychological symptoms. However, it is acknowledged by most of the search to date that further research is needed in this area.

Whilst there are undoubtedly negative health impacts arising from industrial type noise exposure, there is a great deal of uncertainty about the precise quantification of these impacts and at what dose – response and noise levels, such health impacts are likely to occur. Moreover, health impacts are more likely to be primarily associated with late evening and night-time noise should they arise.

Therefore, the noise impact assessment undertaken for the radar as an industrial type noise focuses on quality of life / amenity effects e.g. outcomes or changes to people's behaviour, attitude or other physiological responses as a result of noise as summarised in the Planning Practice Guidance (PPG)-Noise '*Noise Exposure Hierarchy Table*' recreated below as Table 1, based on the likely average response of those affected.

**Table 1: Noise Exposure Hierarchy Table (PPG)-Noise**

Response	Example of Outcomes	Increasing Effect Level	Action
<b>No Observed Effect Level</b>			
Not present	No Effect	No Observed Effect	No specific measures required
<b>No Observed Adverse Effect Level</b>			
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life	No Observed Adverse Effect	No specific measures required
<b>Lowest Observed Adverse Effect Level</b>			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life	Observed Adverse Effect	Mitigate and reduce to a minimum
<b>Significant Observed Adverse Effect Level</b>			
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

There appears to be no decisive definition of what cumulative effects in EIA are and what they should cover. Cumulative and in combination effects are difficult and there is no specific methodology to undertake such assessment.

In relation to this chapter we agree as health impacts can be related to several topic areas, then it is necessary to consider the combined and cumulative effects as required by the regulations.

There is no evidence linking sleep disturbance to the difference between the rating level and the background sound level. The majority of not all of the guidance and research on sleep disturbance focusses on absolute levels of sound. This is for a particularly good reason and that is when individuals are asleep, they do not perceive sound in the same way as they do during the day. When we are asleep, we are not conscious of our own bodies and response to noise is more of an autonomic /

unconscious response. For the night period an external noise rating level limit of around 35dB would be in our view be highly precautionary.

As shown in the noise assessment (Chapter 14), during the daytime, evening and night-time periods, the predicted H17 Radar noise rating levels at all receptors (inclusive of a rating penalty for tonal characteristics), are lower than the associated derived background sound levels.

For the H17 radar the highest predicted external night-time radar rating levels are all below a rating level of 35dB and assuming a reduction of approximately 10 to 15dB across an openable window, this is likely to result in internal night-time noise levels of 20 to 25dB (as worst). These are considered extremely low noise levels even for noise that is industrial / commercial in nature.

**Therefore, it is our view that significant adverse health effects are very unlikely, and we are reasonably confident that any residual adverse effects on sleep are unlikely to arise at such low levels of external H17 radar noise as predicted in this case. We conclude that there is no evidence base to indicate that unacceptable health impacts will arise.**

## **7.2 EQG Comment: Health and Electromagnetic Radiation**

**The comments made previously in our planning consultation memo dated the 18-11-2021 (Tascomi Ref No: 2204/21) remain the same and these were as follows:**

*'A revised / amended ES - Chapter 11: Health has been updated and submitted.*

*The Radar Safety Certification (Impact of Electromagnetic Radiation on Personnel Safety) report by the radar manufacturer Thales is also now provided as Appendix 11.1 to the ES and graphics are included in the Chapter 11 showing the electromagnetic radiation field / beam and coverage pattern.*

*It is stated that the assessment reaffirms that a number of simulations concerning power density radiated by the STAR radar (which will comprise the operating H17 Radar) as outlined in the Impact of Electromagnetic Radiation report show that there is no risk at ground level to the public or airport employees from electromagnetic radiation at any distance from radar, given that the antenna will be installed at the top of a tower 35m meters high (with the radar beam forming area being horizontal at this height).*

*It is noted that the reference EMF / radiation levels to be respected as detailed in Appendix 11.1, both in average and peak values, given by the 'European Parliament Directive 2013/35/UE - Electromagnetic Fields' for "workers" and the 'European Community / Council Recommendation 1999/519/CE - on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz), are never achieved / exceeded at ground level.*

*Furthermore, it is stated in section 11.46 that the H17 Radar is located a minimum of 70m inside of the Airport boundary. Therefore, there will be no effects of radiation which will occur outside of the Airport boundary, as the potential area of influence is restricted to 24m.*

*In terms of the potential for cumulative effects due to electromagnetic radiation it is stated that notwithstanding that there is no receptor within the zone where electromagnetic radiation will occur, i.e. within 24m at the height of the beam forming area, there is also no other infrastructure (be that Airport infrastructure, electricity pylons etc), which emits*

electromagnetic radiation which is located within this zone. It is concluded that there will be no cumulative effects relating to electromagnetic radiation.

The approach and EMF levels within the define beams and zones as detailed in the ES is similar in principle to GCSP planning requirements for telecommunication / mobile phone masts application in terms of the submission of an 'International Commission for Non-Ionising Radiation Protection (ICNIRP) certificate of compliance' demonstrating compliance with maximum recommended levels of EMF radiation for base stations. The ICNIRP Guidelines on Limiting Exposure to Electromagnetic Fields are for the protection of humans exposed to radiofrequency electromagnetic fields (RF) in the range 100 kHz to 300 GHz. The submitted Radar Safety Certification (Impact of Electromagnetic Radiation on Personnel Safety) report by the radar manufacturer Thales appears to be the same type of document and has the same purpose.

As stated previously, any potential health issues related to the radar and generation of electromagnetic fields (EMF) a form of non-ionising radiation, is outside the remit / expertise of Environmental Health / EQG.

**However, it is our view that the information now presented is acceptable and any EMFs associated with the radar are very unlikely to be a health risk to airport personnel, other employees off-site at Barnwell Drive or the general public in the area.'**

## **8.0 Artificial Lighting: Landscape and Visual – Chapter 13**

**In summary, no concern / objection on artificial lighting grounds. A compliance condition for artificial lighting details and plans / submissions as proposed is recommended.**

**The comments made previously in our planning consultation memo dated the 28-10-2021 (Planning Ref No: 21/03224/FUL & Tascomi Ref No: 2204/21) remain the same and these were as follows:**

*'The effects from artificial lighting are considered under the heading 'Potential Night-time Effects and Lighting' in section 13.101. of Chapter 13 - Landscape and Visual.*

*It is stated that the Development Proposal will be illuminated in the same way as the existing H16 Radar (, to include two 32 candela (approximately 402 lumen) red obstacle lights on the top of the H17 Radar, to ensure no collision with aircraft.*

*Additional pedestrian lighting would be located on the stair of the H17 Radar tower, however this would only be used 'on demand' in exceptional circumstances and thus very infrequently. The low intensity green LED lights that form part of the additional pedestrian lights indicate they are being charged. It is anticipated that access to the H17 Radar would be required once every three months and would be carried out during daylight hours. Any access after dark would be for fault rectification only and would be unlikely to occur after 1800hrs due to a lack of night shift cover. Various image of this lighting is shown in Figure 13.3: Image 1 showing normal lighting; Image 2 showing full illumination.*

*We agree with the assessment of artificial lighting impacts on human receptors and conclusion that under normal operating circumstances effects from the lighting would be negligible.*

*Due to the distance of approximately 200m to the nearest residential receptor we do not envisage any unacceptable intrusive artificial lighting spill or impacts on quality of life / amenity as a result of the normal operating lighting conditions detailed, which are very low level e.g. use of red obstacle lights on the top of the H17 Radar and the low intensity green LED charge*

*light. Full lighting would only be used in exceptional circumstances such as fault identification when access is required in periods of dark for safety purposes.*

*A condition could be imposed to control the level and use of operational artificial lighting to that detailed in the submissions.'*

## **9.0 Noise – Chapter 14**

This Chapter reports the assessment of likely effects of the proposals on the surrounding area in terms of noise and vibration from both the demolition, construction, and operational phases. Where appropriate, it also identifies measures to prevent, minimise or control likely adverse effects arising from noise.

### **9.1 Policy and Legislative Context, and Technical Guidance**

Under this heading of Chapter 14 and other sections of the ES, reference is made to (with a summary of the content / purpose of each), to the following:

#### National Noise Policy

- Noise Policy Statement for England, Department for Environment, Food & Rural Affairs, 2010 (NPSE, 2010)

#### Local Noise Policy

- Cambridge City Council – The Cambridge Local Plan 2018: Policy 35
- Greater Cambridge Shared Planning – Sustainable Design and Construction: Supplementary Planning Document (GCSP-SPD, 2020) – relevant noise sections
- Local Plan - Policy 83: Aviation Development
- Cambridge East Area Action Plan (2008) - Policy CE/26: Noise

#### Technical Guidance - Noise

- British Standard 5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites. Part 1: Noise' (2014)
- British Standard 5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites. Part 2: Vibration' (2014)
- British Standard 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound' (BS 4142)
- British Standard 8233:2014 'Guidance on Sound Insulation and Noise Reduction for Buildings' and
- World Health Organization 'Guidelines for Community Noise'

### **9.2 EQG Comment: Noise - Policy / Legislative Context and Guidance**

The '*Policy and Legislative Context, and Technical Guidance*' as detailed in the ES are relevant and acceptable. In terms of noise the following are also equally relevant:

#### **National – Planning Policy**

#### National Planning Policy Framework (NPPF)

The original National Planning Policy Framework (NPPF) was published in March 2012 with revised versions published in 2019 and July 2021. The NPPF is part of government reform to make the planning system less complex and more accessible, and to promote sustainable growth. It replaced previous national planning policies such as Planning Policy Guidance PPG24: Planning and Noise. In terms of noise the most relevant paragraphs are:

- **174 e)** which states, “*Planning policies and decisions should contribute to and enhance the natural and local environment by:*

*(e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of .. **noise pollution** ...”*

- **185 a)** which states, “*Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from this development. In doing so they should:*

***a. mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development– and avoid noise giving rise to significant adverse impacts on health and the quality of life;”***

#### Planning Practice Guidance (PPG) – Noise (Government Guidance)

The Government launched the PPG web-based resource in March 2014 and refreshed it in July 2019. The section on noise (PPG-Noise) provides tabulated descriptions of likely human response to noise exposure and example outcomes based on the noise effect categories introduced in the NPSE, 2010 based on the likely average response e.g. for No Observed Effect Level (NOEL), the Lowest Observed Adverse Effect Level (LOAEL) and the Significant Observed Adverse Effect Level (SOAEL). It also adds a fourth category termed Unacceptable Adverse Effect (UAE). All these effect levels are summarised in the ‘*Noise Exposure Hierarchy Table (PPG-Noise)*’, in Table 1: above.

The PPG-Noise recognises that due to the subjective nature of noise there is not a simple relationship between measured or predicted noise levels (numerical values) and the resultant impact and that this will depend on how various factors combine. The factors considered to be most relevant in this assessment are:

- The source and absolute level of the noise together with the time of day it occurs
- The spectral content of the noise (i.e. whether or not the noise contains particular high or low frequency content) and the general character of the noise (i.e. whether or not the noise contains particular tonal characteristics or other particular features),
- The local topology and topography – local arrangement of buildings, surfaces and the extent to which it reflects or absorbs noise.
- The existing or, where appropriate, planned character of the area
- The cumulative impacts of more than one source of noise;
- Whether any adverse internal effects can be completely removed by closing windows and, in the case of new residential development, if the proposed mitigation relies on windows being kept closed most of the time (and the effect this

may have on living conditions). In both cases a suitable alternative means of ventilation is likely to be necessary.

- In cases where existing noise sensitive locations already experience high noise levels, a development that is expected to cause even a small increase in the overall noise level may result in a significant adverse effect occurring even though little to no change in behaviour would be likely to occur.

The NPSE also states that it is not possible to have a single objective noise-based measure that defines SOAEL an indeed LOAEL or NOAEL that are mandatory and applicable to all sources of noise in all situations. Consequently, the SOAEL etc is likely to be different for different noise sources, for different receptors, in different locations (due to varying background noise levels) and at different times. It is acknowledged that further research is required to increase the understanding of what may constitute a significant adverse impact on health and quality of life from noise.

### **9.3 Noise Impact Assessment Methodology/Standard**

#### **BS4142:2014+A1:2019**

In this case BS 4142 is considered the most appropriate significance of noise impact assessment methodology for the proposed radar which is an industrial noise source.

BS 4142 describes the methodology for rating and assessing sound of an industrial and/or commercial nature - existing, proposed, new, modified or additional source(s). The methods described use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.

The standard describes the recommended methodology to measure and determine ambient, background and residual sound levels, and the rating levels of industrial/commercial sound. BS 4142: 2014 requires consideration of the level of uncertainty in the data and associated calculations.

BS 4142 refers to the sound produced by an assessed source at a sensitive receptor (e.g. outside a façade of a residential building) as 'specific' sound, in this case the proposed main source of noise the radar motor cabin enclosure. The specific sound level (radar cabin noise) is determined by calculating or measuring the equivalent continuous A-weighted sound pressure level of the source over the assessment time period 'T' (LAeq,T).

Where certain acoustic features are present in the source's sound at the assessment location, the Standard requires an acoustic feature correction to be added to the specific sound level to obtain the 'rating level'. Corrections can be included for any of the following acoustic features / characteristics of the sound:

- tonality,
- impulsivity,
- intermittency, and
- other sound characteristics that make it "readily distinctive".

The procedure contained in BS 4142 gives an indication of the degree of significance of any potential impact of sound by determining the margin by which the rating level

of the specific sound source exceeds the existing representative background sound level, examining also the context in which the sound occurs or will occur. The following key parameters are relevant:

- **'specific sound source'** is the sound source being assessed.
- **'specific sound level'**, is the sound pressure level produced by the specific sound source at the assessment location over a given reference time interval,  $T_r$ .
- **'residual sound'** is defined in BS 4142: 2014 as *"ambient sound remaining at the assessment location when the specific sound source is suppressed to such a degree that it does not contribute to the ambient sound"*. (without specific)
- **'ambient sound'** is defined in BS 4142: 2014 as *"totally encompassing sound in a given situation at a given time, usually composed of sound from many sources near and far"*. It comprises the residual sound and the specific sound when present.
- **'rating level'** is the specific sound level plus any adjustment for the characteristics of the sound (tone, impulse, intermittent or other acoustic feature). The standard describes subjective and objective methods to establish the appropriate adjustment.
- **'background noise'** is the sound level at a given location and time, measured in the absence of intermittent noises, any other extraneous or sound sources under consideration.

The background sound level is the LA90, T of the residual sound level, and is the underlying level of sound. Measurements of background sound level should be undertaken at the assessment location where possible or at a comparable location.

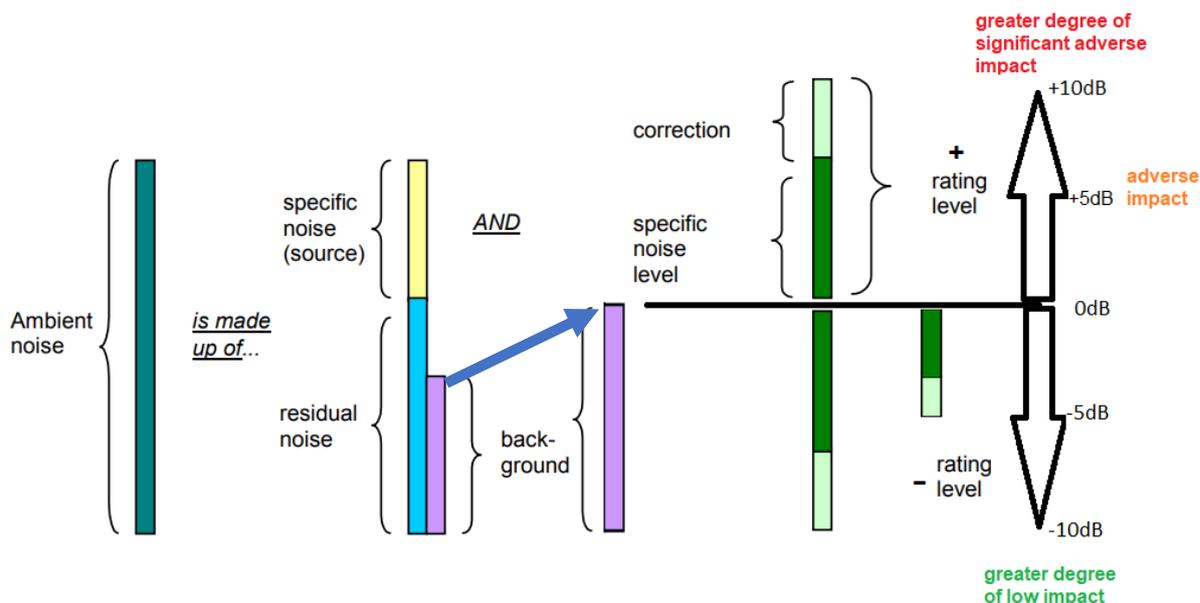
The magnitude / significance of any impact is assessed by comparing the rating level of the specific sound source with the background sound level. Typically, the greater the difference the greater the magnitude of the impact, depending on the context. The standard states (with emphasis):

- A difference of around **+10 dB or more** is likely to be an **indication of a significant adverse impact**, depending on the context.
- A difference of around **+5 dB** is likely to be an **indication of an adverse impact**, depending on the context.
- The lower the rating level is relative to the measured background sound level (**+4dB and lower**), **the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact**.
- Where the rating level does not exceed the background sound level (**0dB and below i.e. a minus level -1 to -5 to -10 and downwards**), this is an indication of the specific sound source having **a low impact, depending on the context**.

The BS 4142 impact assessment methodology can be difficult to fully understand, and Figure 2 below shows the relationship between different BS 4142 parameters and how a likely indication of the significance of the impact is derived.

For context, a 3dB change in noise level is commonly considered to be the smallest change perceptible to humans unless under controlled conditions, whilst a 10dB change corresponds to a subjective doubling of level.

**Figure 2: Relationship between different BS 4142 parameters**



The full BS 4142 assessments for the day, evening and night-time period for various receptors are included in Appendix A14.10 of the ES.

**Greater Cambridge Shared Planning – Sustainable Design and Construction: Supplementary Planning Document (GCSP-SPD, 2020)**

As already stated, the PPG-Noise recognises that due to the subjective nature of noise there is no a simple relationship between measured or predicted noise levels (numerical values) and the resultant impact and that this will depend on how various factors combine.

It is important to acknowledge that BS 4142 only gives an indication of the degree of significance of a potential impact of sound. It is not possible to offer a rigid prescriptive guidance on how to apply BS 4142. There are many factors, including local conditions and site-specific circumstances, that will help determine where in this range “acceptability” lies.

However in addition, with respect to Noise Generating Development (NGD), including industrial sound sources such as the H17 radar proposed, the Greater Cambridge Shared Planning – Sustainable Design and Construction: Supplementary Planning Document (GCSP-SPD, 2020) ‘**Table 3.11: New Noise Generating Development - External Noise Standards for “non-anonymous noise”**’ (recreated below as **Table 2**), sets local ‘Noise Significance Risk’ and ‘Noise Significance of Effect’ categories, having regard to the principles of BS 4142 outcome criteria and adopting

the terminology advocated in the NPSE (2010) and PPG-Noise i.e. for No Observed Effect Level (NOEL), Lowest Observed Adverse Effect Level (LOAEL) and Significant Observed Adverse Effect Level (SOAEL).

**Table 2: New Noise Generating Development - External Noise Standards for “non-anonymous noise” (GCSP - SPD, 2020)**

Noise Significance Risk	Noise Significance of Effect	BS4142 Outcome rating level ( $L_{Ar,Tr}$ minus (-) background level ( $LA_{90}$ ))	Planning Advice
None	NOEL	$L_{Ar,Tr} - LA_{90,T}$ is $\leq -10$	Sound is likely to be inaudible and have no discernible impact on health or quality of life. No objection from a noise perspective and no specific noise measures required.
Minimal	NOEL to LOAEL	$L_{Ar,Tr} - LA_{90,T}$ is $> -10$ & $\leq -5$	Where the rating level of noise is below the background noise level by at least 5dB, this indicates that the proposed NGD is likely to be acceptable from a noise perspective. The LPA will seek this level of compliance in most noise sensitive areas and/or where there is a requirement to mitigate creeping background effects.
Low	NOEL to LOAEL	$L_{Ar,Tr} - LA_{90,T}$ is $> -5$ & $\leq 0$	Where the rating level of noise is equal to, or below the background noise level by up to 5dB, this indicates that the proposed NGD may be acceptable from a noise perspective but will be more context dependent, i.e. extent and effect on noise sensitive receivers (externally and internally). Compliance within this range is more applicable to less sensitive sites or where there is no requirement to mitigate creeping background effects.
Medium	LOAEL to SOEL	$L_{Ar,Tr} - LA_{90,T}$ is $> 0$ & $\leq +5$	Where the rating level of noise is equal to, or above the background noise level by up to 5dB, this indicates that the proposed NGD is less likely to be acceptable from a noise perspective and will be context dependent, i.e. extent and effect on noise sensitive receivers (externally and internally). Compliance within this range is typically only applicable to non-sensitive sites or where there are overriding other reasons why development should be considered. It will typically be necessary for the applicant to confirm how adverse impacts from the NGD will be mitigated and minimised. It is less likely that planning consent will be granted. Acceptable only if there are overriding economic or social reasons for development to proceed.
High	SOEL	$L_{Ar,Tr} - LA_{90,T}$ is $> +5$ & $+10$	Where the rating level of noise is above the background noise level by more than 5dB, this indicates that the proposed NGD is unlikely to be acceptable from a noise perspective and planning consent is likely to be refused on noise grounds.
Very High	SOEL and unacceptable	$L_{Ar,Tr} - LA_{90,T}$ is $> +10$	Where the rating level of noise is above the background noise level by more than 10dB, this indicates that the proposed NGD is unacceptable from a noise perspective and planning consent shall be refused on noise grounds.

Note:

- (i) Certain acoustic features eg Tonality, Impulsivity, Intermittency or sound features characteristics that are otherwise readily distinctive against the residual acoustic environment, can increase the significance of impact over that expected from a basic comparison between the specific sound level and the background sound level. For example sound with prominent impulses has been shown to be more annoying than continuous types of sound (without impulses or tones) with the same equivalent sound pressure level.

Where such features are present at the assessment location, a character correction may need to be added to the specific sound level to obtain the rating level. Full justification for selecting and not selecting character corrections will need to be provided.

- (ii) All terms as defined in BS4142

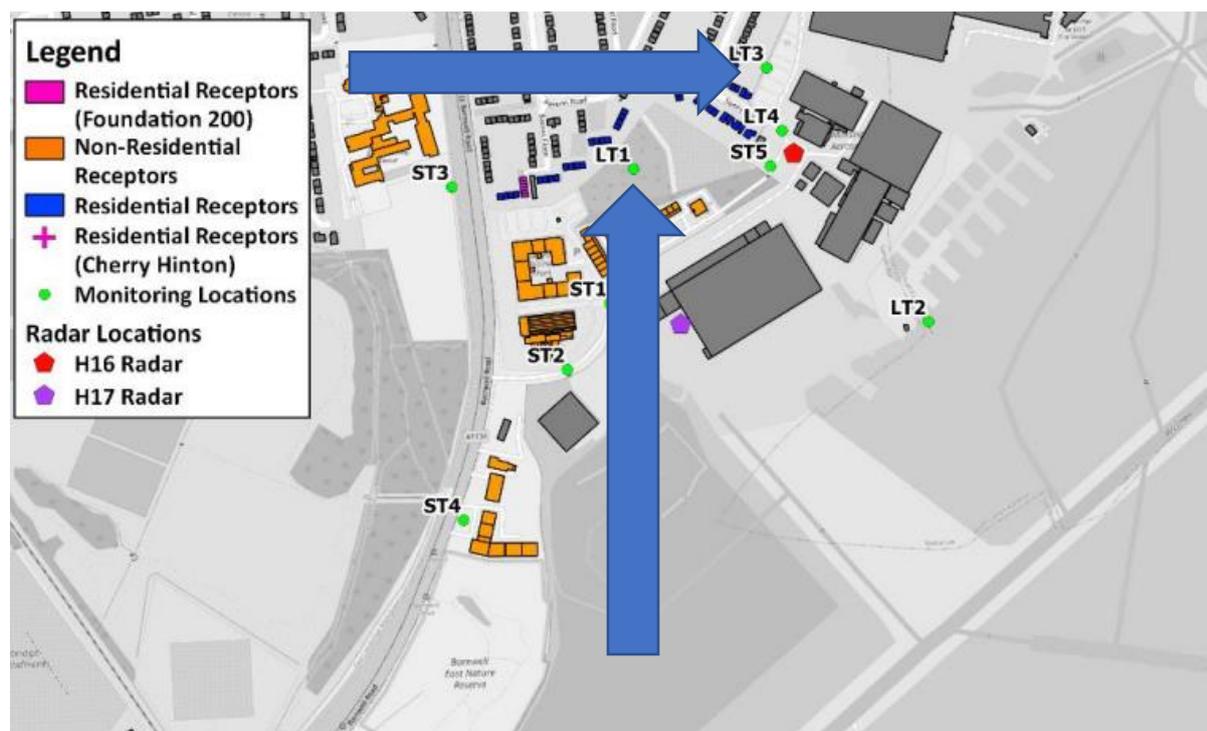
## 9.4 Background Noise Levels – Residential Receptors

Establishing representative background noise levels at receptors is an important step in any BS 4142 assessment as they are a key determinant in the significance of any impact outcome.

It is stated in the ES that the noise baseline has been characterised by direct measurement over two periods.

The first survey ('Survey 1') was undertaken on the 1 February 2021 at locations representative of the closest non-residential receptors at Barnwell Drive / Road. Survey 2 was undertaken between the 7 – 14 May 2021 at long term locations to inform the validation of the noise model, and to measure baseline noise levels at locations representative of the closest residential receptors at **LT1 – Barnes Close** and **LT3 – The Westering**. The monitoring locations LT1 and LT3 are shown in Figure 3 below.

**Figure 3: ES – Background Noise Monitoring Locations LT1 and LT3**



During Survey 2, the H16 Radar was switched on for the latter half of the survey (11/05/2021 1600hrs – 14/05/2021 1600hrs). Measurements during the initial part of Survey 2 (7/05/2021 – 11/05/2021), when the H16 Radar was not in operation, have been used to derive the noise baseline.

Meteorological conditions were monitored using a met station deployed at LT1 Barnes Close. Periods of adverse weather (wind speeds > 5m/s and/ or periods of rain) have been removed from the long-term data analysis.

In order to determine the representative background sound levels at residential receptors for use in the assessment, consideration has been given to the mean and

modal average LA90,15min captured at monitoring locations **LT1 – Barnes Close** and **LT3 – The Westering**, and the distribution of sound levels.

The distribution of background sound levels are shown in Appendix A14.4 of the ES, and include the periods when the H16 Radar was in operation, and not in operation.

The derived background sound levels are presented for the daytime (0700 – 1900), evening period (1900 – 2300) and night-time (2300 – 0700) periods in Table 3 below, along with a justification of the selected level to inform the assessment.

**Table 3: ES -Derived Background Sound/ Noise Levels (LT1 and LT3)**

Location	Period	Derived dB LA90(T)	Justification
<b>LT1-Barnes Close</b>	Daytime 0700-1900)	43 (1hr)	Modal – most common
	Evening (1900-2300)	40 (1hr)	Modal – most common
	Night-time (2300-0700)	36 (15mins)	Modal – most common
<b>LT3 – The Westering (on boundary with Airport)</b>	Daytime 0700-1900)	43 (1hr)	Average, no clear mode
	Evening (1900-2300)	36 (1hr)	Modal – most common
	Night-time (2300-0700)	36 (15mins)	Modal – most common

The derived background sound levels are considered in the ES to be conservative as it is stated that the majority of the survey included a weekend period, and the measurements were during a period of national lockdown, when ambient sound levels are likely to be lower than those considered ‘representative’.

For context, a comparison has been made with background sound measurements undertaken before the national lockdown period at a location in the vicinity of Sunnyside, and likely representative of the properties on The Westering, as reported in the submitted ‘*Hoare Lea – Cambridge Airport – Radar Replacement. Cambridge. Marshall Aerospace and Defence Group. Acoustics – Environmental Sound Survey (20 May 2021)*’.

This Hoare Lea survey was undertaken between 4 – 11 December 2018, and derived a 39 dB LA90, 15min typical night-time background sound level, which is 3 dB greater than the levels assumed in the ES assessment. It is stated in the ES that this further supports the view that the lower background sound levels used in this assessment from more recent monitoring during the period of national lockdown are likely to be conservative.

## 9.5 EQG Comment: Background Noise Levels – Residential Receptors

### ES - Background Noise Levels

During the pre-application advice stage, it was considered that the general approach proposed and as reported in the ES for deriving representative background noise levels was acceptable in terms of proxy receptors monitoring locations used and relatively conservative / cautious, as levels were measured / monitored during Covid lockdown. The approach in using proxy locations is not uncommon as it can be difficult to obtain readily available secured access to residential properties outside of the applicant's control.

There are contributions to background noise from general industrial noise and activity (apart from the H16 radar) from the Airport which can be considered a legitimate part of the background noise levels in the area, when not dominant.

However, it is agreed that when the acoustic environment has contributions from road traffic noise, as in this case, measurements during this period may not be totally representative of the pre-lockdown situation and the reported background levels are likely to be actually lower due to reduced local traffic movements during lockdown. However, this is more likely to be the case for day and evening time periods and possibly less relevant during night time periods.

It is stated that a comparison has been made with background sound measurements undertaken before the national lockdown period at a location in the vicinity of Sunnyside, and likely representative of the properties on The Westering, as reported in the submitted '*Hoare Lea – Cambridge Airport – Radar Replacement. Cambridge. Marshall Aerospace and Defence Group. Acoustics – Environmental Sound Survey (20 May 2021)*'. It is further stated that this further supports the view that the lower background sound levels used in this assessment from more recent monitoring during the period of national lockdown are likely to be conservative.

This is noted but the microphone location for the measurements is not fully in accordance with recommended measurement protocols e.g. for example the microphone was located in a very tight / constrained location between and close to building façade and a large / high established boundary tree line. The microphone location is very close to a reflective façade and this is not in accordance with recommended good practice. Therefore, levels reported in this report are likely to be at least +3dB if not higher, than if measured in a free field environment with no reflections.

Also, the report simply states that weather conditions were generally suitable for environmental sound measurements with clear sky, moderate wind speed and no recent rainfalls. No meteorological / weather data has been provided.

Therefore, the Hoare Lea report should be used with great caution in justifying background noise levels. However, if they are adjusted by a minus 3dB (-) correction they are considered consistent with the background noise levels reported in the ES. In addition, as the microphone for the Hoare Lea measurements is in a shielded location (behind a boundary airport building /structure) from other noise sources at Marshalls Airport, it could be argued that they are potentially lower as other legitimate

background noise sources at the airport are substantively shielded from the microphone.

The applicant in their response to our request for additional information has provided additional information in relation to the potential influence of meteorological conditions (wind speed and direction and temperature inversions) and on background noise levels reported. The additional information and consideration of weekend periods only are considered acceptable, and we agree that there is a negligible variance in the background derived sound levels during the 'weekend' periods, when comparing those presented in the ES Noise Chapter. We therefore agree that the ES Noise Chapter background sound levels are in the main considered representative, and robust for the nearest receptor locations.

#### 9.6 Three Spires Report, Jan 2022 - EQG/CCC – Additional Background Noise Measurements

As concerns about the acceptability of the background noise levels used in the submitted ES have been raised by local objectors including their noise consultant MAS Environmental, with the view that the levels should be lower (as low as 30dB), the Council's noise consultant Three Spires Acoustics Ltd has undertaken two further additional long term background noise surveys (for approximately a week each) at locations MP1 (58 Westering -rear garden) and MP8 (Barnes Close -garden boundary with Barnes Close / Peverel Road) as detailed in Figure 4 below.

**Figure 4: Three Spires - Background Monitoring Locations**



The background noise survey at location MP1 was undertaken within the rear external amenity space of No 58 The Westering at a height of 1.5m and away from any reflecting surfaces, such as the garden shed, was carried out from approx. 12:53 on Wednesday 22nd to 07:00 on Wednesday 29th September 2021.

The background noise survey at location of MP8 which was on the perimeter of the open field (between the rear of industrial units on Barnwell Drive and residential to the North at Barnes Close at the boundary to the gardens of properties on Barnes Close/Peveler Rd), was undertaken from mid-night on the 11/11/2021 to 11:45am on the 17/11/2021.

Table 4 below details the Three Spires derived background sound levels at MP1- 58 Westering (rear garden) and MP8 – Barnes Close (garden boundary with Barnes Close / Peveler Road) for the daytime (0700 – 1900), evening period (1900 – 2300) and night-time (2300 – 0700) periods, along with a justification of the selected level.

**Table 4: Three Spires -Derived Background Sound/ Noise Levels (MP1 and MP8)**

Location	Period	Derived dB LA90(T)	Justification
<b>MP1- 58 Westering</b> (rear garden)	Daytime 0700-1900)	38 (1hr)	Modal – most common
	Evening (1900-2300)	34 (1hr)	Although modal was 37dB (most common) professional judgement was used to select 34dB from distribution curve
	Night-time (2300-0700)	32 (15mins)	Modal – most common
<b>MP8 – Barnes Close</b> (garden boundary with Barnes Close / Peveler Road)	Daytime (0700-1900)	43 (1hr)	Modal – most common
	Evening (1900-2300)	38 (1hr)	Although modal was 43dB Modal (– most common) professional judgement was used to select 38dB from distribution curve
	Night-time (2300-0700)	36 (15mins)	Modal – most common

Table 4 shows that the derived background noise levels reported in the ES for LT1- Barnes Close and LT3 – The Westering (on boundary with Airport) are in the main consistent with the Three Spires derived background noise levels at MP8 for the following receptors: Barnes Close (garden boundary with Barnes Close / Peveler Road), and are therefore considered representative and acceptable for those receptor locations closest to the airport as follows: 163 to 169 (odd numbered) Barnwell Road (R1); 1 to 6 Caroline Hart Walk (R6); 9, 10, 11, 12 Barnes Close (R2); 5, 6, 7 and 8 Barnes Close (R3); 50, 52, 54, 56; Peveler Road (R4); 58, 60, 62, 64 Peveler Road (R5), 1, 2, 3, 4, 5 and 6 Mansfield Way (R7); 53 (R30) / 55 (R29) The Westering and

all of the Sunnyside properties (R8 to R22). Effectively all the closest receptors on the west of Sunnyside, at Mansfield Way and Barnes Close / Peverel Road etc.

However, the Three Spires monitoring at MP1- 58 Westering (rear garden) has revealed that at the rear of properties e.g. 54 to 64 The Westering (even nos only – receptors R 23 to 28) further away from the airport and where they are afforded greater shielding to their rear gardens / facades from other airport noise sources, background noise levels are likely to be lower in this location to the rear.

The Three Spires report indicates that the background noise levels at MP1 - 58 Westering (rear garden) general area are likely to be lower at these more distant properties, by up to approximately 5dB - daytime (38dB - Three Spires v. 43dB - ES), 2dB evening (34dB - Three Spires v. 36dB - ES) and 4dB night-time (32dB - Three Spires v. 36dB - ES).

However, it is important to emphasise that we consider that these lower background levels are only for properties that are more distant from the immediate vicinity of the airport when compared with those closest to the airport and only at facades and gardens directed and orientated away from the airport in the opposite direction, that is generally not in a direct line of sight to airport structures / buildings or the airport boundaries e.g. 54 to 64 The Westering (even nos only – receptors R 23 to 28) etc.

These lower background noise levels at receptors further way from the airport are acknowledged and should be considered. However due the low absolute levels of H17 radar operational noise as modelled and predicted at these receptors, the overall significance of impact outcome remains a very low impact. These predicted noise levels are still below representative background noise levels namely -3 to -14 dB below daytime/ evening backgrounds in rear gardens and -2 to -5 dB below backgrounds at night-time on the most exposed facades fronting and closest to the airport radar.

**It is concluded that these potential lower backgrounds do not change the overall view that the impact at these more distant receptors remains low under BS 4142 significance criteria and unacceptable adverse impacts are unlikely to arise.**

## **9.7 Embedded Measures – Operational Noise**

It is stated in the ES that following the construction of the H16 Radar and ongoing complaints from local residents about operational noise, noise mitigation measures were installed to the upper radar cabin (main source of operational noise) in January 2021, with additional sound insulation measures installed in April 2021 as detailed in section 14.57 of the ES.

Noise surveys following the implementation of the mitigation measures have been used to quantify the H16 Radar sound emissions, informing the validation of the noise model for the proposed H17 Radar.

The sound survey measurements showed that emissions from the H16 Radar differ in magnitude and characteristics (tonal ‘peak’ at a 400 Hz one-third octave band frequency) in orientations / direction around it, and in particular those measured on the south-west side which are more prominent to those on the north-west side.

Section 14.59 states that as an additional mitigation measure, as far as reasonably practicable, the H17 Radar will be orientated so that the direction of sound emission with the greatest magnitude will be in a direction towards the airfield, and away from the closest NSR. However, for the purpose of the ES assessment, the worst-case orientation has been assumed with respect to all receptors in the noise model, adding a further element of conservatism to the assessment.

## **9.8 EQG Comment: Embedded Measures – Operational Noise**

The radar motor cabin embedded mitigation measures as detailed in the ES and the commitment for additional mitigation to ‘*as far as reasonably practicable*’ to orientate the H17 Radar so that the direction of sound emission with the greatest magnitude will be in a direction towards the airfield, and away from the closest NSR are noted.

However, the commitment to orientate the H17 Radar so that the direction of sound emission with the greatest magnitude will be in a direction towards the airfield is difficult to accept, assess and secure as a quantifiable mitigation measure with a reasonable degree of certainty.

Whilst it may assist, in downwind conditions and due to the complexity of sound propagation, there is uncertainty over the actual effectiveness of this mitigation proposal. However, the use of the highest noise levels with assumed directionality and downwind to all receptors in the noise modelling as a worst-case orientation for the noise impact assessment that has been undertaken and reported is considered acceptable.

Further to our request for further information on the effectiveness of the proposed embedded noise mitigation and our view that additional noise mitigation measures could be considered to improve and reduce radar cabin noise breakout / generation and make the proposals more acceptable in terms of operational noise impacts, the applicant has provided additional information in the submitted ‘*Response: Planning Consultation Response. Planning Ref. 21/03224/FUL - November 2021*’, report No J20-12041B/1/F1: *Noise Consultants Ltd*

This includes a ‘Hoare Lea Report (November 2021, Appendix A5)’ which reports on the acoustic improvements / reductions achieved pre-works and post-works H17 radar cabin noise mitigation scenarios including the overall performance and workmanship. In considering the mitigation measures implemented at the H16 Radar to date and which will be inherent in the design of the H17 Radar, Hoare Lea LLP conclude that “...*these measures represent the limit of what can be done within the current height restrictions and without significant redesign of the radar tower.*”

The applicant also states that further mitigation, through redesign of the radar, would also risk undermining the manufacturer’s warranty. No further mitigation actions are proposed. However, the relocation of the radar presents the opportunity, when the cabin is at ground level, to refit the acoustic insulating material and other seals that were installed with the cabin in situ in January and April / May 2021, which could offer some further slight improvements in acoustic performance.

**In conclusion having regard the low absolute level of radar noise predictions at all receptors and the fact that the noise rating levels at all assessed NSR are below the Lowest Observed Adverse Effect Level (LOAEL), we do envisage any**

**unacceptable adverse noise impacts and the inherent embedded noise mitigation as detailed is acceptable in terms of national noise policy the NPSE or national or local planning policy. It is also our view that and there is no justification for requiring any additional noise mitigation to that proposed and it would not be necessary or reasonable to do so.**

**However, a bespoke condition is recommended to ensure the said mitigation is fully implemented and retained at all times.**

### **9.9 Prediction of Effects - Operational Noise**

It is agreed that the main potential operational noise sources that make up the proposed development include the following:

- i. Radar Motor enclosure cabin (above ground at a height of approximately - including two electrical motors and a vertical bearing, and upper support bearing below the rotating antennae);
- ii. A back-up diesel generator (ground height);
- iii. Four heat exchangers outside the H17 Radar electronic cabin (ground height);
- iv. Four air conditioning units inside the H17 Radar electronic cabin (ground height);
- v. Electronic cooling fans inside the electronic cabin (ground height).

It is also agreed that the dominant source of noise at distances commensurate with those of the closest NSRs is in relation to the motor enclosure cabin (i), and therefore this noise source should be the main focus of the impact assessment.

With regard to noise sources ii, iii, iv and v. above due to a combination of physical shielding, adequate distance separation and hours of use we do not envisage any unacceptable adverse noise impacts.

### **9.10 Noise Model Inputs and Assumptions**

The ES states that the assessment of noise effects from the H17 Radar has been informed by the development of a noise model. The robustness of the model is benefited by the fact that the motor enclosure cabin for the H16 Radar will be retained for use as the H17 Radar, and therefore the sound emission characteristics will be very similar and informed by measurements undertaken whilst in the H16 Radar location.

The development of the noise model, in particular sound emissions from the motor enclosure cabin, has been informed by measurements of sound emissions from the operation of the actual H16 Radar, both in close proximity to the radar and at locations within the community. The measurements have been used to inform the sound source quantification.

The propagation of sound levels arising from the operation of the H17 Radar has been determined through noise modelling using Stapelfeldt's LimA® computational noise modelling software (v2020), which accounts for variances in propagation due to barrier and ground effects, such as those due to existing buildings. LimA® allows the calculation of sound levels at specific single points, or over a calculation grid of specified size.

It is noted that the noise model uses the calculation method advocated in ISO 9613 'Acoustics — Attenuation of sound during propagation outdoors' Parts 1 and 2 (ISO 9613, 1996), which is an acceptable industry standard.

The calculation results are considered in the ES to be worst-case as they assume downwind propagation, which in reality would not occur at all times due to changes in wind direction.

#### **9.11 EQG Comment: Prediction of Effects / Noise Modelling - Operational Noise**

The noise model used incorporates a recognised industry standard ISO 9613 which is widely used for noise impact assessments and allows for precise acoustic modelling of particular noise sources to predict noise immissions levels at receptors from proposed sources of noise such as the H17Radar.

The model was produced using on-site measured source data for the radar cabin, detailed / accurate ground topography data including the locations and heights of the radar cabin as a noise source and other buildings / structures and houses. Building height information has been extracted from OS Mastermap. Building heights have been determined from analysis of LiDAR data, namely a digital terrain model (DTM), which describes terrain elevations, and a digital surface model (DSM), which describes surface elevations including buildings.

The H17 radar cabin as a noise source has been modelled in its expected final context, i.e. with all other buildings in place and how the noise interacts with adjacent buildings. This means that the impact of shielding, reflection and/or diffraction effects of the surrounding on site buildings has also been modelled. Measurements, upon which the assessment and model are based, have been undertaken with embedded mitigation measures in place, and therefore can be considered inherent in the design of the development, rather than mitigation measures to be implemented.

Using a computer model allows for the potential to quickly undertake many hundreds of calculations for a given noise source taking into account factors that influence sound propagation including multiple reflections, diffractions, air and ground absorption over distance and variation of ground type, façade reflections and normative weather conditions. This capability can lead to a greater degree of confidence in the predicted results for any given assessment provided that the data inputs used to programme the model are accurate and has been processed correctly.

Relevant inputs to simulate the radar as a relevant noise source have been used and verified where possible using the noise measurements taken to ensure that the model was giving the representative predictive noise levels at the positions where real-time monitoring had taken place.

The model of the radar sound source has been calibrated using two measurements at the base of the H16 Radar, with the louvre mitigation in place. The location of the calibration positions allowed for consideration of the entirety of the radar sound source. and shows the broadband modelled and measured levels differ by +/-0.4 dB. Therefore, the Noise Model Validation Methodology detailed / undertaken reports a

good correlation between modelled output specific sound levels and onsite measured levels at certain locations.

We agree that for the NIA reasonable worst-case assumptions have been adopted for the noise modelling inputs, such as hard ground surface attenuation ( $G=0$ : totally reflecting surfaces and effectively little sound energy absorbed by the surface such as asphalt, concrete), downwind propagation to all receptors at all times, and 'worst-case' noise source directional orientation of the radar cabin. All of these factors combined have allowed for a 'worst case scenario' predictive approach.

The model was ultimately used to calculate the 'Specific Noise levels' required in the BS4142 impact assessment both for day /evening time and night time and includes a +2db correction for tonal noise character at receptors. The main difficulty faced in a BS4142 assessment is being able to accurately determine the impact of the noise sources in question in the absence of any other noise source not pertaining to the radar, (roads, birdsong, and other general background noise). The use of computer modelling in this way allows direct prediction of the 'Specific Noise Level' and removes the complication of calculating this from out of the 'Ambient Noise Level'.

The model is designed to reflect reality as far as is possible, has been validated and is considered representative of future predicted H17 radar noise levels at receptors.

**In conclusion, the predictive radar noise modelling that has been undertaken is considered robust and we have a high degree of confidence in the predicted noise rating levels at receptors. This position is also supported by Three Spires Acoustics Ltd.**

#### **9.12 BS 4142:2014 - Character Correction Considerations (Tonality etc.)**

As required by BS 4142, where there are certain acoustic features of the specific sound level, that would likely increase the significance of impact, then an appropriate character correction is added to the specific sound level,  $L_s$ , to derive a sound rating level -  $L_{Ar,Tr}$ .

This matter is important as industrial noise can be dynamic and have numerous acoustic features which can illicit complex emotional reactions to the sound, resulting in greater significance of impact / effect.

This matter was discussed in considerable detail at the pre-application stage.

We agree that the radar sound is neither impulsive or intermittent, as there are no rapid changes in the noise and no identifiable on / off conditions as the proposed H17 Radar will be typically operating continuously across a 24-hour period, 7 days a week.

Various assessment methodologies to establish if any character correction at the receptor location should be applied for tonality or other sound characteristics (such as modulating sound levels), are detailed in BS 4142. This includes both subjective (visiting and listening in actual real time to the sound) and objective (analysis of audio recording of the specific sound) methods.

In this case the ES assessment concludes that following consultation with LPA, a +2 dB correction for tonality has been agreed, and applied to the daytime, evening, and

night-time assessments. It is stated that this is considered conservative, given during the daytime and early evening periods, tonal characteristics of the H17 Radar would be significantly less distinct against the residual sound environment.

In terms of any potential modulating noise (e.g. a variation in the level of the broadband noise and the perceived loudness varies BS 4142 - Other Sound Characteristics) the ES concludes that based on objective quantitative analysis supported by subjective experience onsite and from listening to audio recording a correction is not justified in this case.

**This matter has been extensively discussed with officers within the Environmental Health service who have previously visited the area on numerous occasions to listen to the noise from H16 (which has a degree of identifiable modulation at the closet receptors), and it is agreed that an acoustic correction is not required in this case for other modulating sound / noise at residential receptors locations at a distance of approximately 200m plus.**

**We therefore agree that as part of the BS 4142 impact assessment the only character correction that needs to be applied is +2 dB for a tone that is likely to be just perceptible at times as a worst case, at the residential receptor locations considered.**

This conclusion is supported by the Three Spires report, whose objective assessment indicates that noise emissions from the proposed H17 radar location is unlikely to cause any unacceptable adverse or significant adverse noise impact and measurements showed no noise level change with the radar off/on situations. The aural assessment undertaken indicates that noise from the radar during the assessment was inaudible at approx. 200m when in operation, in the general location from the residential boundaries of properties on the west side of Sunnyside and towards the Peverel Rd and Barnes Close property boundaries. This suggests that a tonal correction may not be required but it has been included in the ES specific noise predictions as a matter of caution as it may just be audible at times.

### **9.13 Significance of Effects Assessment - Demolition / Construction Noise**

There is the potential for adverse noise and vibration effects during both the demolition / dismantling of the H16 Radar and AR15 Radar, and the construction of the proposed H17 Radar.

The methodology used to assess construction impacts is acceptable e.g. the use of British Standard 5228-1:2009+A1:2014.

It is stated that, the appointed construction contractor will be required to comply with the provisions of a Construction Environment Management Plan (CEMP) which has been prepared which includes details of construction traffic access and management, working hours, temporary hoarding, and waste management. This can be found in Appendix 3.2.

The CEMP includes recommendations that represent best practicable means (BPM) which will be applied during construction works at all times to minimise noise (including vibration) at neighbouring residential properties and other sensitive receptors.

**In conclusion, due to the relatively low impact nature of demolition / construction and short duration of the works involved, if the submitted CEMP is fully implemented and adhered to, we agree that unacceptable adverse noise impacts should not arise.**

**This matter can be conditioned accordingly, and no further information is required.**

#### **9.14 Significance of Radar Noise Effects Assessment / Analysis – Non-Residential Receptors**

The approach for ascertaining baseline noise levels and assessing the significance of impacts / effects at the nearest non-residential premises at the Mercedes-Benz garage (Commercial, Retail, Shops and Showrooms), Quorum Offices, Barnwell Business Park, Abacus Care Home Commercial offices, other offices and Work Studios all of Barnwell Road / Drive, Peverel Road Allotment Gardens (Whitehill Allotment Society) and other recreational areas or areas of open space and the Abbey Meadows School are considered acceptable.

Most of these premises are combination of commercial, industrial, workshops, light industrial, retail and showrooms do not have any specific external amenity areas and are considered less sensitive and more tolerant to noise. In the main they operate during normal daytime business hours. For these reasons unacceptable noise impacts should not arise.

The Fields Childrens Centre and Galfrid School both Galfrid Road, the Barnwell West and East Local Nature reserves and Coldhams Common are considered to be an acceptable distance (approximately 250m plus at the nearest point) from the proposed radar so as not to give rise to unacceptable adverse impact.

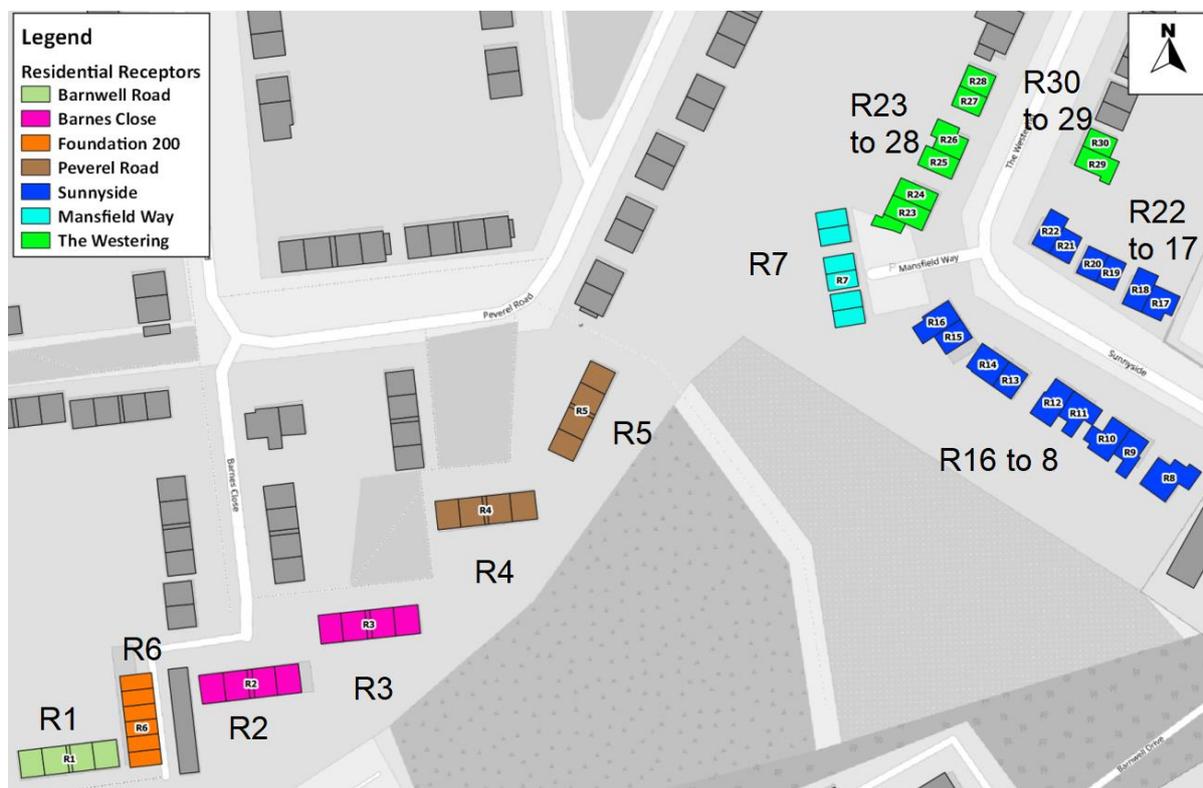
**In conclusion, we do not envisage unacceptable adverse impacts on non-residential premises or other noise sensitive recreational areas or areas of open space. No further action is required.**

#### **9.15 Significance of Operational Noise Effects Assessment / Analysis - Residential**

##### **ES - BS 4142 Rating Levels and Significant of Effect**

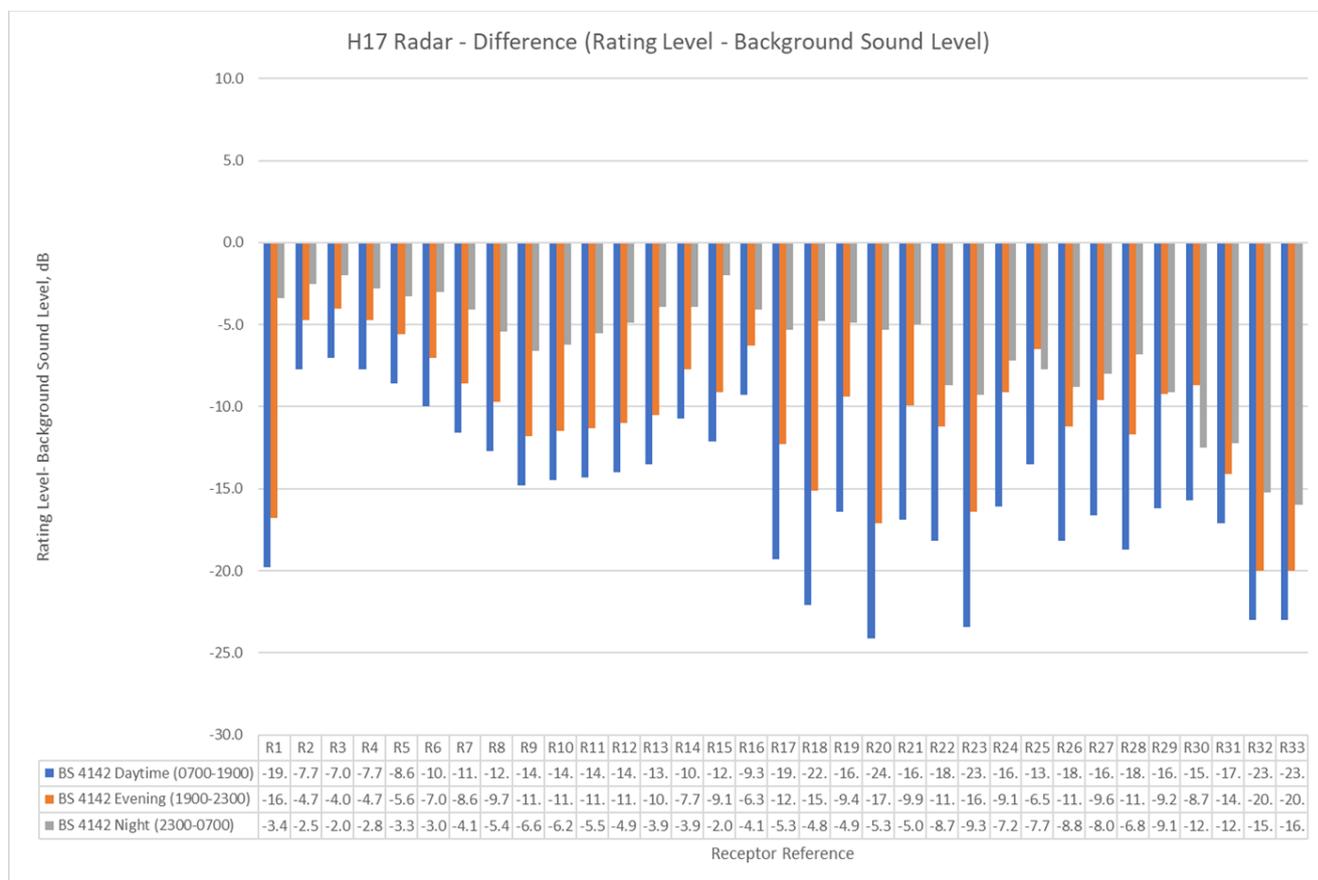
It is reported in the ES that at all the closet receptors R1 to R30 (55 separate receptors locations as highlighted on Figure 5 below) the BS 4142 rating levels are less than the assumed representative background sound levels.

**Figure 5: Residential Receptors (Assessment References R1 to 30)**



A graphical representation of the differences between the calculated H17 radar noise rating levels and the background sound levels reported in the ES for daytime, evening and night-time periods is shown in Figure 6 below. A negative value is where the calculated noise rating level is below the derived background sound level. The greater the negative value, the less likely it is that the specific sound source will have an adverse impact or significant adverse impact. There is a decrease in the significance as the – (negative) value difference increases. For context, a 3dB change in noise level is commonly considered to be the smallest change perceptible to humans unless under controlled conditions, whilst a 10dB change corresponds to a subjective doubling of level.

**Figure 6: ES - BS 4142 (2019) Rating Level v. Background Sound Level margins**



With reference to Figure 6, in summary the significance of impact is as follows:

- **Day Assessment Period (0700-1900) – external in amenity areas / gardens:**
  - Calculated noise levels are more than 5 dB below the background sound level (considered LOAEL) at all 55 receptors, and more than 10 dB below the background sound level (considered NOAEL) at all but six receptors (R2, R3, R4, R5, R6 and R16).
  - BS4142 margins / differences range from -7.0 to -16.8 dB in the Barnes Close, Barnwell Road / Peverel Road area and -9.3 to -24.1dB in the Sunnyside/ The Westering / Mansfield Way area. In terms of BS4142 these are considered indicative of very low impacts. There is a decrease in the significance of impact as the – (negative) value difference increases (is higher numerically).
  - Further consideration of operational noise effects has been informed by the ‘New Noise Generating Development (NGD) - External Noise Standards for “non- anonymous noise” (GCSP-SPD, 2020):

In terms of the GCSP-SPD (2020) the outcome is a Noise Significance Risk: ‘None’ to ‘Minimal’ with a Noise Significance of Effect: from ‘NOEL ( $\leq -10$  dB) to LOAEL ( $> -10$  &  $\leq -5$ )’ for all receptors. For these outcomes, the SPD (2020) planning advice is that the proposed development ‘is likely acceptable from a noise perspective. The LPA will seek this level of compliance in most noise

*sensitive areas and / or where there is a requirement to mitigate creeping background effects.'*

- In terms of Planning Practice Guidance (PPG) 'Noise Exposure Hierarchy Table' (Table 1 above), the likely response is that the noise may be 'present and not intrusive' with the example outcome that 'Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life'.

- **Evening Assessment Period (1900-2300) – external in amenity areas / gardens:**

- Calculated noise levels are more than 5 dB below the background sound level (considered LOAEL) at all 55 receptors but three (R2, R3 and R4).
- BS4142 margins / differences range from -4.0 to -16.8 dB in the Barnes Close, Barnwell Road / Peverel Road area and -6.3 to -17.1 dB in the Sunnyside/ The Westering / Mansfield Way area.
- In terms of the GCSP-SPD (2020), all but three receptors are in the 'None' or 'Minimal' Noise Significance Risk, with the remaining in the 'Low' category.

For 'Low', the SPD (2020) planning advice is: *'this indicates that the proposed NGD may be acceptable from a noise perspective but will be more context dependent, i.e. extent and effect on noise sensitive receivers (externally and internally). Compliance within this range is more applicable to less sensitive sites or where there is no requirement to mitigate creeping background effects.'*

- **Night Assessment Period (2300-0700) – external at residential façades:**

- Calculated noise levels are below the background sound level (considered LOAEL and below) at all 55 receptors.
- BS4142 margins / differences range from -2.0 to -3.4 dB in the Barnes Close, Barnwell Road / Peverel Road area and -2 to -12.5 dB in the Sunnyside/ The Westering / Mansfield Way area.
- In terms of the GCSP-SPD (2020), all but three receptors are in the 'None' or 'Minimal' Noise Significance Risk, with the remaining in the 'Low' category' with a Noise Significance of Effect: NOEL to LOAEL is  $> -5$  &  $\leq 0$ ) for all receptors.

For 'Low', the SPD (2020) states *'this indicates that the proposed NGD may be acceptable from a noise perspective but will be more context dependent, i.e. extent and effect on noise sensitive receivers (externally and internally). Compliance within this range is more applicable to less sensitive sites or where there is no requirement to mitigate creeping background effects.'*

- Have regard to the national Planning Practice Guidance (PPG)-Noise 'Noise Exposure Hierarchy Table' (Table 1 above), the impact of the radar noise is considered to be below the 'Lowest Observed Adverse Effect Level (LOAEL)' at all the nearest receptors at all times.

Based on the likely average response of those affected, the likely response to the noise is that it may be *'present and not intrusive'* with the example outcome that *'noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.'*, with the planning advice / action of *'No specific measures required'*.

**We agree with the 'ES - BS 4142 Rating Levels and Significant of Effects' for residential receptors as detailed above.**

### **9.16 Three Spire Acoustics - H17 BS4142 Assessment**

In their report Three Spire Acoustics provide an opinion on the proposed relocation of the radar to the H17 location and likely impact. Their report details the results of a background noise survey undertaken at location MP8 and the outcome of the BS4142 assessment applying the results from the background noise survey and measurements made at the base of the radar and predicted back to location MP7 (at 200m) and MP8 as shown on Figure 7 below.

**Figure 7: Three Spires BS4142 assessment locations.**



A BS4142 assessment of the daytime, evening and night-time situations, replicating the distance from the proposed H17 radar tower relocation at a distance of 200m from receptors, has been undertaken and the results presented in Table 5 below.

**Table 5: Three Spires MP8 - H17 BS4142 Assessment Outcome**

Situation	BS4142 Outcome $L_{A,T} - L_{A90,T}$	Significance of Outcome
Day	-14	Indication of low adverse impact depending on context
Eve	-9	
Night	-7	

The Three Spires report states the following:

*'The results indicate a rating level minus background level of between -14 to -7 for day, evening and night respectively. BS4142 states where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.'*

*With regard to the above the absolute level of radar noise it is predicted to be approx. 29dB(A) at the receptor location (MP8) which is significantly below the prevailing background and ambient acoustic conditions for daytime, evening and night time periods and shows no level change with or without the radar in operation. Aural assessment during the noise survey at MP7 approx. 200m from radar H16, indicated that the radar noise was completely inaudible in terms of absolute level and also regarding tonal components specifically at 400 Hertz. The time profile ..... for 400 Hertz LZeq and LZ90 1minute measurements indicates no level change between the radar on and radar off situations. There may be some uncertainty in BS4142 measurement outcome due to the use of the proxy location, however the negative level difference is large enough to indicate that there is confidence in the outcome of low adverse impact.'*

*It is considered that the background and ambient prevailing conditions at location MP8 and for residents at Peverel Rd and Barnes Close are different and typically higher than those experienced by residents in The Westering and Sunnyside which are further away NE from the Airport boundary. This is due to the increased noise from local traffic on the A1134 Barnwell Rd and noise emissions from the paint abatement plant at Marshalls Airport, which both legitimately form part of the background noise level.'*

*Comparison against the Greater Cambridge Shared Planning – Sustainable Design and Construction: Supplementary Planning Document (SPD, 2020) Table 3.11: New Noise Generating Development - External Noise Standards for “nonanonymous noise” SPD (2020) Noise Generating Development – External Noise Standards for “non anonymous noise” is presented .....and indicates that the daytime and evening BS4142 outcomes results in a “no significance risk” and a “no observable effect” level. The night-time BS4142 outcome results in “minimal significance of risk” and within the range of “no observable effect” to the “lowest observable adverse effect level”*

*It is therefore considered that the relocation of the radar to H17 is unlikely to result in any unacceptable noise impact to the closest residential receptors in Peverel Rd and Barnes Close. For properties further away such as those on the southern side of Sunnyside and The Westerings the operational noise impact will be even lower due to the greater separation distance involved, and unacceptable adverse noise impact is not envisaged.'*

## **9.15 BS 4142 & Context (in which the sound occurs)**

In terms of BS4142 significance of impact advice, all the assessment outcomes above equate to an indication of the specific sound source having a '*low impact, depending on the context.*'

As advocated in BS4142, NPPG- Noise and Para. 3.6.105 of the GCSP-SPD (2020), when considering the overall impacts / effects of noise due regard should be given context in which the noise occurs which depends on how various factors combine in any particular situation. **The difference between the rating level and the background sound level only provides an indication of the impact and that the context must be considered before any conclusions can be drawn about the magnitude of any impacts.**

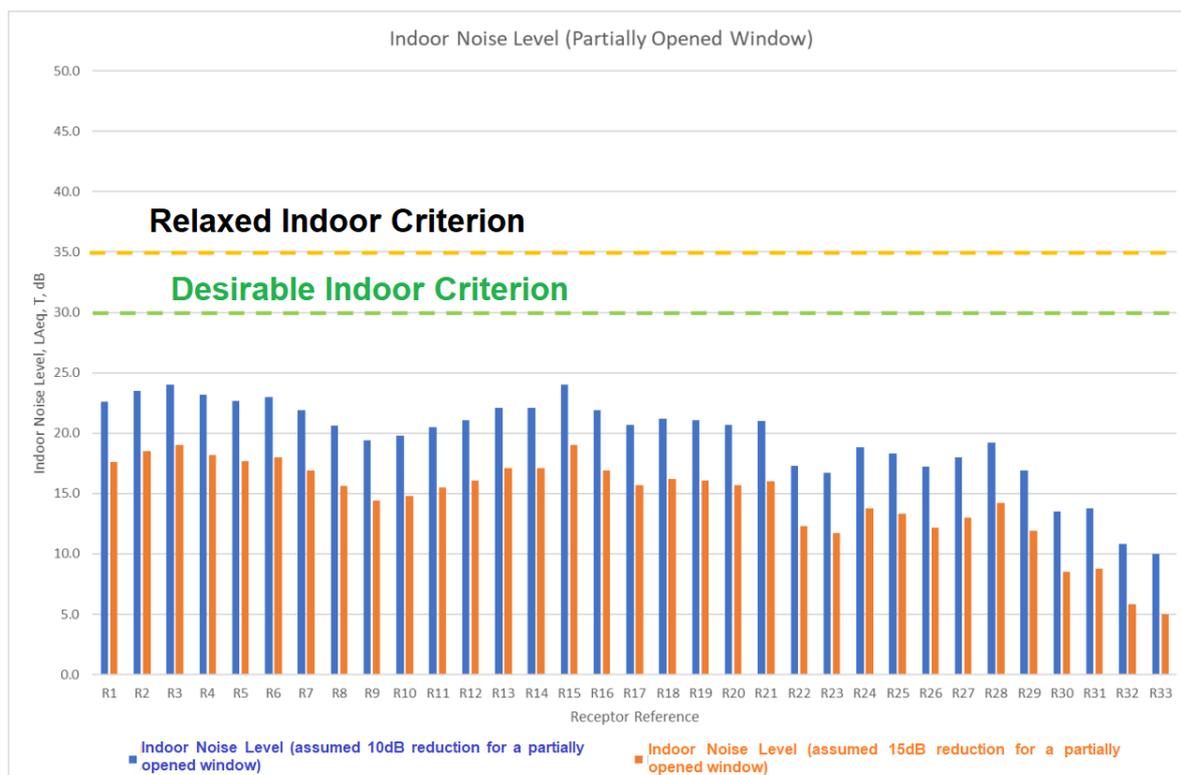
All pertinent contextual considerations should be taken into account including the following:

- the absolute level of the sound / noise;
- the character and level of the residual sound compared to the character and level of the specific sound;
- for a new noise making source, how the noise from it relates to the existing sound environment;

For the night-time period (2300 to 0700hrs) which is considered the most sensitive time of day context is paramount in reaching an overall conclusion on effects. In this case the relatively low absolute levels of the sound / noise at receptor façades is a key factor in this mixed commercial / industrial urban area adjacent to an operational airport.

In terms of assessing potential internal noise impacts, the acoustic performance of receptor façades can be considered. Assuming a partially opened window providing either a 10 dB (conservative) or 15 dB (relaxed for urban type areas) attenuation from outside to inside, having regard to predicted external façade noise rating levels (inclusive of a tonal correction of +2dB), the calculated internal noise levels adopting this approach are shown in Figure 8 below. In all instances are significantly below the BS8233:2014 'Guidance on Sound Insulation and Noise Reduction for Buildings' desirable internal noise criterion of 30 dB LAeq,T and the relaxed criterion of 35 dB LAeq, T for a bedroom at night. The internal noise levels would be even further below the BS 8233 (2014) criterion if consideration was given to closed windows, or the average time that windows are open / closed.

**Figure 8: ES - Night-time Assessment – Additional Context (Indoor Noise Levels)**



Therefore, in terms of context and the absolute internal noise levels, the predicted night-time internal noise levels at the nearest receptors range from 10 to 24dB under a worst case prediction scenario just assuming a 10 dB reduction across a partially open window. These levels are considered extremely low and are unlikely to result in any unacceptable adverse impact when having regard to industry standards and best practice technical guidance recommended acceptable internal noise standards. The noise levels are shown in the main to be significantly below BS 8233 (2014) desirable internal noise levels of 30 for bedrooms at night, as recommended in World Health Organisation community guidelines.

Although it could be argued that standards such as BS 8233 (2014) are not directly applicable to this application and industrial noise sources such as the radar noise, the levels as stated are significantly below recommended internal levels and give sufficient comfort that unacceptable adverse impacts are unlikely to arise.

**9.16. Noise Impact Comparison of H17 with existing H16 Radar**

The submitted ES does undertake any BS 4142 comparative analysis between the existing H16 and H17 radar impact scenarios. However, it is our view that it would be beneficial and helpful to do so.

Table 6 below from the ES presents the assessment at the five residential receptors where the difference between the predicted rating level (the specific sound levels inclusive of a rating penalty) and the background sound levels, is smallest (i.e. where the rating level is closest to exceeding background sound level indicating the greatest potential noise impact). This is for the night-time period and in all instances, the predicted rating level in the ES is lower than the derived background sound level and

is considered below the Lowest Observed Adverse Effect Level (LOAEL), and the ES concludes that this is not significant in EIA terms.

**Table 6: ES - BS 4142 Assessment: Night-time (2300-0700hrs) – smallest difference**

Receptor	Ref.	Predicted Rating Level dB L <sub>Ar,Tr</sub> dB	Background Sound Level dB L <sub>A90,T</sub>	Difference (L <sub>Ar,Tr</sub> – L <sub>A90</sub> ), dB	Assessment Outcome
Barnes Close	R3	34.0	36	-2.0	<LOAEL
Sunnyside	R15	34.0	36	-2.0	<LOAEL
Barnes Close	R2	33.5	36	-2.5	<LOAEL
Peverel Road	R4	33.2	36	-2.8	<LOAEL
Foundation 200	R6	33.0	36	-3.0	<LOAEL

These predication are at the facades of properties at 200m and greater from the proposed H17 radar with no other properties closer.

Three Spires have also undertaken a predictive impact assessment of the current H16 radar at the closest property 22 Sunnyside which is approximately 42 m to the nearest façade.

It has only been possible to predict the H16 radar noise at this location using measurement data gathered during their assessment and the background noise measurements provided / assumed by the applicant's noise consultant for the planning consultation for relocation of the radar to H17. Table 7 below details the outcome of the BS4142 assessment at this location.

A 4dB character correction has been applied to this situation as the tonal noise from the H16 Radar was clearly audible at the perimeter of the site with 22 Sunnyside.

**Table 7: Three Spires - H16 BS4142 Assessment (22 Sunnyside)**

Situation	BS4142 Outcome L <sub>Ar,Tr</sub> - L <sub>A90,T</sub>	Significance of Outcome
Day	+5	Indication of adverse impact dependent upon context
Night	+8	Indication of adverse impact dependent upon context

Whilst this assessment is strictly not directly comparable to the ES - H17 prediction assessment, as the same detailed noise modelling has not been undertaken, it indicates that the existing H16 - BS4142 rating level margins when compared to backgrounds at the existing closest receptor at 42m - 22 Sunnyside from the existing H16 radar are 12 to 17dB greater / higher during the daytime when compared with the H17 radar and closest receptors at 200m (a +5dB BS4142 rating for the existing H16 situation compared to a -7/-12 rating for the proposed H17 radar). For night-time the rating level margins at 42m at 22 Sunnyside are 10 to 11dB greater when

compared with the H17 radar and closest receptors at 200m (a +8dB for the existing H16 situation compared to a -2/-3 rating for the proposed H17 radar).

The absolute rating levels are also approximately 8 to 10dB higher at night-time (34 dB for H17 compared to 44dB H16). The planning criteria significance of BS4142 impact for H16 to the closest receptor at 22 Sunnyside is considered an indication of an adverse impact and having regard to the GCSP - SPD (2020) this is likely to be considered a high significance of noise risk and a '*significant observed adverse effect level (SOAEL)*' with the planning advice '*Where the rating level of noise is above the background noise level by more than 5dB, this indicates that the proposed NGD is unlikely to be acceptable from a noise perspective and planning consent is likely to be refused on noise grounds.*'

**This H16 v. H17 comparison, clearly shows that in terms of operational noise impacts, the H17 radar (predicted to be below a '*Lowest Observed Adverse Effect Level (LOAEL)*') at all times is by far a preferable location to the existing H16 (predicted to give rise to a '*Significant Observed Adverse Effect Level (SOAEL)*') scenario.**

### **9.17 EQG Overall Conclusion: Significance of Operational Noise Effects Assessment / Analysis - Residential**

Having reviewed the noise impact assessments that have been undertaken by the applicant as detailed in the submitted Environmental Statement and by the Councils' own noise consultant Three Spires Acoustics Ltd, it is the EQG service conclusion that the long term operational noise associated with the H17 radar in the location proposed has been thoroughly assessed within in the submitted ES and complies with Environmental Impact Assessment regulations.

The ES noise impact assessment has been undertaken substantively in accordance with industry noise impact assessment methodologies / standards with acceptable professional judgement being applied as necessary and allows an informed decision / judgment to be made about the acceptability of the proposals. It is also our view that any uncertainty in the data and associated calculations in the ES assessment has been adequately accounted for.

The challenge with any noise impact assessment and exposure is that it is not possible to have a single objective noise-based measure that defines absolute acceptable noise levels or a range of noise levels that are mandatory and applicable to all sources of noise in all situations. It is likely to be different for different noise sources, for different receptors / locations and at different times.

The ES Noise Chapter derived background sound levels are in the main considered representative and typical both for the particular circumstances and periods of interest for the nearest residential receptor locations at a distance of 200m from the proposed H17, to allow a robust noise impact assessment to be undertaken. 200m is the approximate separation distance to the closest residential receptors to the North / North East as follows: 163 to 169 (odd numbered) Barnwell Road (R1); 1 to 6 Caroline Hart Walk (R6); 9, 10, 11, 12 Barnes Close (R2); 5, 6, 7 and 8 Barnes Close (R3); 50, 52, 54, 56; Peverel Road (R4); 58, 60, 62, 64 Peverel Road (R5), 1, 2, 3, 4, 5 and 6 Mansfield Way (R7) and all of the western side of Sunnyside properties nos. even - 6

to 22 (R8 to R16). Effectively all the closest receptors on the west of Sunnyside, at Mansfield Way and Barnes Close / Peverel Road etc.

We agree that reasonable worst-case assumptions have been adopted for the noise modelling inputs, such as hard ground surface attenuation ( $G=0$ : totally reflecting surfaces and effectively little sound energy absorbed by the surface such as asphalt, concrete), downwind propagation to all receptors at all times, and 'worst-case' noise source directional orientation of the radar cabin. All of these factors combined have allowed for a 'worst case scenario' predictive approach for radar noise rating levels at the residential receptors considered.

In conclusion, it is our view that operational noise levels associated with the H17 radar will not give rise to any significant adverse noise impacts / effects on the health and quality of life /amenity both externally and internally at residential receptors.

During the daytime period, when the derived background sound levels are higher, the H17 radar noise is likely to be inaudible at distances of approximately 200m or greater. During quieter evening periods, and night-time periods, when background noise levels are lower, noise from the H17 radar may be just perceptible externally at times at approximately 200 m, but at what are considered to be low absolute noise levels and it is likely to be very difficult to distinguish the specific radar noise from other ambient noise in the area. The aural assessment undertaken by Three Spires and as witnessed by this service, indicates that noise from the radar (under very still wind conditions) was inaudible at approx. 200m when in operation, in the general location from the residential boundaries of properties on the west side of Sunnyside and towards the Peverel Rd and Barnes Close property boundaries. This suggests that a tonal correction may not even be required but it has been included in the ES specific noise predictions as a matter of caution as it may just be audible at times. Such an approach is considered precautionary.

However, overall impact will depend on how various factors combine in any particular situation. In terms of the most relevant impact assessment standard for industrial / commercial noise - BS 4142, the overall noise impact is predicted to be '*low to very low*', with the radar noise below the existing representative background sound levels at all relevant closest residential receptors. Having regard to context, the predicted radar noise rating levels (inclusive of a correction of +2dB for tonal character) at receptors are considered low in absolute noise level terms during the day / evening (ranges from 19 to 36 dB externally in gardens / amenity areas) and night- time (ranges for 20 to 34 dB externally at facades) periods.

In terms of national planning guidance on noise it is concluded that no unacceptable adverse effect is likely to arise, as the noise exposure / levels as predicted at receptors and as assessed are considered to be below the '*Lowest Observed Adverse Effect Level (LOAEL)*' at all times. Although the word 'level' is used here, this does not mean that the effects can only be defined in terms of a single value of noise exposure.

There is nothing in the mainstream scientific evidence to suggest with any degree of certainty that a low external noise rating level of 35 / 36 dB or lower could result in any changes in behaviour such as those described in PPG-N for a '*Lowest Observed Adverse Effect Level (LOAEL)*', even if the noise rating level was significantly above the background sound level. In this case the predicted noise rating levels at all receptors are all below the representative derived background noise levels and below

a noise rating level of 35/36dB and is considered as being between a 'LOAEL' to a 'No Observed Effects Level' (NOEL).' BS4142 is quite specific in this regard and advises that absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background and this "is especially true at night".

Predicted internal noise levels at the nearest receptors at night-time range from 10 to 24dB under a worst case prediction scenario just assuming a 10 dB reduction across a partially open window (external to internal). Also based on the Three Spires noise assessment we are also confident that any, radar noise including any tonal character is unlikely to be audible internally or result in any unacceptable adverse impact having regard to recommended internal noise levels and Noise Rating (NR) curves. The character of the area around the airport is mixed urban residential / industrial and these noise levels are not considered unacceptable in the existing prevailing acoustic environment.

Based on national planning guidance it is concluded that the H17 radar noise may be just audible externally at times but should not cause any change in the behaviour, attitude or other physiological responses. The radar noise may slightly affect the acoustic character of an area but not to the extent that there is a change in quality of life / amenity. If the noise exposure is at this level the national planning guidance action / advice is that no additional specific measures are required to manage the proposed radar noise in the prevailing acoustic environment.

This conclusion is all advocated by the Councils' own noise consultant Three Spires Acoustics Ltd.

Therefore, it is considered that the proposed development is in accordance with NPPF paragraphs 174 e) and 185 a) and Cambridge Local Plan 2018 policies 35: Protection of human health and quality of life from noise and vibration and 83: Aviation development.

However, to ensure that the radar noise complies with the predicted noise rating levels as detailed in the submitted ES and to protect the quality of life / amenity a number of bespoke operational noise conditions are recommended as detailed above.

These operational noise conditions have been formulated and agreed in consultation with both the Councils' and the applicants' acoustic consultant and are considered highly precautionary. We understand that they are acceptable in principle to the applicant.

Regards,

Greg Kearney  
Principal Environmental Health Officer  
Environmental Quality & Growth Team  
Environmental Services  
Cambridge City Council

**Enclosed:**

- Three Spires Acoustics Ltd report 'Cambridge City Airport Radar Noise - Statutory Nuisance & Planning Assessment, Rev3 - 31/01/2022: Ref. No. TSA/ENA/2021/37'

# 21.03224.FUL: Appendix E - Three Spires Acoustic Report

## Cambridge City Airport Radar Noise Statutory Nuisance & Planning Assessment

**Cambridge City Airport  
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For: Cambridge City Council, Environmental Health Department

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## Cambridge City Airport Radar Noise - Statutory Nuisance & Planning Assessment

IDENTIFICATION TABLE	
Client/Project Owner	Cambridge City Council
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Rev1			22/12/2021	Amendments following EHO comments
Rev 2			24/01/2022	Inclusion of further plan of site, updated Google Maps Aerial photograph and amendments following further EHO comments.
Rev3			31/01/2022	Further amendments following further EHO comments

### DISCLAIMER

This report was completed by Three Spires Acoustics Ltd on the basis of a defined programme of work and terms and conditions agreed with the Client. The report has been prepared with all reasonable skill, care and diligence within the terms of the Contract with the Client and taking into account the project objectives, the agreed scope of works, prevailing site conditions and the degree of manpower and resources allocated to the project.

Three Spires Acoustics Ltd accepts no responsibility whatsoever, following the issue of the report, for any matters arising outside the agreed scope of the works. This report is issued in confidence to the Client and by Three Spires Acoustics Ltd has no responsibility of whatsoever nature to third parties to whom this report or any part thereof is made known. Any such party relies upon the report at their own risk. Unless specifically assigned or transferred within the terms of the agreement, by Three Spires Acoustics Ltd retains all copyright and other intellectual property rights, on and over the report and its contents.

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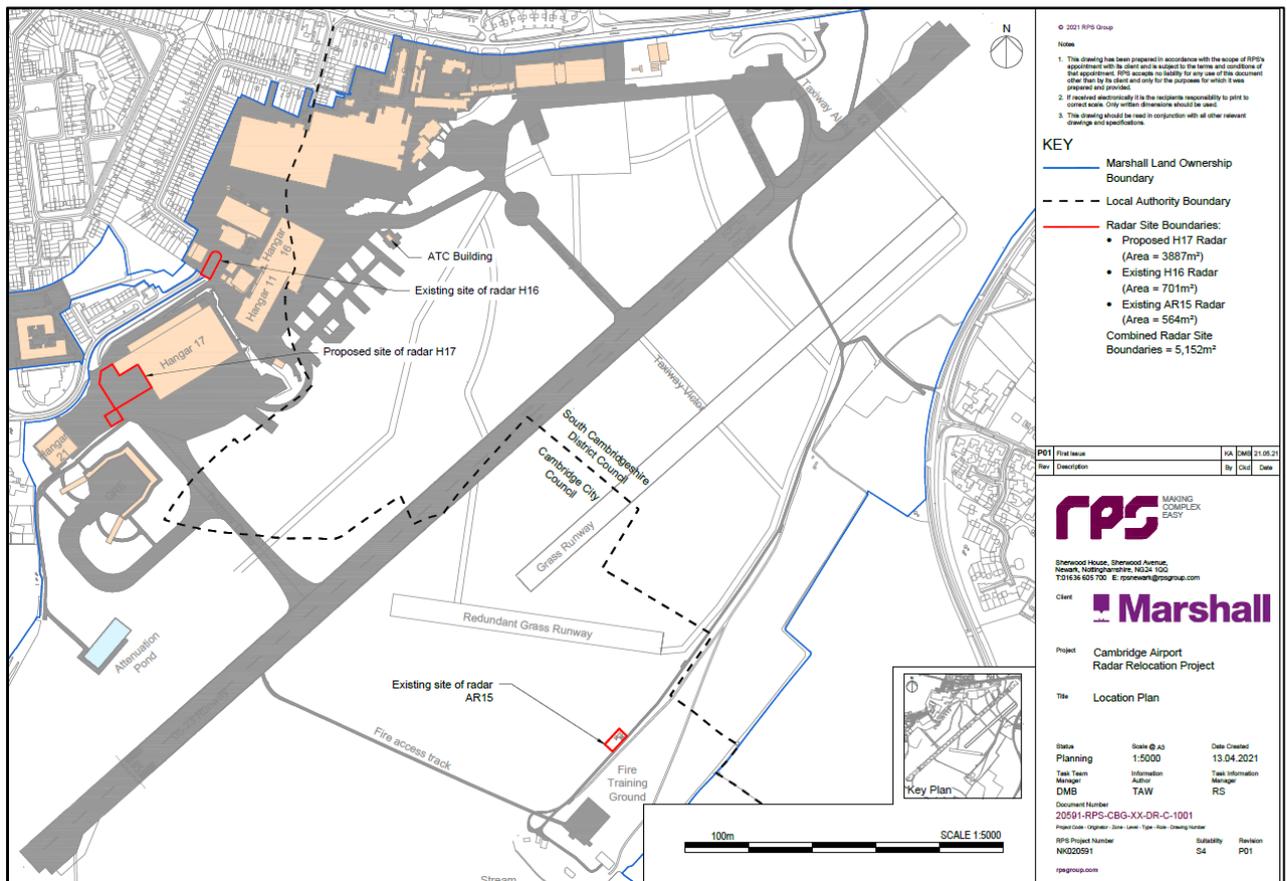
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## 1. EXECUTIVE SUMMARY

- 1.1.1 I am Christopher Hurst, a registered Environmental Health Officer/Practitioner and Director of Three Spires Acoustics Ltd and have been retained by Cambridge City Council (hereafter referred to as 'the Council' or CCC ) Environmental Health Department, to provide an environmental noise and statutory nuisance assessment of noise immissions from a recently erected 38m radar tower, known as H16 (hereafter referred to as the 'H16 Radar'), at Cambridge City Airport, Newmarket Rd, Cambridge, CB5 8RX.
- 1.1.2 H16 is located in the northern part of the Airport adjacent to Hangar 16, to the north of Hangar 17 and I understand that noise immissions from the operation of H16 radar have been the source of complaints from local residents made to the local authority at CCC, since its installation in autumn of 2020.
- 1.1.3 The environmental health department at CCC have undertaken noise nuisance investigations since autumn 2020 and have requested that an independent environmental noise impact assessment is undertaken in order to determine the noise impact and effect of the immissions and provide an expert acoustic and environmental health officer opinion, as to whether the immissions amount to a statutory nuisance under Section 79 of the Environmental Protection Act Part III 1990.
- 1.1.4 The council have also requested that I provide an opinion on the acceptability, in terms of the potential significance of operational noise impacts and effects of the proposed relocation of the H16 radar to the north-west of the Airport, immediately to the west of Hangar 17, on an area of hard standing comprising unused apron space (hereafter referred to as the 'H17 Radar'). The location of the existing H16 and AR15 radars and proposed H17 location are shown on the H17 planning application Location Plan (Ref. 20591-RPS-CBG-XX-DR-C-1001 P01) which is reproduced in Figure 1 below.

Figure 1. Cambridge City Airport - Plan of Radar Tower Locations



1.1.5 I have undertaken two noise monitoring surveys in September and November 2021 to determine the noise immissions from the radar at source and at representative residential receptors in the vicinity of the H16 radar tower and to determine the prevailing ambient and background noise levels at two locations which are relatively close to the radar tower. The noise surveys included attended and unattended measurements and were supplemented with audio recordings for post measurement analysis.

1.1.6 The main source of noise complained of and identified as part of the noise surveys is radar motor noise emanating from the radar motor cabin enclosure, at a height of 35m, located below the radar antenna (38m). The noise contains a mid tonal component within the 400 Hertz one third octave band range and identified by narrow band analysis specifically at 378Hertz, which is distinctive at the radar source, radar base and reduces in level with distance from the source. The operation of the radar is potentially 24 hours a day, 7 days a week and therefore has the potential to cause disturbance including sleep disturbance to local residents.

1.1.7 Relevant guidance and standards and significance criteria thresholds have been proposed and include absolute, relative and change level criteria. Assessment against these standards and thresholds has been undertaken applying the measurement data obtained from the noise surveys. Aural assessment during attended measurements and also from analysis of audio recordings, has also been undertaken.

1.1.8 The outcome of the assessment at 58 The Westering is summarised in Table 1 below and indicates that the radar noise immissions are below all the proposed significance criteria thresholds (see Section 4) and therefore it is considered that objectively the radar noise does not cause an unreasonable or unacceptable adverse impact. Aural assessment of the noise indicates that the noise is audible above the prevailing acoustic environment, however, in my opinion, the noise is of a relatively low absolute level and considered not sufficiently distinctive to immediately draw the receivers attention to it or result in significant modifying behaviour such as closing windows or increasing volume of TV or radio to mask out the noise.

**Table 1. H16 Noise Assessment Summary Table 58 The Westering**

Situation	EXTERNAL		INTERNAL		Significance Outcome
	BS4142	Noise Change	Community NR	BS8233	
Day /Eve	-4 to +3	Up to 2dB	-9	-15 to - 12	Indication of insignificant to low adverse noise
Night	+2		-4	-10 to -7	

1.1.9 However, as a full assessment was unable to be undertaken at the closest property to the radar tower (22 Sunnyside) predictive assessment has been undertaken. The outcome of the predictive assessment indicates that radar noise immissions may have the potential to cause a greater degree of adverse impact externally and it is reasonable to assume that internal tonal noise would be elevated to a similar degree.

1.1.10 It is my professional opinion that the noise from the operation of the H16 radar tower is unlikely to cause a statutory nuisance to residents at 58 The Westering or other residential properties at a similar or greater distance from the radar tower. Noise from the operation of the radar tower however, has the potential to cause a greater degree of adverse impact to residents who live closer to it. However, without further investigation at and within these receptor properties, the likely existence or occurrence of a statutory nuisance under Section 79 of the Environmental Protection Act Part III 1990 cannot be confirmed.

1.1.11 It is also my opinion that the noise mitigation measures detailed by Marshalls Airport acoustic experts indicate, that when compared to the post mitigation (2<sup>nd</sup> stage) situation there has been significant reduction in noise from the operation of the radar, specifically at 400Hertz one third octave band, which is the dominant tonal feature of the noise and which residents have complained of and has caused disturbance to them.

1.1.12 However, It is also evident that the sound reduction performance of the radar motor cabin enclosure, specifically at 400Hertz is still relatively low and it may be possible and practicable to enhance the performance of the ventilation louvres 'to the H16 radar motor cabin' and so reduce the tonal component of the received noise immissions further. I am not an acoustic noise control engineering expert and therefore suggest that a consultancy is engaged to discuss this aspect of the case, as necessary, to inform CCC if further works are practicable.

- 1.1.13 It is also understood that the H16 radar is currently not in full operation and the Airport have committed to only run commissioning tests for periods between 8am and 6pm and these are limited in frequency. Therefore, it could be argued that currently there is no 'state of affairs' to determine the existence of a statutory nuisance. However, if this position was to change due to failure of the existing AR15 radar it could be reasonably foreseen that a statutory nuisance 'could be established' if an ongoing state is considered to exist. Ultimately it is up to the courts to decide if Best Practicable Means have been undertaken to prevent or counteract the effects of the nuisance.
- 1.1.14 Regarding the relocation of the radar tower to location H17, the outcome of the noise assessment indicates that the background and ambient acoustic environment are different and higher than those experienced by residents in The Westering and on one side of the street on Sunnyside. This is due to the increased noise from local traffic on Barnwell Rd/ A1134 to the west and noise emissions from the paint abatement plant at Marshalls Airport, on the northern corner of Hanger 17, which in my opinion both legitimately form part of the background noise level.
- 1.1.15 The objective assessment I have undertaken indicates that noise emissions from the proposed H17 radar location is unlikely to cause unacceptable adverse or significant adverse noise impact and measurements showed no noise level change with the radar off/on situations. The aural assessment indicates that noise from the radar during the assessment was inaudible at approx. 200m when in operation.
- 1.1.16 It is therefore considered that the relocation of the radar to the H17 location is a suitable alternative to the current H16 location and having 'regard to national and local planning policy requirements' the evidence suggests that it will not result in 'unacceptable' adverse noise impact to closest residential properties in Barnes Close / Peverel Road which will be approx. 200m from the proposed H17 radar.

## 1.2 Consultants Experience

1.2.1 I am Christopher Hurst, a registered Environmental Health Officer/Practitioner and Director of Three Spires Acoustics Ltd. I have BSc (First Class Hons) in Environmental Health Studies and a Post Graduate Diploma in Acoustics & Noise Control. I am a Member of the Institute of Acoustics (MIOA), Chartered Environmental Practitioner (CEnvH) and Associate Member of the Institute of Licensing (AMIOL), and am registered with the Environmental Health Registration Board (EHORB ). I have over 25 years' experience in environmental regulatory control including environmental noise assessment and the use of statutory nuisance provisions.

My professional experience has included the assessment of environmental noise in relation to construction noise, planning, nuisance, licensing and other regulatory regimes. I have been part of national working parties regarding guidance on noise control from places of entertainment, outdoor concerts and professional practice guidance on planning & noise. I have also presented expert testimony regarding planning, statutory nuisance and licensing cases and acted as an expert Environmental Health Officer in a number of noise related cases. I am also one of the co-developers of the noise app which is now used by over 380 local authorities and housing associations. <https://www.thenoiseapp.com>

### 1.2.2 Professional Associations

Member of The Institute of Acoustics (MIOA)

Member of The Institute of Licensing (AMIOL)

Chartered Environmental Practitioner (CEnvH)

## 2. BACKGROUND TO CASE & SITE DESCRIPTION

- 2.1.1 Cambridge City Airport, also known as Marshalls Airport, Newmarket Rd, Cambridge, CB5 8RX, erected a 38m high radar tower, know as H16 Radar, in autumn 2020. The radar tower is located within the perimeter of the airport site, close to residential properties in Sunnyside and The Westering. A Google Maps street view, from Sunnyside is presented in Figure 2 below and a Google Maps aerial photo of the site is presented at Figure 3.
- 2.1.2 The council have provided a briefing note detailing the background and history of the case, some of which I have reproduced below.

*The purpose of the newly erected Radar tower is essentially a “backup” to the pre-existing Radar, which is nearly 50 years old. It is obsolete and unsupported by the original equipment manufacturer. Spare parts are extremely difficult to source. Equipment failure, although infrequent, is increasing. Equipment outages are also increasing in duration. A recent equipment failure, in January 2021, required 10 days of fault finding, component sourcing and equipment repair. The Radar was not available during this time. The probability of a terminal radar component failure is increasing with time. The possible future implication is that the permanent Radar could suffer a terminal malfunction and the” back up” Radar could become the permanent Radar.*

*Before a radar is permitted to operate, it must go through a “commissioning process” to ensure that it is “fit for purpose”. The commissioning process is required by the Civil Aviation Authority and includes a number of tests and training sessions that have to be satisfied and completed to demonstrate that the radar can operate safely in day and night time circumstances. The recently erected Radar went through an extended period of commissioning over a whole month in February 2021, which we understood lead to further complaints from residents (see comments below).*

Figure 2. Goggle Maps Street View of H16 Radar Tower from Sunnyside



Figure 3. Google Maps Aerial Photograph of H16 Radar Tower and Environs



## 2.2 History of Complaint

- 2.2.1 The following details have been obtained from the Council’s briefing note and other information provided to myself by the council, including extracts from the planning consultation documents for the relocation of H16 Radar to the proposed H17 Radar position.
- 2.2.2 Cambridge City Council have received 13 complaints regarding disturbance caused by the operation of the H16 Radar Tower, the first of which was received on the 17<sup>th</sup> November 2020.
- 2.2.3 Residents from Sunnyside, The Westering and Peverel Road have made complaints about tonal noise, the source of which has been determined by the council and the Airport’s and resident’s acoustic consultants, as from the operation of the radar motor. Other complaints concerned other sources of noise, which I understand are not connected with the operation of the radar, as well as complaints regarding shadow flicker which is the effect of the sun (low on the horizon) shining through the rotating radar antennae structure, casting a moving shadow at receptors, perceived as a “flicker” due to the rotating antennae speed repeatedly casting the shadow.
- 2.2.4 Following receipt of the complaints the council initiated an investigation to ascertain if a statutory noise nuisance existed, under The Environmental Protection Act 1990.
- 2.2.5 I have been informed that at the start of 2021 Marshalls considered if they could re-locate the new Radar to an alternative and less intrusive site on the airport. Marshalls have

provisionally earmarked a site, and have undertaken pre-planning public consultation, <http://cambridgeairport.com/radar-consultation/>. It is anticipated that the timescale for the determination of planning application for relocation of the radar to H17 will be dictated by the planning process but it is understood that a decision in early 2022 is likely. It is also understood that construction of the radar will reuse the majority of the H16 radar, including its mast, radar head, ground based cabin, upper motor cabin enclosure, emergency generator and security fencing. If the H17 radar is approved it is understood that the dismantling of the H16 radar and erection of the proposed H17 radar is expected to take 6 to 7 months.

- 2.2.6 The proposed relocation site is discussed in more detail in Section 10 of this report.
- 2.2.7 Marshalls have also employed the services of Noise Consultants Ltd (NCL), who undertook a noise assessment which included;
- Identification and separation of various potential sources of noise at the airport and to isolate the radar noise as a specific source.
  - Application of attenuation works to various sources of noise and re-assessment to ascertain the net effect on the overall sound climate.
  - Isolation of the remaining Radar noise and propose suitable attenuation work that could be applied.
  - Re-measure once above carried out (joint visit by Council Officer and Noise consultant on 1st February 2021)
- 2.2.8 Following the joint visit on 1st February 2021, the Council Officer (case officer) and Marshalls' noise consultant, jointly agreed at the time of the visit that the sound levels had reduced (Council Officer having carried out a subjective assessment) such that Civil Aviation Authority radar certification' commissioning works / radar running' could re-commence for the month of February.
- 2.2.9 Subjective aural assessments were carried out by council officers from within residents' homes during February 2021, and whilst the Radar noise could be heard, at the time was not at a level that could be considered a statutory noise nuisance , having regard to all factors that need to be considered when determining if a statutory nuisance was likely. Officers who carried out these assessments were of the view that during warm spring and summer months, it may well become such. To this end Marshalls were written to and asked to consider what further attenuation work might be suitable. The complainants were also written to and told that the investigation remained open and that should the Radar become operational again (for whatever reason) further site visits and assessment would be made to inform next best steps.
- 2.2.10 During this same period, the residents employed the services of Mike Stigwood of MAS Environmental Consultants who carried out an environmental noise impact assessment of the radar noise. Mr. Stigwood concluded that noise immissions from the operation of the

radar were likely to give rise to a nuisance and therefore the council should use its powers under Section 79 and 80 of the Environmental Protection Act PTIII 1990.

- 2.2.11 In the interim since February 2021, Marshalls advised the council that they had completed further attenuation work during the period 30<sup>th</sup> April to 7<sup>th</sup> May 2021. They also stated their intention of re-starting the commissioning work, on the 11<sup>th</sup> May, for a 72-hour continuous period. Marshalls advised the council of the start date/time on 11<sup>th</sup> May 2021. Since May 2020 further periods of H16 radar certification / commissioning running have occurred but these have been mainly for day time periods 08.00 to 1800hrs ranging from 1 to 5 days only.
- 2.2.12 Noise mitigation measures undertaken to the radar motor cabin enclosure to date, include the following:
- **January 2021**
    - Installation of Sonobex's Noise Trap Blox behind all weather louvres.
  - **April / May 2021**
    - Sealing of all gaps and holes around the perimeter of the cabin;
    - Provision of enhanced rubber and brush seals to the cabin door and floor access panel;
    - Provision of high performance sound absorbent treatment within the cabin
    - Application of Akotherm D40 50mm thickness around the motor gear
    - Application of Akotherm D40 50mm thickness around the remainder of the cabin ceiling and the cable tray
    - Installation of Isomat TS 8kg/m<sup>2</sup> (1000mmx1000mm) cut-to size
    - Installation of Rockwool RWA45 50mm thickness around the walls.
- 2.2.13 The NCL noise assessment also indicated that the emissions from the H16 radar differed in magnitude and characteristics in orientation around it, in particular those measured in the south west side to those measured in the north west side. The noise characteristics on the south-west side include a tonal peak at 400 Hertz , which was not prominent at an equivalent distance on the north west side.
- 2.2.14 A further subjective assessment was conducted by two different officers to those who carried out the former assessments, on Thursday 15th July 2021. Following this visit, the opinion of the officers was that the radar noise was not a statutory noise nuisance at that point in time, but again concern voiced regarding impact on residents should usage of the H16 radar be increased.

### 3. LEGISLATIVE FRAMEWORK

3.1.1 This section of the report reviews the relevant legislation, current national, and local guidance and standards which are considered relevant to the case in question

#### 3.2 Nuisance

3.2.1 The common law<sup>1</sup> has long recognised that noise may be a problem, mainly by way of an action for the tort<sup>2</sup> of nuisance. In England and Wales common law nuisances are divisible into public nuisances and private nuisances. The first deals with interferences with the comfort of the general public and is a crime. The latter deals with the unreasonable and substantial interference<sup>3</sup> with the use of property or personal comfort and is a civil wrong (tort) and does not attract criminal liability.

3.2.2 Statutory Nuisances are matters prescribed by statute as such and covers both public and private nuisances.

3.2.3 At common law, the remedies for public and private nuisance are either damages to compensate for the harm which has been done or an injunction to prevent something from happening in the future. In addition, public nuisance is a criminal offence triable either way, that can attract penalties of unlimited fines and imprisonment.

#### 3.3 Environmental Protection Act Part III 1990 Section 79-80 Statutory Nuisance

3.3.1 Local Authorities have powers and duties to address issues arising from noise through the statutory nuisance provisions of the Environmental Protection Act 1990 (EPA 90) Part III, Section 79-80 (EPA). Section 79(1) (g) of the EPA defines a statutory noise nuisance as: "Noise emitted from a premises so as to be prejudicial to health or a nuisance." (Note: "noise" in this context also includes vibration.)

3.3.2 Local Authority Environmental Health services have a duty to inspect their districts from time to time for statutory nuisances. Additionally, Local Authorities have a duty to take reasonable steps to investigate any complaint about alleged noise nuisance made by persons residing in their district. Where they are satisfied to the civil standard of proof (on the balance of probability) that a statutory nuisance in law exists, or is likely to occur or recur, they have a duty to serve an abatement notice on the person(s) responsible for the nuisance.

3.3.3 Failure to comply with such a notice can result in further formal action being taken by the Local Authority. This includes prosecution of the recipient(s) of the abatement notice (to the criminal standard of proof).

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<sup>1</sup> Common law is law made by judges, based on previous court decisions and customs as distinct from statute law created by Parliament

<sup>2</sup> Tort is an old French word for a "wrong." A tort is a civil wrong. A civil wrong involves a breach of a duty owed to someone else, as opposed to criminal wrongdoing which involves a breach of a duty owed to society. Torts are civil wrongs other than breaches of contract and certain equitable wrongs. Tort usually refers to the causing of damage to property or its use or to a person's reputation or harm to a person's commercial interest

<sup>3</sup> *Howard v Walker* [1947]

3.3.4 Proof of the existence, likely occurrence or recurrence, of ‘noise emitted from premises such as to be prejudicial to health or a nuisance’, is required before a local authority are required to act by the service of an abatement notice.

3.3.5 The legal requirements for establishing liability in Statutory Nuisance cases are objective. The threshold is a high one: either substantial interference with use or enjoyment of property or personal discomfort or prejudicial to health must be proved. The standard cannot be defined precisely; each case should be examined on its merits; and where there is a dispute much will depend on the view taken by the court of the seriousness of the harm.

### 3.4 Factors to be taken into consideration when determining a nuisance

3.4.1 The legal test for determining a noise nuisance is an objective one and the noise must be both excessive and unreasonable. The following factors are some of those typically applied by those making judgements on nuisance, to whether a set of circumstances exist which can be considered to constitute statutory nuisance.

3.4.2 Reaching a decision whether a complaint amounts to a Statutory Nuisance often requires that a number of factors need to be weighed up and assessed properly. The relevant factors are detailed in many precedent setting cases and legal texts and include:

- The level and character of the noise
- The duration and frequency of its occurrence
- The time of the noise (day or night)
- The presence of any aggravating characteristics to the noise
- The characteristics of the neighbourhood
- Motive – malice can render noise a nuisance
- Where the noise takes place and is experienced
- The number of people affected

3.4.3 Even after those qualifications have been satisfied a local authority may also consider;

- Whether, in legal terms, it qualifies as a nuisance
- What measures are required to reduce or stop the noise
- Whether the perpetrator is being reasonable
- The potential for a ‘best practicable means defence’

3.4.4 The Level and Character of Noise

There is no specific objective noise standard in nuisance legislation above or below which a noise nuisance exists, as the variables involved in the assessment of noise in nuisance cases must be considered as a whole. However, environmental noise standards allow standardised assessments to be made by acousticians and environmental health officers (EHO's) of noise and vibration effects produced by a noise source into a specific location.

3.4.5 There are different ways noise assessments can be carried out;

- I. The effects can be determined by reference to guideline values for example, BS8233:2014 Guidance on sound insulation and noise reduction for buildings.
- II. The effects can be determined by considering the change in noise level that would result from the noise source. The usual approach is to use an appropriate noise index for the characterisation of the noise that is generated by the source. This approach is contained within Institute of Environmental Management & Assessment (IEMA) Guidelines for Environmental Noise Impact Assessment November 2014.
- III. The effects can be determined by comparing the resultant noise level after the noise source is placed into the local environment against the background noise level (LA90) of the area. This is the method employed by BS4142:2014 Methods for rating and assessing industrial and commercial sound and is used to determine the significance of effect.

3.4.6 The approach to assessment adopted by the acoustician and EHO can influence the effects that will ultimately be determined. It is essential, therefore, that any decision to adopt a particular approach is professionally supported, with a clear rationale.

3.4.7 It is also important to take account of the context of the noise source and the environment in which it is taking place, for instance in the case in question, it is considered that an assessment comparing the specific noise with the underlying background and ambient noise situation and an assessment comparison against guideline levels within a defined standard, are both appropriate in establishing the significance and intensity of effects and ultimately reasonableness of the activity in question.

3.4.8 Different noise metrics can also assist in the characteristics of noise in terms of its spectral frequency content.

3.4.9 Duration & Frequency

The duration and frequency of occurrence of the noise in question will have obvious consequences to its impact and effect. If the noise is classed as non-permanent or occasional, it is less likely to form a set of circumstances or state of affairs which may be considered to cause a nuisance. If it is persistent and regular it is more likely that levels above significance thresholds will cause a nuisance, taking into account the other objective nuisance tests.

3.4.10 Time of Day

Noise at night which causes sleep disturbance or noise which occurs during weekend periods or public holidays, will have a greater effect on recipients than a similar level of noise during the typical working day and will generally be considered with more weight when judgements are made about nuisance.

### 3.4.11 Locality

Where the complaint consists of interference with the use and enjoyment of land, the locality principle is used as a means of determining whether there is an actionable nuisance<sup>4</sup>. The question of locality was raised in *Sturges v Bridgman 1879*, in which Thesiger, LJ stated '*What would be a nuisance in Belgrave Square would not necessarily be so in Bermondsey*'

An example may be that noise from industrial plant and equipment is acceptable in an industrial estate but much less likely to be acceptable in a suburban area. The case in question is a mixed industrial / commercial and residential area and therefore context is an important factor and will be taken into account when setting proposed significance criteria.

### 3.4.12 Reasonableness

Reasonableness will be an important factor in determining whether the noise intrusion amounts to a nuisance and the principle of 'give and take'<sup>5</sup> will apply.

The amount of noise depends on the type of plant and equipment used as well as other factors such as structural transfer of noise and vibration and the manner of operation and mitigation applied. Many items of plant can have noise reduction techniques applied.

## 3.5 Environmental Protection Act Part III 1990 Section 82

3.5.1 Section 82 of the Environmental Protection Act Part III 1990, enables a person aggrieved by a statutory nuisance to bring proceedings in the magistrates court against the person responsible. The court may then issue an order requiring the abatement of the nuisance and/or prohibiting its recurrence. The procedure is only available if the statutory nuisance is in existence at the date of the hearing.

3.5.2 The matters must be proved by the person starting the proceedings to the criminal standard of 'beyond all reasonable doubt/ be sure to convict'. This is different to the appeals procedure regarding section 80 notices, where the defendant must prove, to the civil standard, 'on the balance of probabilities' that one or more of the statutory defences has been properly applied.

## 3.6 Best Practicable Means (BPM)

3.6.1 Regulation 2(2)(e) of the Statutory Nuisance (Appeals) Regulations 1995, provides that best practicable means were used to prevent, or counteract the effects of the nuisance. BPM

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<sup>4</sup> *Sturges v Bridgman 1879*

<sup>5</sup> *as in Dymond v Pearce [1972] 1 All ER 1142*

grounds are only available in noise cases for nuisance emitted from or caused on industrial, trade, or business premises.

3.6.2 BPM is defined as Section 79 (9) EPA 1990

“(9) In this Part “best practicable means” is to be interpreted by reference to the following provisions—

(a) “practicable” means reasonably practicable having regard among other things to local conditions and circumstances, to the current state of technical knowledge and to the financial implications;

(b) the means to be employed include the design, installation, maintenance and manner and periods of operation of plant and machinery, and the design, construction and maintenance of buildings and structures

(c) the test is to apply only so far as compatible with any duty imposed by law;

(d) the test is to apply only so far as compatible with safety and safe working conditions, and with the exigencies of any emergency or unforeseeable circumstances; and, in circumstances where a code of practice under section 71 of the [1974 c. 40.] Control of Pollution Act 1974 (noise minimisation) is applicable, regard shall also be had to guidance given in it.

## 4. RELEVANT NOISE ASSESSMENT STANDARDS AND GUIDELINES

4.1.1 The following standards and guidance are considered relevant to the case in question and are discussed in detail below.

### 4.2 BS4142:2014 +A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound

4.2.1 This British Standard describes methods for rating and assessing sound of an industrial and/or commercial nature which includes:

- sound from industrial and manufacturing processes
- sound from fixed installations which comprise mechanical and electrical plant and equipment.
- sound from the loading and unloading of goods and materials at industrial and/or commercial premises; and
- sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that from train or ship movements on or around an industrial and/or commercial site

4.2.2 The methods described in this British Standard use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.

4.2.3 The standard is applicable to the determination of the following;

- rating levels for sources of sound of an industrial and/or commercial nature
- ambient, background and residual sound levels, for the purposes of
- assessing sound from proposed, new, modified or additional source(s) of sound of an industrial and/or commercial nature;

and for the purposes of:

- 1) investigating complaints;
- 2) assessing sound from existing, proposed, new, modified or additional source(s) of sound of an industrial and/or commercial nature; and
- 3) assessing sound at proposed new dwellings or premises used for residential purposes.

4.2.4 It is important to note the determination of noise amounting to a nuisance is beyond the scope of this British Standard.

4.2.5 Certain acoustic features or character can increase the significance of impact that might be expected from a comparison of the specific sound level to the background sound level. Where such features are present at the assessment location, a character correction to the specific sound level is made to obtain the rating level. This can be approached from subjective, objective and reference methods.

4.2.6 The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs. The greater this difference, the greater the magnitude of the impact as detailed in Table 2 below.

**Table 2. BS4142 Assessment Outcome Table**

Difference between background noise and rating level	Assessment Outcome
+10dB	indication of a significant adverse impact, depending on the context.
+5dB	indication of an adverse impact, depending on the context
0dbB	indication of an low impact, depending on the context

4.2.7 The context can significantly affect the outcome of the Initial estimate, which is based solely on the difference between the rating and background sound levels. The background sound level (LA90) specifically excludes acoustic events occurring for less than 90% of the time, such

as passing vehicles or activity occurring for much but not all of the time. This means that the difference between rating and background sound levels can be identical for two locations with very different acoustic characteristics and corresponding sensitivities to noise.

#### 4.3 BS8233:2014 Sound Insulation and Noise Reduction for Buildings.

- 4.3.1 Guidance on suitable internal noise levels can be found in BS8233:2014: Sound insulation and noise reduction for buildings. BS8233 suggests indoor ambient noise criterion for reasonable resting and sleeping conditions in bedrooms and living rooms. The guidance is mainly applied in relation to steady continuous noise and much of the underlying research was based on and guidance relates to transportation noise, which does not have the same characteristics as noise in the case in question
- 4.3.2 BS8233 relates to external noise, typically from transportation sources or other anonymous noise sources without character etc, which may effect the internal sound environment, therefore are not strictly applicable to the case in question but may be used for comparative purposes in the assessment of impact and potential effect.

#### 4.4 World Health Organisation (WHO) Community Noise Guidelines 1999 & 2018

- 4.4.1 The WHO guideline values for community noise, are appropriate to what are termed “critical health effects”. This means that the limits are at the lowest noise level that would result in any psychological or physiological effect. The guidelines have recently been updated (October 2018) but still references some of the guidelines levels in the 1999 document. Although they are mainly considered for use with transportation noise sources such as road, rail and aircraft, they are useful in providing some guidance on negative sleep effects. They state that if negative effects on sleep are to be avoided the Leq,8hr should not exceed 30dB(A) for continuous noise, which approximates to 45dB(A) externally

#### 4.5 Community Reaction to Criteria for External Noises. Kosten & Van Os (1962)

- 4.5.1 A criteria for rating internal noise impact based on a set of noise rating curves (NR) was described in Kosten and Van Os (1962). A set of curves similar to those described above are used with criterion for specific uses (and became the foundation of ISO noise rating curves). The criterion for a bedroom is NR 25 regardless of the time of occurrence of the noise. Various corrections can be made for dwellings depending on the character of the area and the character of the noise. In this case the criterion may be lowered by 5 due to the presence of or pure tones easily perceptible and as the locality is residential urban an addition of +5 needs to made to the criterion. Therefore it is considered reasonable to apply an acceptability criterion for the living room NR=30 day and NR 25 Night. Table 3 below details the criteria table.
- 4.5.2 Assessment – If the measured octave band spectrum exceeds the corrected NR criterion curve in any octave band by less than 5dB, the noise is rated as marginal, by 5-10dB the noise is rated as difficult to accept, by greater than 10dB the noise is rated unacceptable.

Table 3. NR Community Reaction Table

Selection of Criteria	NR
Basic Criteria For Inside Sleeping Rooms	25
Basic Criteria For Inside living Rooms	30
<i>Corrections to be added to basic NR number</i>	
<i>Pure tone or other characteristic easily distinguishable</i>	-5
<i>Impulsive or intermittent noise</i>	-5
<i>Type of area</i>	
<i>Very quite Suburban</i>	-5
<i>Suburban</i>	0
<i>Residential Urban</i>	+5
<i>Urban near some industry</i>	+10
<i>Area of heavy industry</i>	+15
<i>Corrected criterion is basic criterion plus appropriate corrections</i>	<b>Day NR 30 Night NR 25</b>

#### 4.6 IEMA Guidelines on Noise Impact Assessments

- 4.6.1 The Institute of Environmental Management and Assessment (IEMA) Guidelines for Environmental Noise Assessment 2014, address the key principles of noise impact assessment and are applicable to all development proposals where noise effects may occur. The guidelines set out key principles for noise impact assessment relevant to all types of project regardless of size. The guidance provides advice with regards to the collection of baseline noise data, prediction of noise levels and how noise should be assessed. The guidance recognizes that the effect associated with a noise impact will be dependent on a number of factors including but not limited to, the sensitivity of the receptor, frequency and duration of the noise source and time of day. The Guidelines accept that a simple change in noise levels using a single noise indicator may fail to adequately reveal the actual noise impact of the proposal. The character of the noise must be considered and the Guidelines suggest comparing other noise indicators such as the LAeq, LAmx and LA90 as a more rigorous approach.
- 4.6.2 Absolute levels such as those set out in WHO Guidelines are also considered and the Guidelines suggest that a change in noise levels in an area where the existing levels are above WHO Guidelines should be considered as having more of an adverse effect than a change in noise levels in an area where existing levels are well below.
- 4.6.3 The Guidelines stop short of providing specific assessment criteria which developments should achieve but instead suggests that the methodology adopted should be selected on a site by site basis regarding relevant national and local standards. The Guidelines contain effect descriptors for changes in noise levels and for noise effect levels. These are summarized in Table 4 below

Table 4. IEMA Guidelines effect descriptors

Effect Descriptors	
Very substantial	Greater than 10 dB LAeq change in sound level perceived at a receptor of great sensitivity to noise
Substantial	Greater than 5 dB LAeq change in sound level at a noise sensitive receptor, or a 5 to 9.9 dB LAeq change in sound level at a receptor of great sensitivity to noise
Moderate	A 3 to 4.9 dB LAeq change in sound level at a sensitive or highly sensitive noise receptor, or a greater than 5dB LAeq change in sound level at a receptor of some sensitivity
Slight	A 3 to 4.9 dB LAeq change in sound level at a receptor of some sensitivity
None/Not Significant	Less than 2.9 dB LAeq change in sound level and/or all receptors are of negligible sensitivity to noise or marginal to the zone of influence of the proposals

4.6.4 The Guidelines are not prescriptive as to how a noise impact assessment should be carried out, and allow assessors to consider factors such as frequency spectra, days and times of operation, frequency of operation and any other factor which allows the noise to be assessed in context.

#### 4.7 Proposed Assessment Criteria

4.7.1 Due to the type of noise complained of, which contains tonal and potential modulation elements, a relative assessment approach detailed in BS4142 and absolute LAeq,T levels contained within the BS8233 and NR Kosten & Van Os method and a examination of any change in level are appropriate for evaluation purposes.

4.7.2 Table 5 provides a summary of the proposed assessment criteria and significance thresholds that will be applied for assessment purposes and have been used along with statutory nuisance objective tests detailed in Section 3 to form an opinion on, if a statutory nuisance exists or is likely to occur or recur.

Table 5. Proposed Assessment Guidance and Significance Thresholds

Guidance	Proposed Significance Threshold
BS 4142:2014+A12019	LAr,Tr-L90,T = Greater than 5dB dependant upon context
BS8233:2014	Internal noise from source above the Guideline criteria
Kosten & Van OS Community NR	Internal NR from source noise above the modified Noise Rating Criteria
Level Change IEMA:2014	Change in noise by more than 3dB

### 5. BACKGROUND NOISE SURVEY

5.1.1 A background noise survey was carried out from approx. 12:53 on Wednesday 22<sup>nd</sup> to 07:00 on Wednesday 29<sup>th</sup> September 2021. Noise monitoring was undertaken at location MP1

within the rear external amenity space of No 58 The Westering (photograph in Appendix A page 40) at a height of 1.5m and away from any reflecting surfaces, such as the garden shed.

5.1.2 The sound level meter was set to record all broadband and statistical A weighted metrics including L90 and Leq as well as and one third octave band measurements. Measurements were simultaneously made of 100m/s, 1 second and 1 minute time intervals. Measurements were obtained using the following instrumentation complying with the Type 1 specification of IEC 60651, IEC 61260 and IEC 61672;

- Bruel and Kjaer 2250 Integrated SLM Serial Nos 2827259
- Bruel and Kjaer 4231 Field Calibrator 3001533

5.1.3 The equipment was calibrated using a B&K 4231 field calibrator both before and after the survey and no significant drift was observed. Full calibration certificates are available upon request. Measurements were supplemented with timed audio recordings to enable post measurement analysis.

5.1.4 Weather conditions were considered favourable for the majority of the monitoring period, with very limited precipitation and low but variable wind speeds, however conditions during 27/09/2021 and from 9am to mid-night on 28/09/2021 were unfavourable with variable wind speeds with high wind gusts and periods of precipitation. These periods have therefore been removed from the background noise assessment. Further meteorological data is contained in Appendix C.

## 5.2 Noise Survey Results

5.2.1 Table 6 details the ambient and background noise measurement results at MP1 (rear garden of 58 The Westering) in the absence of radar noise for the 1hour day (07:00-23:00) and evening (19:00-23:00) periods and the 15minute night-time (23:00-07:00) situations as per the guidelines in BS4142:2014. Background noise level frequency distribution charts are presented in Appendix B.

5.2.2 The evening background frequency distribution (Figure 14) does not exhibit a normal distribution pattern and therefore 34dB has been used, after applying professional judgement, in the BS4142 assessment.

**Table 6. MP1 Ambient & Background Day & Eve & Night Results -58 The Westering - Long Term Sept 2021**

MP1	LAeq,1hour Range	LAeq,1hour Mode	LA90,1hour Range	LA90,1hour Mode
Day	35-59	46	32-44	38
Eve	35-52	39	32-38	37
	LAeq,15min Range	LAeq,15min Mode	LA90,15min Range	LA90,15min Mode
Night	24-50	34	25-45	32

5.2.3 Tables 7 details the 400 Hertz on third octave band ambient and background measurement results for location MP1.

Table 7. MP1 400 Hertz Ambient & Background Day, Eve & Night-Time Results -58 The Westering - Long Term Sept 2021

MP1	400Hz LZeq,1hour Range	400 Hz LZeq,1hour Mode	400 Hz LZ90,1hour Range	400 Hz LZ90,1hour Mode
Day	28-50	32	24-36	30
Eve	28-41	32	24-31	28
	400Hz LZeq,15min Range	400 Hz LZeq,15 min Mode	400 Hz LZ90,15min Range	400 Hz LZ90,15min Mode
Night	18-38	28	16-34	26

5.2.4 The noise climate around the site consists of distant traffic noise, periodic airport mobile and static plant and equipment noise at various locations, including periods of high noise from aircraft engine testing within a ground running enclosure (GRE), and aircraft taking off and landing.

A further background survey was undertaken at MP8 (see location map Figure 2 on page 23) regarding the H17 proposed relocation of the radar tower and this is discussed further in Section 10 of this report.

## 6. RADAR NOISE ASSESSMENT

6.1.1 Following the initial attended noise survey undertaken in September 2021 it was considered necessary to undertake further assessment closer to the H16 radar noise in order to more accurately establish the impact and effect from the H16 radar motor noise at residential receptors in the vicinity to it.

6.1.2 Therefore a further survey, both attended and unattended, was undertaken on Wednesday 10<sup>th</sup> November 2021. Measurements were undertaken at various positions at residential receptors, close to the radar tower, and inside and outside the radar motor cabin enclosure, replicating those previously undertaken by Noise Consultants Ltd surveys. Measurements were also undertaken with radar turned off and on during the day and also for an hour period between 10pm to 11pm when background and ambient sound levels had reduced.

6.1.3 The weather conditions during the November survey were more conducive for assessment with very still wind conditions, cloud cover 6 to 8 Oktas and no precipitation during the assessment periods, although there had been some rain in the morning before the assessment started with some wet road conditions, which dried out during the day and evening.

6.1.4 Audio recordings were enabled throughout the assessment period with audio recording set at 16bit high resolution and the peak recording level set according to the environment the measurements were undertaken within. Measurement locations are detailed in Table 8 and Figure 4 below.

Table 8. Measurement Locations

Location	Description
MP1	Background Survey 1 (from 22/09/2021) - End of rear garden of 58 The Westering
MP2	Front garden of 58 The Westering (10/11/2021)
MP3	Front First Floor Bedroom 58 The Westering (10/11/2021)
MP4	24m from base of radar (LHS) (10/11/2021)
MP5	24m from base of radar (RHS) (10/11/2021)
MP6	Various measurements made inside and outside the motor room of radar at height of 33/35m.
MP7	Background Survey 2 (from 01/11/2021) - Field 200m from H16 Radar ( to the south west between Barnes Close / Barnwell Drive)
MP8	Boundary of residential properties within same field as above. (background noise survey)

Figure 4. Measurement Location Map



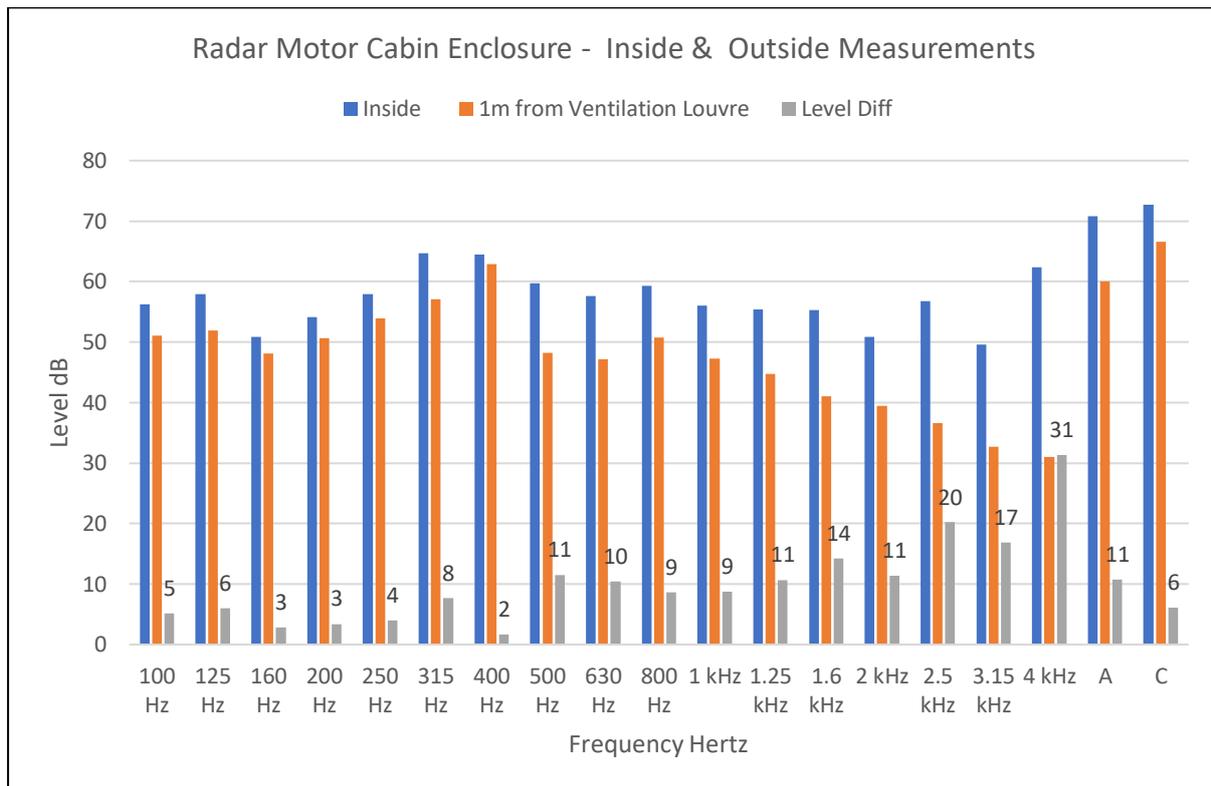
## 6.2 Radar Source Noise Level Assessment

6.2.1 Measurements were undertaken inside and outside of the H16 radar motor enclosure (MP6) for short periods, representative as close to source and are detailed in Table 9 below and Figure 5 below.

Table 9. Radar Motor Room Assessment (MP6) Table

Location	LAeq dB(A)	400Hz dB(Z)
Internal Motor Enclosure	71	65
1m from motor enclosure louvre (external)	60	63
<b>Level Difference</b>	<b>11</b>	<b>2</b>
Internal Motor Enclosure	71	65
1m from motor enclosure door (external)	57	55
<b>Level Difference</b>	<b>14</b>	<b>10</b>

Figure 5. Radar Motor Cabin Enclosure Inside & Outside Frequency Spectrum Comparison



6.2.2 The measurements indicate that the measured level difference from inside to outside provides a 11 to 14 dB(A) reduction at the ventilation louvre and enclosure door respectively and a 2 to 10 decibel reduction in the 400 Hertz one third octave band level. Discussion with Noise Consultants Ltd indicate that the measurements are consistent with those undertaken by Hoare Lea (consultants also working for Marshalls Airport advising on retrospective mitigation measures) during their most recent noise survey.

6.2.3 The relatively minimal measured sound level reduction in the 400 Hertz one third octave band at 1m from the ventilation louvre of the motor enclosure is considered potentially to be the main source of the tonal noise that residents have complained of and it should be possible through acoustic engineering solutions to improve the sound level reduction performance of the ventilation louvre overall and specifically at 400 Hertz. It is recommended that specialist acoustic engineer is consulted to discuss the practicability of such

improvements, as this will have implications regarding potential Best Practical Means (BPM) Defence. Suggested acoustic engineering expert Richard Coleman of [Acoustical Control Engineers Ltd](#)

6.2.4 Further specific narrow band analysis of the tonal element of the noise is presented in Figures 6 and 7 below and indicates a tonal component at 378.1 Hertz at 1m from the louvre and internally within the first floor bedroom of 58 The Westering, this is consistent with the findings of both the airports' and residents' acoustic consultants.

Figure 6. FFT Analysis 1m from Ventilation Louvre

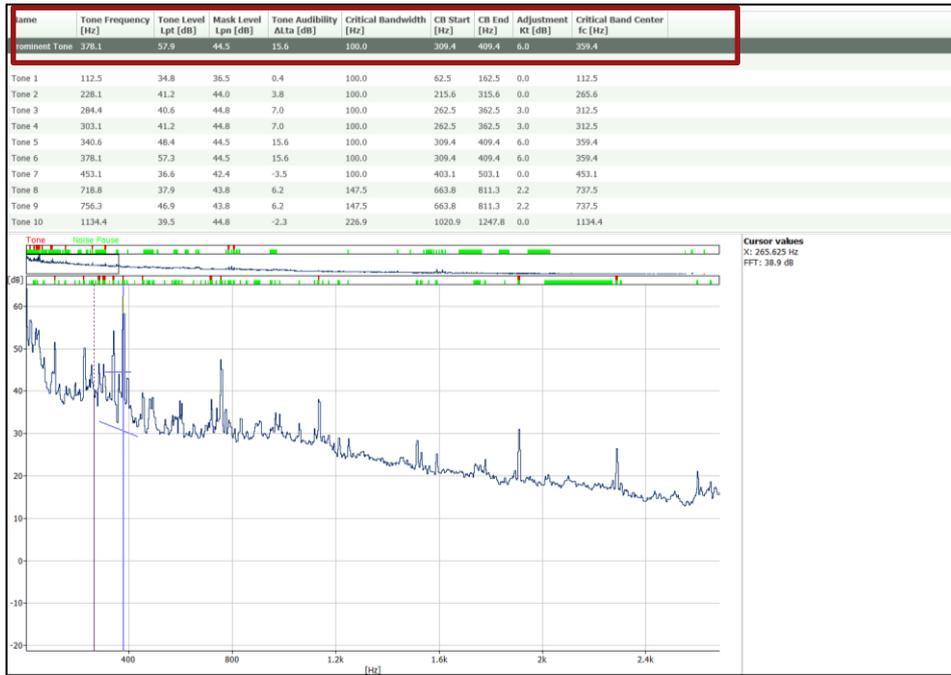
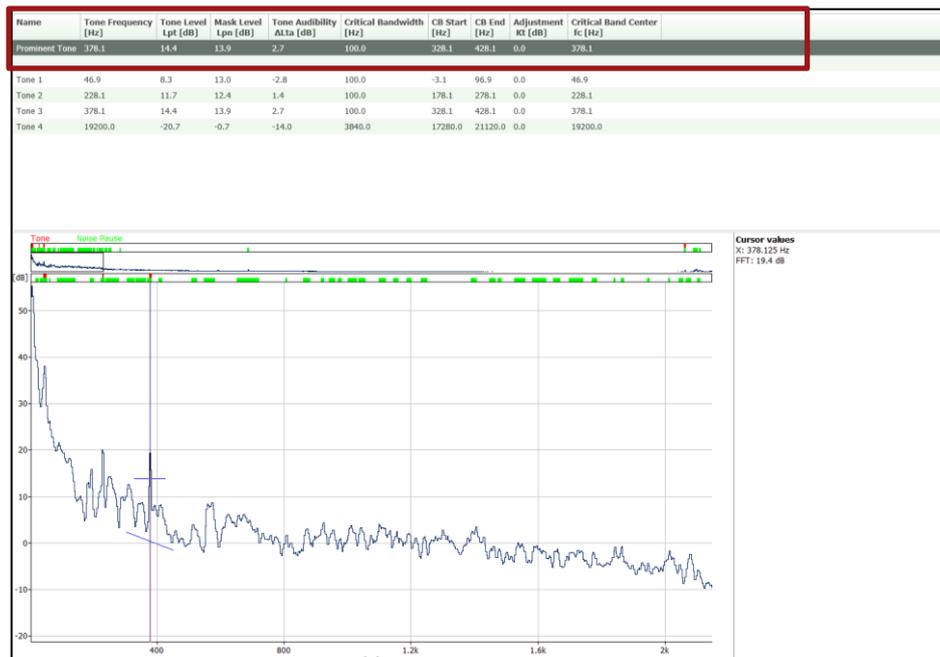


Figure 7. FFT Analysis FF Bedroom 58 The Westering



### 6.3 Noise Mitigation Effect

- 6.3.1 Table 10 below compares the pre second stage and post second stage of mitigation works as measured sound levels at MP4, 24m from the radar base and MP2, outside 58 The Westering. The pre second stage mitigation measurements have been taken from Table 4 of the Noise Consultants Ltd report reference J1133A/1F1 dated 11<sup>th</sup> February 2021.
- 6.3.2 The measured level difference indicates a 4dB(A) to 12dB(A) measured level difference and a 8dB to 13dB level difference in the 400 Hertz one third octave band. It is clear from the NCL report that the 400 Hertz component of the measured level was dominant with the radar on situation (over 10dB higher radar on) therefore the dominant tonal feature. Therefore it is evident that there has been a significant noise level reduction in the 400 Hertz one third octave band of over 10 decibels, which will equate to a perceived halving of the 400 Hertz tonal noise level with the pre and post mitigation situations.
- 6.3.3 It is less clear how this has resulted in the change in LAeq,T measured noise level as the difference between radar on /off at MP2 in the NCL report was less than 2dB and there is no indication of L90 metrics which may have provided further information to establish a more accurate level change.

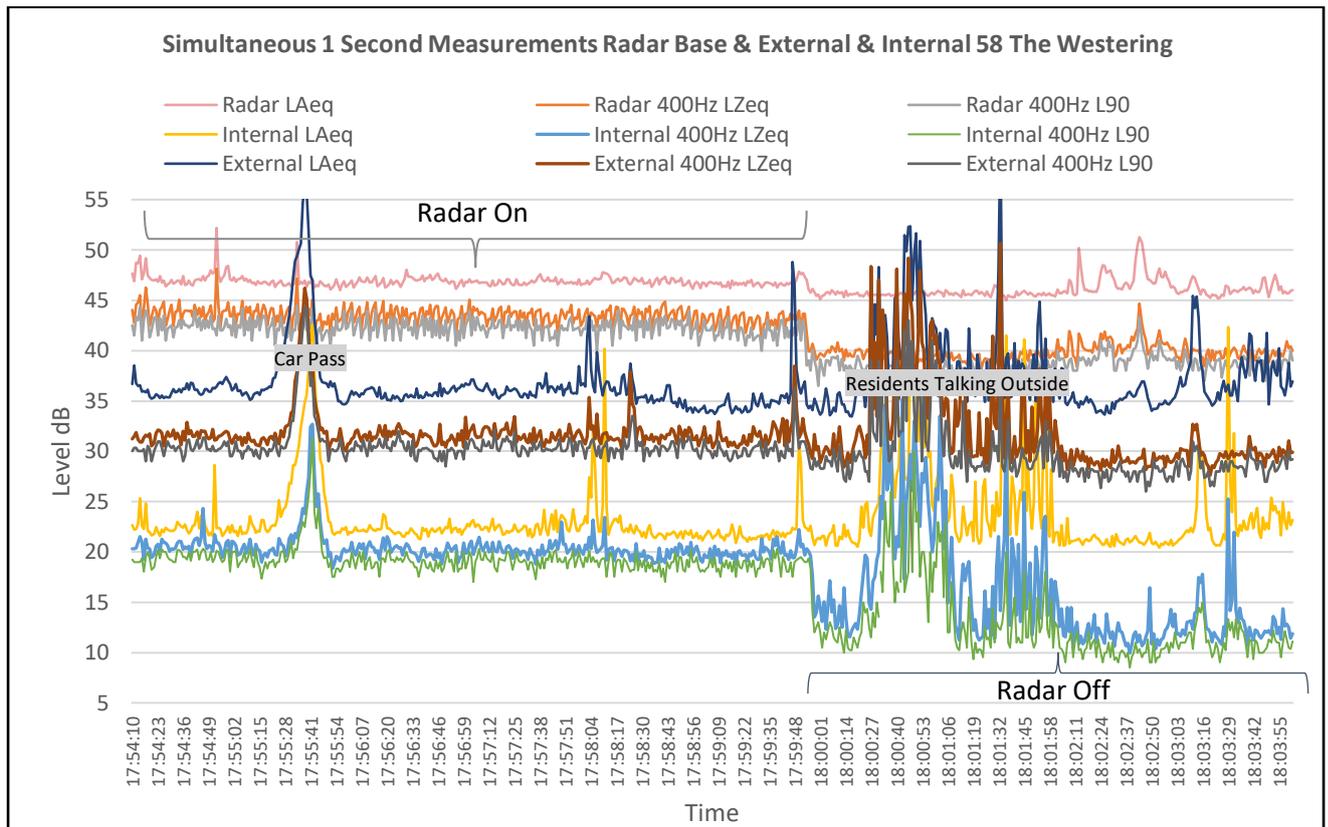
**Table 10. Comparison of Pre and Post (Second Stage) Mitigation Measured Noise level at MP2 and MP4**

Location	LAeq	400Hz LZe <sub>q</sub>
Radar 24m Pre Mitigation	49	51
Radar 24m Post Mitigation	45	43
Measured Level Difference	4	8
58 The Westering Pre Mitigation	44	42
58 The Westering Post Mitigation	32	29
Measured Level Difference	12	13

### 6.4 Residential Noise Survey Results -November 2021

- 6.4.1 Figure 8 below presents simultaneous 1 second measurements undertaken at the following locations from 17:54 to 18:04 on Wednesday 10th November 2021. The radar was switched off at approximately 18:00
- MP5 24m from the radar base,
  - MP3 internally within the first floor bedroom (window partially open) and
  - MP2 externally on the front garden area of 58 The Westering.

Figure 8. Simultaneous 1 Second Measurements Radar Base & External & Internal 58 The Westering



6.4.2 Table 11 below presents the representative measured level for the three locations with the radar on and radar off situations

Table 11. Comparison of Measurements Radar On Radar Off 18:00

	Radar RHS MP5				58 Westering External				58 Westering Internal			
	LAeq	LA90	400Hz LZeQ	400Hz L90	LAeq	LA90	400Hz LZeQ	400Hz L90	LAeq	LA90	400Hz LZeQ	400Hz L90
Radar On	47	46	44	42	36	35	32	30	23	22	20	19
Radar Off	46	45	39	38	35	33	31	28	21	20	12	10
Level Diff	1	1	5	4	1	2	1	2	2	2	8	9

6.4.3 The measurements indicate that there is a minimal sound level reduction of between 1 to 2 decibels in the LAeq and LA90 metrics between the radar on/off situations at all three locations.

6.4.4 There is a more prominent sound level reduction in the 400 Hertz Leq & L90 one third octave bands for measurements undertaken at the radar base of 4 to 5 decibels and internally at 58 The Westering of 8 to 9 decibels with a less prominent change in level at the external monitoring location of 2 to 1 decibels in 400 Hertz Leq & L90 respectively. Although the relative level difference internally may equate to a near perceived doubling of the 400 Hertz level, the absolute level is only 20dB which is just over 10 decibels above the threshold of hearing for 400 Hertz and is considered to be a relatively low level unlikely to be considered a significant adverse impact.

6.4.5 Aural assessment during attended measurements and analysis of the audio recordings indicated that H16 radar motor noise was clearly audible with a prominent mid tone feature at the MP5 radar base location. Radar noise was audible at a lower level at the external location at MP2 58 The Westering with the tonal component of the noise distinctive and audible but at relatively low level. The acoustic environment both before and after the radar was switched off, was relatively quiet with some distant traffic noise and periodic neighbour noise including passers by and local traffic. Noise from the airport was also periodically audible including vehicle movements. Aural assessment within the first floor bedroom indicated that the tonal component of radar noise was just audible above the prevailing acoustic environment, however this was at a low level and the councils EHO Greg Kearney reported that he had to concentrate to distinguish the radar noise against the underlying ambient noise which I concurred with. Comparison between attended aural assessment and aural audio recording analysis indicated that the radar noise was more distinctive during attended assessment compared to audio play back, even at increased amplification. There was periodic noise from household activities during the assessment period, however the bedroom acoustic environment was considered to be typically very quiet.

6.4.6 Figure 9 below presents the 1 second time profile from 21:57 to 22:05 at MP3 inside within the first bedroom 58 The Westering (window partially open) when the Radar was switched on at 22:00. Figure 10 presents the same time period for MP2 external front drive area of 58 The Westering and Table 12 presents a comparison of measured levels with the radar on and off situations during a representative minute during this time period. Note that levels fluctuated by +/-1dB in the three one minutes periods before and after the radar was turned on and it is considered that Table 12 is representative of the overall change in noise level effect.

Figure 9. MP3 First Floor Bedroom 58 The Westering Time Profile of Radar 21:57 too 22:05

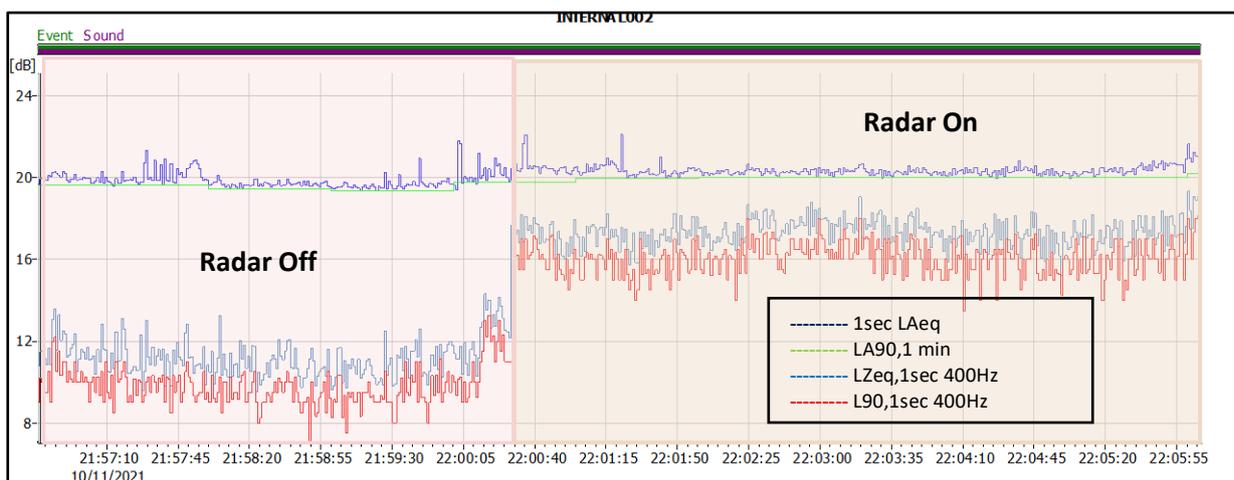


Figure 10. MP2 External Front Garden 58 The Westering Time Profile 21:57 to 22:05

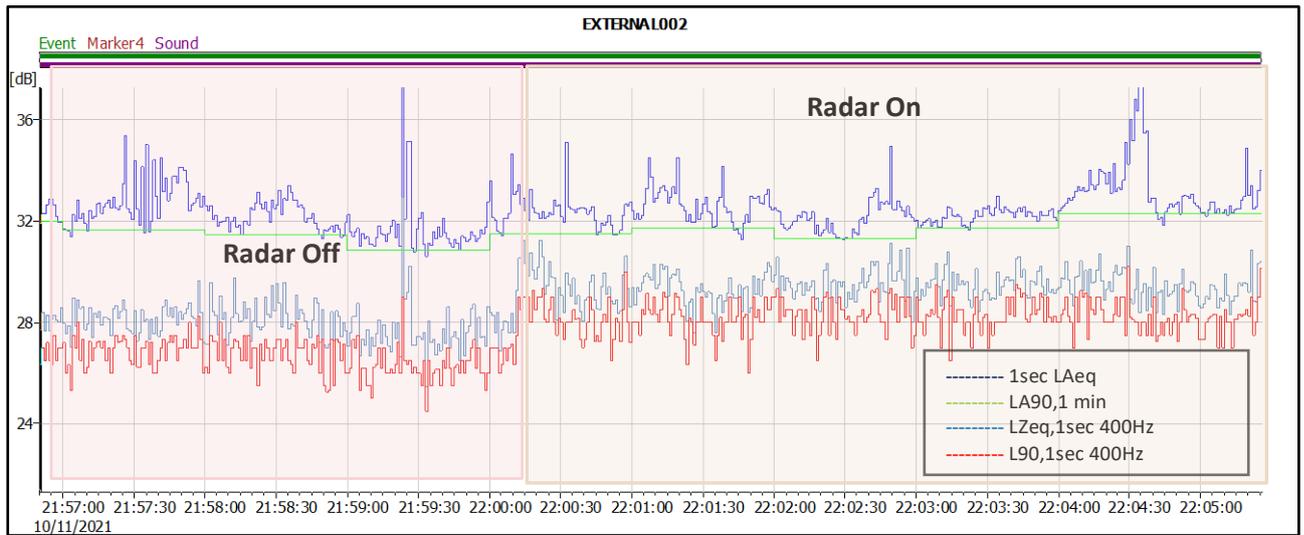


Table 12. Comparison of Measurements H16 Radar Off and On 22:00

	58 Westering External					58 Westering Internal				
	LAeq	LA90	400Hz LZeq	400Hz L90		LAeq	LA90	400Hz LZeq	400Hz L90	
Radar On	32	32	29	27		20	20	18	16	
Radar Off	32	32	28	27		20	19	11	9	
Level Diff	0	0	1	0		0	1	7	7	

6.4.7 Attended aural assessment during this time indicated that within the first floor bedroom assessment was similar to the earlier in person assessment, with the tonal component of radar noise audible above the prevailing acoustic environment, however this was at a low level and concentration was required to distinguish the radar noise against the underlying ambient noise. Externally the tonal component of the radar noise was perceptible but less prominent due to greater contribution to the perceived sound level from other ambient noise sources. Aural audio analysis indicated that the radar noise was more distinctive in person compared to audio replay, even at increased amplification. There was periodic noise from household activities during the assessment period, however the bedroom acoustic environment was considered to be typically very quiet.

## 7. ASSESSMENT OF H16 AND PROPOSED H17 RADAR NOISE

### 7.1 BS4142 Assessment

7.1.1 A BS4142 assessment of the daytime, evening and night-time situations have been undertaken and the results presented in Table 13 below. Background measurements undertaken from the September survey (MP1 rear garden of 58 The Westering) have been applied for day, evening and night and a separate BS4142 assessment applying the November evening background measurements (MP2 front drive 58 The Westering) also undertaken. Further detailed BS4142 assessment results are presented at Appendix B.

- 7.1.2 The difference between the measured level and the residual level at MP5 24m from the radar base (35m source height = 42m hypotenuse ) is only 2 decibels and therefore BS4142 suggests that measurements are undertaken closer to the source where there is less contribution from the residual level. However, measurements undertaken at 1.5m from the ventilation louvre indicated a level of 61dB(A) which equates to a MP2 receiver level at 142m of 21decibels, which is significantly below the measured level. It is therefore considered that other noise breakout attributable to the radar is contributing to the measured receiver level. This could be evaluated if it was possible to measure at a greater distance i.e. 10-15m from the radar motor cabin at a height of 35m. This is not practicable and therefore measurements at the radar base has been used for assessment purposes.
- 7.1.3 It is possible to validate the propagation by undertaking assessment of the 400 Hertz LZeq one third octave band level as this is 5dB higher when the radar is in operation and as such has less contribution from other extraneous noise from the airport. Applying residual contribution and distance propagation corrections, based on the hypotenuse to the radar motor housing and the distance to the MP2 receiver location of 142m, this equates to a level of 32dB 400 Hertz which is 4dB below the measured level, which also has a contribution from the residual level which was only 1 dB lower than the measured level. Therefore this gives a level of confidence in the propagation predictions from MP5 to the receiver location and specifically the 400 Hertz predictions.

Table 13. H16 BS4142 Assessment 58 The Westering (MP2).<sup>6</sup>

Situation	BS4142 Outcome $L_{Ar,Tr} - L_{A90,T}$	Significance of Outcome
Day	-4*	The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context
Eve	0* to +3*	
Night	+2*	

\*Longer term background survey applied (MP1 free field)  
 \*Shorter term background noise survey applied (MP2 free field)  
 Note 2dB character correction applied

- 7.1.4 The BS4142 outcome for the daytime situation indicates a rating level minus background level of -4dB. The outcome for the evening and night-time situations ranges from 0 to +3 dependent upon the background survey level applied. With respect to significance a rating level difference of equal to or less than the background level indicates a low adverse impact, which decrease in significance as the negative difference increases.
- 7.1.5 The evening and night-time outcome of +3 and +2 respectively, results in a significance outcome less than an adverse impact but higher than low significance.
- 7.1.6 BS4142 states Where the initial estimate of the impact needs to be modified due to the context, take all pertinent factors into consideration, including the following

<sup>6</sup> Further detailed BS4142 assessment results are presented at Appendix B

11 (1) Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night

11 (2) The character and level of the residual sound compared to the character and level of the specific sound. Consider whether it would be beneficial to compare the frequency spectrum and temporal variation of the specific sound with that of the ambient or residual sound, to assess the degree to which the specific sound source is likely to be distinguishable and will represent an incongruous sound by comparison to the acoustic environment that would occur in the absence of the specific sound. Any sound parameters, sampling periods and averaging time periods used to undertake character comparisons should reflect the way in which sound of an industrial and/or commercial nature is likely to be perceived and how people react to it

7.1.7 With regard to the above the absolute level of radar noise both measured and predicted is 32dB(A) at the receptor location and shows no level change with or without the radar in operation. There is some uncertainty with both measured and predicted level due to the contribution from residual noise at both the receptor and the proxy locations and it is likely that the absolute level may be marginally lower than 32 decibels. The absolute level is therefore considered to be relatively low for both daytime and night-time situations. With respect to the character of the radar noise compared to the residual noise character it is evident that there is a relatively large change in 400 Hertz L<sub>Zeq</sub> & L<sub>90</sub> one third octave band at the internal location, with the radar on and off situations, however, the absolute internal level at 400 Hertz is 21dB(A) with a Noise Rating Level of 21 and these are objectively low levels and therefore unlikely to cause significant adverse noise impact or any other unacceptable residual adverse impact.

## 7.2 Community Reaction to Criteria for External Noises.

7.2.1 Assessment of the internal Noise Rating Level against the NR Community Reaction criteria is presented in Table 14 below.

Table 14. H16 Noise Rating (NR) Community Reaction Table

Location	NR	NR Guideline Day	NR Guideline Night	Outcome
58 The Westering First Floor Bedroom (MP3 window Partially Open	21	30	25	Below Adverse Noise Impact level

## 7.3 BS8233 Assessment

7.3.1 Assessment against the absolute guideline levels in BS8233:2014 is presented in Table 15 below.

Table 15. H16 BS8233 Assessment (58 The Westering FF Bedroom)

Location	L <sub>Aeq</sub>	Guideline Day L <sub>Aeq,T</sub>	Guideline Night L <sub>Aeq,T</sub>	Outcome
58 The Westering First Floor Bedroom (window partially open 12-15dB attenuation)	17-20	35	30	Below Maximum Guideline Level

**7.4 Assessment at the Closest Property (22 Sunnyside)**

- 7.4.1 Cambridge City Council were unable to facilitate an attended assessment at the closest property to the radar tower, at No 22 Sunnyside and it is understood that these residents have not made a specific complaint regarding the tonal radar noise. However, it is possible to predict the noise at this location using measurement data gathered during the assessment and the background noise measurements provided by the applicants noise consultant and Noise Consultants Ltd for the planning consultation for relocation of the radar. Table 16 below details the outcome of the BS4142 assessment at this location. Further detailed BS4142 assessment results are presented at Appendix B
- 7.4.2 A 4dB character correction has been applied to this situation as the tonal noise from the H16 Radar was clearly audible at the perimeter of the site with 22 Sunnyside. A 3dB facade correction has also been applied to the background measurement results provided by Marshall’s acoustic consultants as the measurement position was within 1 meter of a façade. It may be argued that the effect of the location screened background levels from airport site, to some extent which may counteract the façade effect, however a worst case has been applied as the measurement position is not in strict accordance with BS4142 measurement guidelines.

Table 16. H16 BS4142 Assessment (22 Sunnyside)

Situation	BS4142 Outcome $L_{A,r,T} - L_{A90,T}$	Significance of Outcome
Day	+5	Indication of adverse impact dependent upon context
Night	+8	Indication of adverse impact dependent upon context

- 7.4.3 Predicted internal noise assessment comparison against BS8233 absolute guideline levels is detailed in Table 16 below. It is not possible to accurately predict, with the data available, the internal Noise Rating level without measurement.

Table 17. H16 BS8233 Assessment 22 Sunnyside

Location	Estimated L <sub>Aeq</sub>	Guideline Day	Guideline Night	Outcome
22 Sunnyside Internal (window partially open 12-15dB attenuation)	25-28	35	30	Below Maximum Guideline Level

## 8. OPINION SUMMARY

8.1.1 Table 18 below details the summary of the H16 Radar noise impact assessment against the proposed significance criteria for external and internal day time, evening and night-time situations at Nos 58 The Westering. This indicates that none of the proposed significance thresholds of the relevant criteria have been exceeded and therefore the outcome of the objective assessment indicates radar noise represents an insignificant to a low adverse noise impact at this location.

**Table 18. H16 Radar Noise Assessment Summary Table 58 The Westering**

Situation	EXTERNAL		INTERNAL		Significance Outcome
	BS4142	Noise Change	Community NR	BS8233	
Day /Eve	-4 to +3	Up to 2dB	-9	-15 to - 12	Indication of insignificant to low adverse noise
Night	+2		-4	-10 to -7	

8.1.2 The aural assessment during attended measurements and analysis of the audio recordings indicates that radar motor noise is clearly audible with a prominent 400 Hertz one third octave band mid tone feature at the radar base location. Radar noise is also audible but, at a lower level at the external location at 58 The Westering with the tonal component of the noise audible but at a relatively low level and not sufficiently distinctive to immediately draw the listeners attention to it. Aural assessment within the first floor bedroom indicated that the tonal component of radar noise was just audible above the prevailing acoustic environment, however this was at a low level and considered that it would be unnecessary for the average person to modify their behaviour such as closing window or turning the radio or television up to overcome the tonal feature of the noise. Moreover, both myself and the EHO at CCC had to concentrate to fully distinguish the tonal element of the noise.

8.1.3 However, at the closest property to the radar tower (22 Sunnyside) the noise assessment predictions indicate that that radar noise immissions may have the potential to cause a greater degree of adverse impact externally and it is reasonable to assume that internal tonal noise would be elevated to a similar degree.

8.1.4 It is my professional opinion that the noise from the operation of the H16 radar tower is unlikely to cause a statutory nuisance to residents at 58 The Westering or other residential properties at a similar or greater distance from the radar tower. Noise from the operation of the radar tower however, has the potential to cause a greater degree of adverse impact to residents who live closer to it. However, without further investigation at and within theses receptor properties the likely existence or occurrence of a statutory nuisance under Section 79 of the Environmental Protection Act Part III 1990 cannot be confirmed.

## 9. BEST PRACTICABLE MEANS (BPM) DEFENCE

- 9.1.1 There is evidence (as detailed within and comparison of the data contained within the NCL report ref J1133A/1F1 dated 11/02/2021) that indicates that noise mitigation works have been undertaken to reduce noise immissions from the radar motor cabin enclosure and these have resulted in a measured level reduction, specifically at 400 Hertz one third octave band, which is the dominant tonal feature of the noise and that which residents have complained about and has caused disturbance to them.
- 9.1.2 The relevant date for deciding whether BPM have been used, is the date on which any abatement notice is served. As the council have not yet served such a notice, any works which have been undertaken by the Airport to mitigate the situation would be taken into account by the courts, upon any appeal of the notice, or for any subsequent prosecution for failure to comply with such an abatement notice.
- 9.1.3 It is also evident that the sound reduction performance of the radar motor enclosure, specifically at 400 Hertz, is still relatively low and it may be possible and practicable to enhance the performance of the ventilation louvre and so reduce the tonal component of the received noise immissions. This may also indicate that the noise breakout from the noise enclosure was only one element of the noise associated with the use of the radar, but it has been difficult for all consultants concerned thus far, to accurately determine all aspects of the radar noise due to its height and practicality of measuring closer to the source.
- 9.1.4 I am not an acoustic noise control engineering expert and therefore suggest that a consultancy is engaged to discuss this aspect of the case, as necessary, to inform CCC if further works are practicable in the current situation.
- 9.1.5 It is also understood that the H16 radar is currently not in full operation and the Airport have committed to only run commissioning tests for periods between 8am and 6pm and these are limited in frequency. Therefore, it could be argued that currently there is no 'state of affairs' to determine the existence of a statutory nuisance. However, if this position was to change due to failure of the existing AR15 radar it could be reasonably foreseen that a statutory nuisance 'could be established' if an ongoing state is considered to exist. This is a question for the CCC's legal advisors.
- 9.1.6 Ultimately it is up the courts to decide if Best Practicable Means have been undertaken to prevent or counteract the effects of the nuisance.

## 10. H17 RADAR NOISE ASSESSMENT

10.1.1 Marshall Group Properties Ltd have made a planning application reference 21/03224/FUL for

*Site West of Hangar 17 (Proposed Replacement Radar)*

*Site West of Hangar 16 (Radar to be relocated)*

*Site on Southside of the Airport known as AR15 (Radar to be removed).*

Full details of the application can be found using the hyperlink

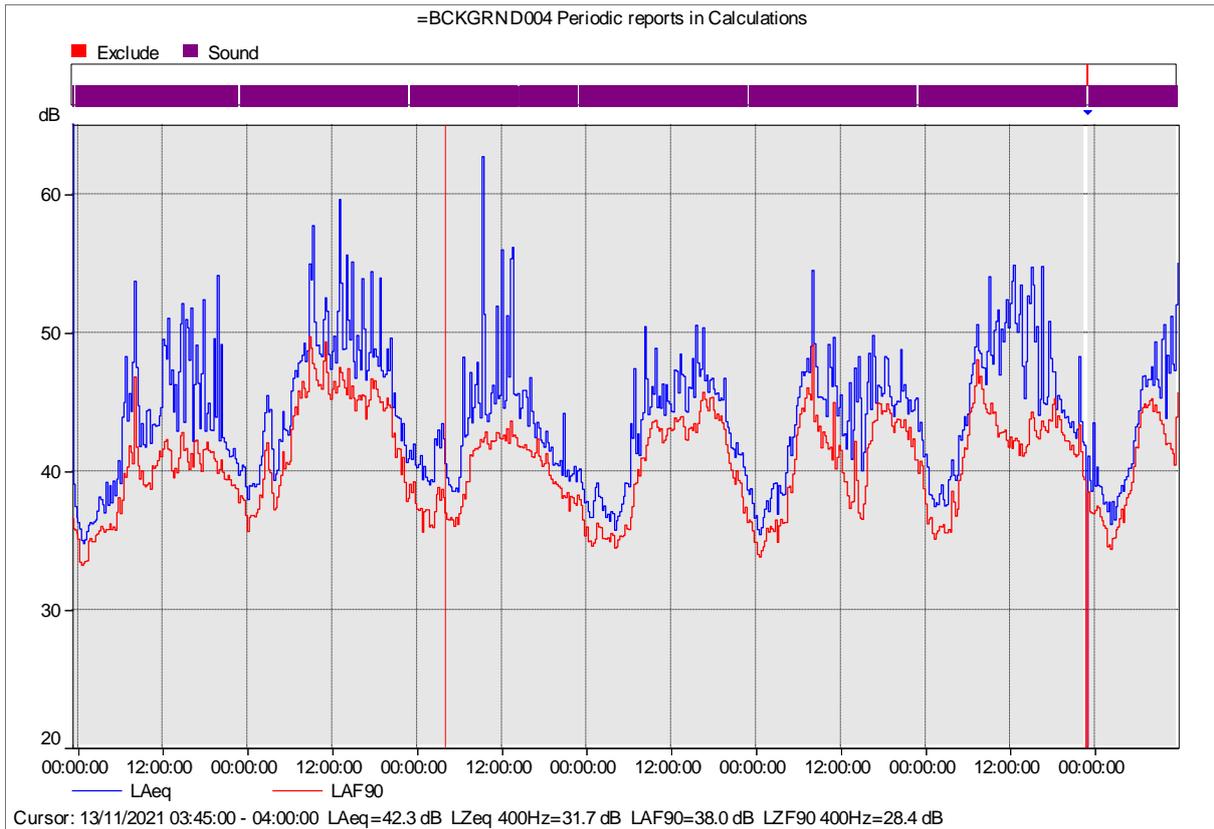
<https://applications.greatercambridgeplanning.org/online-applications/simpleSearchResults.do?action=firstPage>

10.1.2 CCC have requested that I provide an opinion on the proposed relocation of the radar to the H17 location. The following section of the report details the results of a background noise survey undertaken at location MP8 and the outcome of the BS4142 assessment applying the results from the background noise survey and measurements made at the base of the radar and predicted back to location MP8.

10.1.3 A background noise survey was undertaken from mid-night on the 11/11/2021 to 11:45am on the 17/11/2021. The H16 radar was in operation from 8am to 6pm on Thursday 11<sup>th</sup> and Friday 12<sup>th</sup> November 2021 and these times have been excluded from the background noise survey. The location of MP8 measurement position is identified on the Google aerial photograph at Figure 4 and was on the perimeter of the field with the back of properties on Barnes Close/Peverel Rd. The microphone was at a height of approx.1.5m and in a free field location at least 3.5m way from reflecting surfaces.

10.1.4 Figure 11 presents 15minute LAeq and L90 measurements results from mid-night on the 11/11/2021 to 11:45am on the 17/11/2021. The result follow a typical diurnal pattern with the lowest background and ambient noise levels typically between 00:45 and 04:00. There are two periods of night time elevated levels, the first is from 02:15 to 03:15 on 12/11/2021, analysis of periodic audio recordings indicates that noise is due to an unknown mechanical noise source as well as wind rustling leaves. The second is from 02:30 to 03:45 on 13/11/2021, analysis of audio recordings did not identify any specific source, however there was an increase in wind causing rustling of leaves in trees. These two periods have therefore been excluded from the background noise assessment. Daytime measured levels on Friday 12<sup>th</sup> November were also periodically higher when compared to other days, analysis of the periodic audio recordings indicates periodic helicopter noise from the airport and construction vehicle noise, source location unknown. (Friday daytime results have been excluded due to radar being in operation)

Figure 11. H17 Radar – MP8 LAeq,15min & L90,15min Time Profile (11/11/2021 to 17/11/2021)



10.1.5 Table 19 below details the ambient (LAeq,T) and background (LA90,T) noise measurement results at MP8 in the absence of radar noise for the 1hour day and evening periods and the 15minute night-time situations as per the guidelines in BS4142:2014. Further background frequency distribution charts are presented in Appendix B.

10.1.6 The evening background frequency distribution (Figure 17) does not exhibit a normal distribution pattern and therefore 38dB has been used, after applying professional judgement, in the BS4142 assessment

Table 19. MP8 Ambient & Background Day & Eve & Night Results

MP8	LAeq,1hour Range	LAeq,1hour Mode	LA90,1hour Range	LA90,1hour Mode
Day	40-57	45	37-47	43
Eve	40-50	45	37-45	43
	LAeq,15min Range	LAeq,15min Mode	LA90,15min Range	LA90,15min Mode
Night	35-48	39	33-45	36

10.1.7 Table 20 below details the 400Hertz on third octave band ambient (LZeq,T) and background (LZ90,T) measurement results for location MP8.

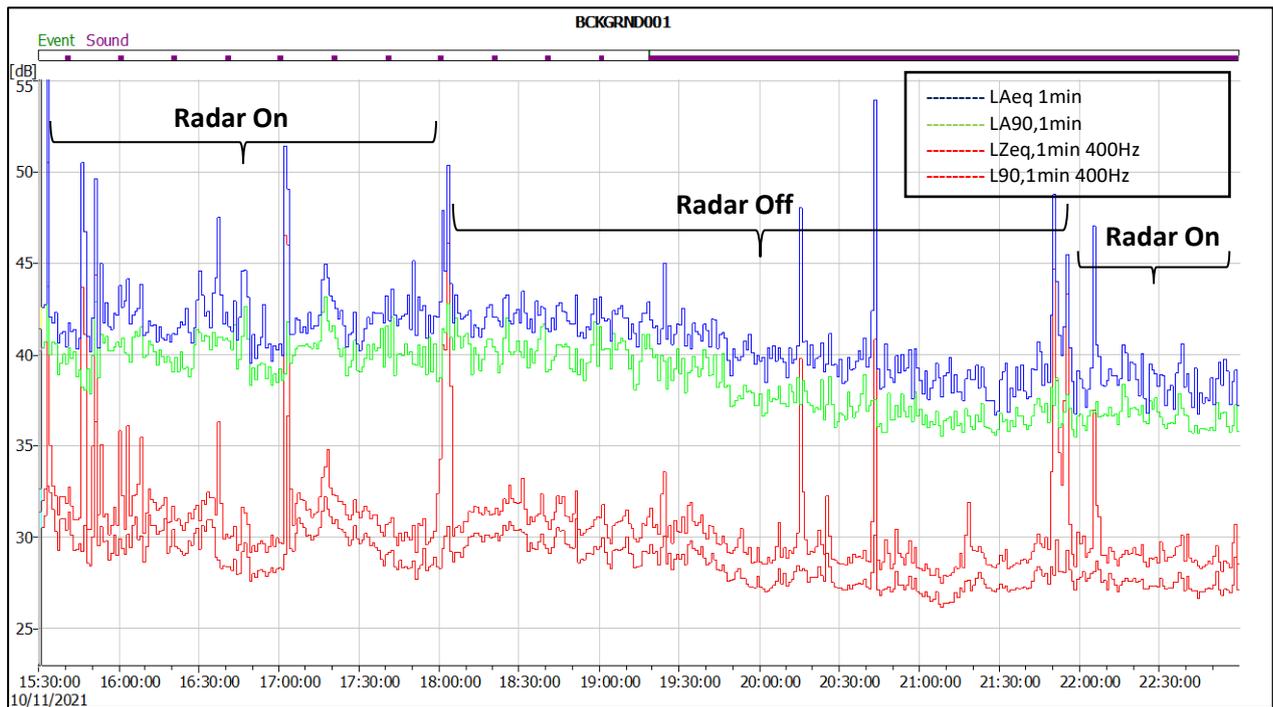
# Cambridge City Airport Radar Noise - Statutory Nuisance & Planning Assessment

**Table 20. MP8 400Hertz Ambient & Background Day & Eve & Night Results**

MP1	400Hz LZeq,1hour Range	400 Hz LZeq,1hour Mode	400 Hz LZ90,1hour Range	400 Hz LZ90,1hour Mode
Day	28-47	32	24-38	30
Eve	28-43	36	24-34	31
	400Hz LZeq,15min Range	400 Hz LZeq,15 min Mode	400 Hz LZ90,15min Range	400 Hz LZ90,15min Mode
Night	25-41	31	23-37	28

10.1.8 Figure 12 below presents the 1 minute LAeq, LA90, 400 Hertz LAeq and 400 Hertz L90 time profile from 15:30 to 23:00 at location MP7 (200m from H16). The measurement results indicate that there is no measurable level change with the radar on and off situations which was confirmed by attended aural assessment at and before 18:00 and 23:00, where the radar noise was completely inaudible and the acoustic environment dominated by noise from the paint abatement plant at Marshalls Airport and local traffic noise on the A1134. The reduction in level over time is likely associated with the reduction in traffic flow into the evening from this arterial road and the corresponding reduction in traffic noise.

**Figure 12. MP7 1minute Time Profile Radar On /Radar Off**



## 10.2 H17 BS4142 Assessment

10.2.1 A BS4142 assessment of the daytime, evening and night-time situations, replicating the distance from the proposed H17 radar tower relocation, has been undertaken and the results presented in Table 21 below. The results from the background noise survey for MP8, detailed in Table 19 above, have been applied for assessment purposes. Further detailed BS4142 assessment results are presented at Appendix B.

Table 21. MP8 - H17 BS4142 Assessment Outcome

Situation	BS4142 Outcome $L_{Ar,Tr} - L_{A90,T}$	Significance of Outcome
Day	-14	Indication of low adverse impact depending on context
Eve	-9	
Night	-7	

10.2.2 The results indicate a rating level minus background level of between -14 to -7 for day, evening and night respectively. BS4142 states

*Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.*

10.2.3 BS4142 states Where the initial estimate of the impact needs to be modified due to the context, take all pertinent factors into consideration, including the following

*11 (1) Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night*

*11 (2) The character and level of the residual sound compared to the character and level of the specific sound. Consider whether it would be beneficial to compare the frequency spectrum and temporal variation of the specific sound with that of the ambient or residual sound, to assess the degree to which the specific sound source is likely to be distinguishable and will represent an incongruous sound by comparison to the acoustic environment that would occur in the absence of the specific sound. Any sound parameters, sampling periods and averaging time periods used to undertake character comparisons should reflect the way in which sound of an industrial and/or commercial nature is likely to be perceived and how people react to it*

10.2.4 With regard to the above the absolute level of radar noise it is predicted to be approx. 29dB(A) at the receptor location (MP8) which is significantly below the prevailing background and ambient acoustic conditions for daytime, evening and night time periods and shows no level change with or without the radar in operation. Aural assessment during the noise survey at MP7 approx. 200m from radar H16, indicated that the radar noise was completely inaudible in terms of absolute level and also regarding tonal components specifically at 400 Hertz. The time profile detailed in Figure 12 above for 400 Hertz LZeq and LZ90 1minute measurements indicates no level change between the radar on and radar off situations. There may be some uncertainty in BS4142 measurement outcome due to the use of the proxy location, however the negative level difference is large enough to indicate that there is confidence in the outcome of low adverse impact.

10.2.5 It is considered that the background and ambient prevailing conditions at location MP8 and for residents at Peverel Rd and Barnes Close are different and typically higher than those experienced by residents in The Westering and Sunnyside which are further away NE from the Airport boundary. This is due to the increased noise from local traffic on the A1134

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Barnwell Rd and noise emissions from the paint abatement plant at Marshalls Airport, which both legitimately form part of the background noise level.

- 10.2.6 Comparison against the Greater Cambridge Shared Planning – Sustainable Design and Construction: Supplementary Planning Document (SPD, 2020) Table 3.11: New Noise Generating Development - External Noise Standards for “nonanonymous noise” SPD (2020) Noise Generating Development – External Noise Standards for “non anonymous noise” is presented in Table 22 below and indicates that the daytime and evening BS4142 outcomes results in a “no significance risk” and a “no observable effect” level. The night-time BS4142 outcome results in “minimal significance of risk” and within the range of “no observable effect” to the “lowest observable adverse effect level”

**Table 22. MP8 -H17 BS4142 Outcome Comparison With GC SPD**

GREATER CAMBRIDGE SHARED PLANNING SPD					
<i>Situation</i>	BS4142 Outcome $L_{Ar,Tr} - L_{A90,T}$	Noise Significance Risk	Noise Significance of Effect	BS4142 Outcome $L_{Ar,Tr} - L_{A90,T}$	PLANNING ADVICE
<i>Day/Eve</i>	-14	NONE	NOEL	$L_{Ar,Tr} - L_{A90,T} \leq -10$	Sound Is Likely To Be Inaudible And Have No Discernible Impact On Health Or Quality Of Life. No Objection From A Noise Perspective And No Specific Noise Measures Required.
<i>Night</i>	-7	MINIMAL	NOEL TO LOAEL	$L_{Ar,Tr} - L_{A90,T} > -10$ & $\leq -5$	Where the rating level of noise is below the Background noise level by at least 5dB, this Indicates that the proposed NGD is likely to be acceptable from a noise perspective. The LPA will seek this level of compliance in most noise sensitive areas and/or where there is a requirement to mitigate creeping background effects.

- 10.2.7 It is therefore considered that the relocation of the radar to H17 is unlikely to result in any unacceptable noise impact to the closest residential receptors in Peverel Rd and Barnes Close. For properties further away such as those on the southern side of Sunnyside and The Westerings the operational noise impact will be even lower due to the greater separation distance involved, and unacceptable adverse noise impact is not envisaged.

## 11. CONCLUSION

- 11.1.1 Three Spires Acoustics have undertaken an environmental noise and nuisance assessment of noise emissions from a radar tower, referred to as H16, at Cambridge City Airport, Newmarket Rd, Cambridge, CB5 8RX.
- 11.1.2 Two noise surveys have been undertaken in September and November 2021 to determine the noise emissions from the radar at source and at representative residential receptors in the vicinity of H16 radar tower and to determine the prevailing ambient and background noise levels at two locations which are relatively close to the radar tower. The noise surveys included attended and unattended measurements and were supplemented with audio recordings for post measurement analysis.
- 11.1.3 Relevant guidance and standards and significance criteria thresholds have been proposed and include both absolute, relative and change level criteria. Assessment against these standards and thresholds has been undertaken applying the measurement data obtained from the noise surveys. Aural assessment during attended measurements and also from analysis of audio recordings, has also been undertaken.
- 11.1.4 The outcome of the assessment at 58 The Westering, indicates that the radar noise immissions are below all the proposed significance criteria thresholds and therefore it is considered that objectively the radar noise does not cause an adverse or significant adverse impact. Aural assessment of the noise indicates that the noise is audible above the prevailing acoustic environment, however the noise is of a relatively low level and considered not sufficiently distinctive to immediately draw the receivers attention to it or result in significant modifying behaviour such as closing windows or increasing volume of TV or radio to mask out the noise.
- 11.1.5 However, as a full assessment was unable to be undertaken at the closest property to the radar tower (22 Sunnyside) a predictive assessment has been undertaken. This indicates that there is a likelihood that radar noise immissions may have the potential to cause a greater degree of adverse noise impact externally and it is reasonable to assume that internal tonal noise would be elevated to a similar degree.
- 11.1.6 It is my professional opinion, that the noise from the operation of the radar tower is unlikely to cause a statutory nuisance to residents at 58 The Westering or other residential properties at a similar or greater distance from the radar tower. Noise from the operation of the radar tower however, has the potential to a greater degree of adverse noise impact to residents who live closer to the radar tower. However, without further detailed noise level objective assessments at and within these closer receptor properties, including establishing representative background noise levels at these locations (levels are likely to be higher as closer to the Airport), the likely existence or occurrence of a statutory nuisance cannot be confirmed to a reasonable degree of confidence.
- 11.1.7 It is also my opinion that the noise mitigation measures provided by Marshalls Airport acoustic experts indicate that there has been significant reduction in noise from the

operation of the radar, specifically at 400 Hertz one third octave band, which is the dominant tonal feature of the noise and which residents have complained of and has caused disturbance to them.

- 11.1.8 It is also evident that the sound reduction performance of the radar motor cabin enclosure, specifically at 400 Hertz is still relatively low and it may be possible and practicable to enhance the performance of the ventilation louvre and so reduce the tonal component of the received noise immissions further. I am not an acoustic noise control engineering expert and therefore suggest that a consultancy is engaged to discuss this aspect of the case, as necessary, to inform CCC if further works are practicable.
- 11.1.9 However, when also considering statutory nuisance the current operation of H16 radar tower must be taken into account i.e. the radar tower is only currently operating as a back up to H15 radar and its use is limited in duration and frequency, with self imposed restrictions (8am to 6pm) implemented by Marshalls Airport. This however, is unlikely to be the long term situation due to obsolescence of H15 radar and eventually H16 could become the primary radar. Therefore it maybe argued that the current state of affairs does not amount to a statutory nuisance due to the current limited usage but there is a potential for a likely occurrence of radar H16 to give rise to a statutory nuisance at closer properties should there be a need to permanently use H16 following a failure or partial failure of H15. There is also the backdrop of the planning to relocate H16 to H17, however this may not be a consideration of nuisance as this is a separate legislative regime with no certainty of outcome. Ultimately it is up the courts to decide if Best Practicable Means have been undertaken to prevent or counteract the effects of the nuisance.
- 11.1.10 Regarding the relocation of the radar tower to location H17, the outcome of the noise assessment indicates that the background and ambient acoustic environment are different and higher than those experienced by residents in The Westering and Sunnyside. This is due to the increased noise from local traffic on Barnwell Rd A1134 to the west and noise emissions from the paint abatement plant at Marshalls Airport, on the corner of Hanger 17, which in my opinion both legitimately form part of the background noise level.
- 11.1.11 The objective assessment indicates that noise emissions from the proposed H17 radar location is unlikely to cause any unacceptable adverse or significant adverse noise impact and measurements showed no noise level change with the radar off/on situations. The aural assessment indicates that noise from the radar during the assessment was inaudible at approx. 200m when in operation.
- 11.1.12 It is therefore considered that the relocation of the radar to the H17 location is a suitable alternative to the current H16 location and the evidence indicates is very unlikely to result in adverse noise impact to closest residential properties in Barnes Close / Peverel Rd which will be approx. 200m from the proposed H17 radar. For properties further away such as those on the southern side of Sunnyside and The Westerings the operational noise impact of the proposed H17 radar will be even lower due to the greater separation distance involved, and unacceptable adverse noise impact is not envisaged.

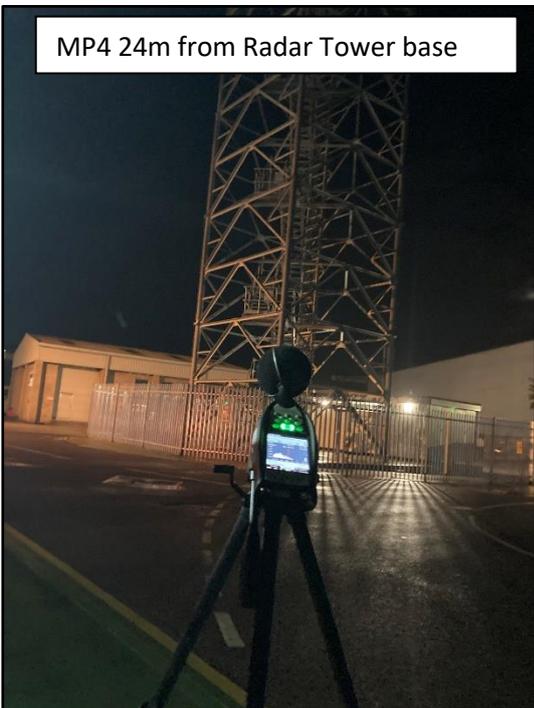
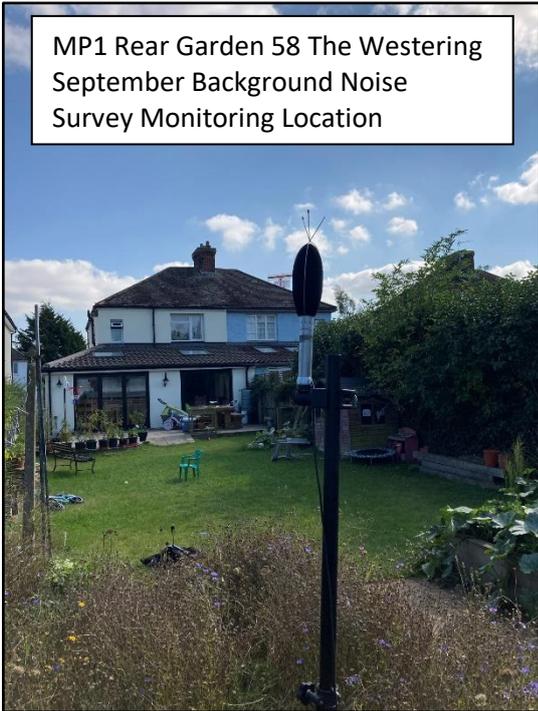
**Expert's declaration.**

I confirm that the evidence presented in this report is objective, unbiased and within my expertise. I understand that my overriding duty is to the court and that this duty overrides any obligation to the person from whom I have received instructions or by whom I am paid. I have prepared this report in accordance with that understanding. The evidence which I have prepared is true and is given in accordance with the guidance of my professional institution.

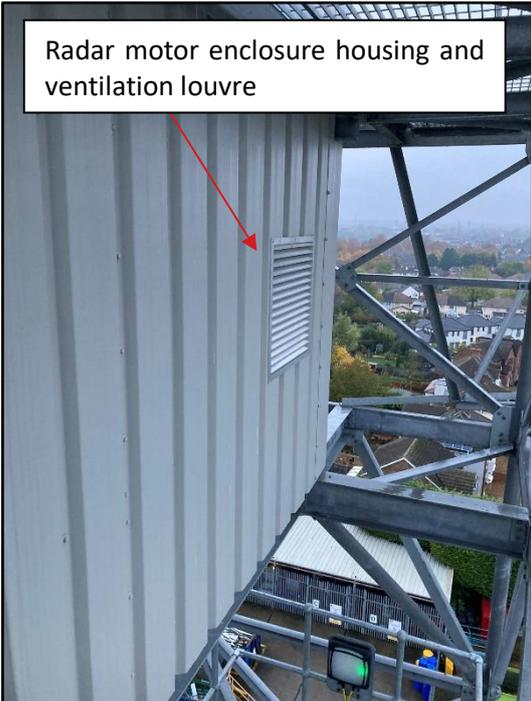
**Statement of truth.**

I confirm that I have made clear which facts and matters referred to in this report are within my own knowledge and which are not. Those that are within my own knowledge I confirm to be true. The opinions I have expressed represent my true and complete professional opinions on the matters to which they refer.

Appendix A: Photographs



NB- SLM was at least 1m from window  
(photograph visual parallax distorts distance  
perception)



## Appendix B: Detailed BS4142 Assessment Calculations

Table 23. H16 BS4142 -58 The Westering (Day) – September Background Survey Results

58 The Westering MP1 BS4142 Assessment Day	Results	Clause	Detail
Measured ambient sound level	47	7.3.1	Radar noise measured at MP5 24m from the base and clearly measurable and audible tonal component at 400Hz . Period considered representative of typical conditions. Source height is 35m hypotenuse =42m
Residual sound level	45		Measured at MP5 24m from the base when the radar was not in operation. Period considered representative of typical conditions.
Background sound Level	38		Measured level at MP during the September 2021 survey
Contribution from residual level to measured level	$10\lg(10^{4.7}-10^{4.5})=43$		Equation 4
Propagation to MP2 43-20Lg (142/42) =32	32		
Assessment made during the day time so the reference time interval is 1 hour		7.2	
Specific Noise 58 The Westering	32	7.3	
Acoustic feature correction	2	9.2	Subjective method applied 400 Hertz component just perceptible (2dB correction) at receptor location both externally and internally.
Rating Level	34	9.2	
Background Sound Level	38	8	
Excess of rating level over background sound level	(34-38) = -4dB		The context is the operation of a radar at Marshalls Airport located in close vicinity of existing residential properties . The sensitive receptor locations are external amenity garden areas and internal living spaces. <b>Assessment indicates specific sound source having a low impact</b>
Uncertainty of the assessment			The excess of the rating level over the background sound level is -4 and is this instance the uncertainty of the measurement may have an effect on the significance to the outcome of the assessment due to the use of the a proxy location for source assessment

Table 24. H16 BS4142 - 58 The Westering (Eve) – November Background Survey

58 The Westering MP1 BS4142 Assessment Evening	Results	Clause	Detail
Measured ambient level	47	7.3.1	Radar noise measured at MP5 24m from the base and clearly measurable and audible tonal component at 400Hz . Period considered representative of typical conditions. Source height is 35m hypotenuse =42m
Residual sound level	45		Measured at MP5 24m from the base when the radar was not in operation. Period considered representative of typical conditions.
Background Sound Level	31		Measured level on 10/11/2021 at MP2 from 20.00 to 22.00 radar off.
Contribution from residual level to measured level	$10\lg(10^{4.7}-10^{4.5})=43$		Equation 4
Propagation to MP2 43-20Lg (142/42) =32	32		
Assessment made during the day time so the reference time interval is 1 hour		7.2	
Specific Noise	32	7.3	
Acoustic feature correction	2	9.2	Subjective method applied 400 Hertz component just perceptible (2dB correction) at receptor location both externally and internally.
Rating Level	34	9.2	
Background Sound Level	31	8	
Excess of rating level over background sound level	(34-31) = +3dB		The context is the operation of a radar at Marshalls Airport located in close vicinity of existing residential properties . The sensitive receptor locations are external amenity garden areas and internal living spaces. <b>Assessment indicates less than adverse impact but higher than low impact</b>
Uncertainty of the assessment			The excess of the rating level over the background sound level is +3 and is this instance the uncertainty of the measurement may have an effect on the significance to the outcome of the assessment due to the use of the a proxy location for source assessment and the use of relatively short back ground measurement period.

Table 25. H16 BS4142 - 58 The Westering (Night) –September Background

58 The Westering MP1 BS4142 Assessment Night	Results	Clause	Detail
Measured ambient level	47	7.3.1	Radar noise measured at MP5 24m from the base and clearly measurable and audible tonal component at 400Hz . Period considered representative of typical conditions. Source height is 35m hypotenuse =42m
Residual sound level	45		Measured at MP5 24m from the base when the radar was not in operation. Period considered representative of typical conditions.
Background Sound Level	32		Measured level at MP1 during the September 2021 survey. Modal level.
Contribution from residual level to measured level	$10\lg(10^{4.7}-10^{4.5})=43$		Equation 4
Propagation to MP2 43-20Lg (142/42) =32	32		
Assessment made during the night time so the reference time interval is 15minutes		7.2	
Specific Noise	32	7.3	
Acoustic feature correction	2	9.2	Subjective method applied 400 Hertz component just perceptible (2dB correction) at receptor location both externally and internally.
Rating Level	34	9.2	
Background Sound Level	32	8	
Excess of rating level over background sound level	(34-32) = +2dB		The context is the operation of a radar at Marshalls Airport located in close vicinity of existing residential properties . The sensitive receptor locations are external amenity garden areas and internal living spaces. <b>Assessment indicates less than adverse impact but higher than low impact</b>
Uncertainty of the assessment			The excess of the rating level over the background sound level is +2 and in this instance the uncertainty of the measurement may have an effect on the significance to the outcome of the assessment due to the use of the a proxy location for source assessment

Table 26. H16 BS4142 - 58 The Westering (Eve) –September Background Survey

58 The Westering MP1 BS4142 Assessment Eve	Results	Clause	Detail
Measured ambient level	47	7.3.1	Radar noise measured at MP5 24m from the base and clearly measurable and audible tonal component at 400Hz . Period considered representative of typical conditions. Source height is 35m hypotenuse =42m
Residual sound level	45		Measured at MP5 24m from the base when the radar was not in operation. Period considered representative of typical conditions.
Background Sound Level	34		Measured level at MP1 during the September 2021 survey. Modal level = 37, limited data set therefore professional judgement applied = 34dB(A).
Contribution from residual level to measured level	$10\lg(10^{4.7}-10^{4.5})=43$		Equation 4
Propagation to MP2 43-20Lg (146/42) =32	32		Hypotenuse to MP2 = 146m
Assessment made during the day time so the reference time interval is 1 hour		7.2	
Specific Noise	32	7.3	
Acoustic feature correction	2	9.2	Subjective method applied 400 Hertz component just perceptible (2dB correction) at receptor location both externally and internally.
Rating Level	34	9.2	
Background Sound Level	34	8	
Excess of rating level over background sound level	(34-34) = 0dB		The context is the operation of a radar at Marshalls Airport located in close vicinity of existing residential properties . The sensitive receptor locations are external amenity garden areas and internal living spaces. <b>Assessment indicates specific sound source having a low impact</b>
Uncertainty of the assessment			The excess of the rating level over the background sound level is 0 and in this instance the uncertainty of the measurement may have an effect on the significance to the outcome of the assessment due to the use of the a proxy location for source assessment

## Cambridge City Airport Radar Noise - Statutory Nuisance & Planning Assessment

**Table 27. H16 BS4142 Assessment - 22 Sunnyside (Day)**

22 Sunnyside MP1 BS4142 Assessment Day	Results	Clause	Detail
Measured ambient level	47	7.3.1	Radar noise measured at 24m from the base and clearly measurable and audible tonal component at 400Hz . Period considered representative of typical conditions. Source height is 35m hypotenuse =42m
Residual sound level	45		Measured at MP5 24m from the base when the radar was not in operation. Period considered representative of typical conditions.
Background Sound Level	42-3dB =39		Hoare Lea Background Survey location LT1 - Facarde correction of 3dB applied as measurement position within 1m of building facade. (see Fig B1 of REP-1010962-5A-DF-20210520-Environmental sound survey data - Rev 00
Contribution from residual level to measured level	$10\lg(10^{4.7}-10^{4.5})=43$		Equation 4
Propagation to 22 Sunnyside $43-20\lg(63/42) =40$	40		Hypotenuse to 22 Sunnyside =63m
Assessment made during the day time so the reference time interval is 1 hour		7.2	
Specific Noise	40	7.3	
Acoustic feature correction	4	9.2	Estimated subjective method applied 400 Hertz component clearly perceptible (4dB correction) at receptor location
Rating Level	44	9.2	
Background Sound Level	39	8	
Excess of rating level over background sound level	(44-39) = 5dB		The context is the operation of a radar at Marshalls Airport located in close vicinity of existing residential properties . The sensitive receptor locations are external amenity garden areas and internal living spaces. <b>Assessment indicates less than adverse impact but higher than low impact</b>
Uncertainty of the assessment			The excess of the rating level over the background sound level is +5 and is this instance the uncertainty of the measurement may have an effect on the significance to the outcome of the assessment due to the use of the a proxy location for source assessment and reliance on third party background assessment results

**Table 28. H16 BS4142 Assessment -22 Sunnyside (Night)**

22 Sunnyside MP1 BS4142 Assessment Night	Results	Clause	Detail
Measured ambient level	47	7.3.1	Radar noise measured at 24m from the base and clearly measurable and audible tonal component at 400Hz . Period considered representative of typical conditions. Source height is 35m hypotenuse =42m
Residual sound level	45		Measured at MP5 24m from the base when the radar was not in operation. Period considered representative of typical conditions.
Background Sound Level	39-3dB= 36		Hoare Lea Background Survey location LT1 - Facarde correction of 3dB applied as measurement position within 1m of building facade. (see Fig B1 of REP-1010962-5A-DF-20210520-Environmental sound survey data - Rev 00
Contribution from residual level to measured level	$10\lg(10^{4.7}-10^{4.5})=43$		Equation 4
Propagation to 22 Sunnyside $43-20\lg(63/42) =40$	40		Hypotenuse to 22 Sunnyside =63m
Assessment made during the night time so the reference time interval is 15minute		7.2	
Specific Noise	40	7.3	
Acoustic feature correction	4	9.2	Subjective method applied 400 Hertz component clearly perceptible (4dB correction) at receptor location
Rating Level	44	9.2	
Background Sound Level	36	8	
Excess of rating level over background sound level	(44-36) = 8dB		The context is the operation of a radar at Marshalls Airport located in close vicinity of existing residential properties . The sensitive receptor locations are external amenity garden areas and internal living spaces. <b>Assessment indicates adverse noise impact</b>
Uncertainty of the assessment			The excess of the rating level over the background sound level is +8 and is this instance the uncertainty of the measurement may have an effect on the significance to the outcome of the assessment due to the use of the a proxy location for source assessment and reliance on third party background assessment results

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**Table 29. H17 BS4142 Assessment Location (Day)**

H17			
MP1 BS4142 Assessment Day	Results	Clause	Detail
Measured ambient level	47	7.3.1	Radar noise measured at 24m from the base and clearly measurable and audible tonal component at 400Hz . Period considered representative of typical conditions. Source height is 35m hypotenuse =42m
Residual sound level	45		Measured at MP5 24m from the base when the radar was not in operation. Period considered representative of typical conditions.
Background Sound Level	43		Measured level MP8 10/11/21 to 17/11/21. Modal level
Contribution from residual level to measured level	$10\lg(10^{4.7}-10^{4.5})=43$		Equation 4
Propagation to MP8 43-20lg (203/42) =29	29		Hypotenuse to MP8 = 203m
Assessment made during the day time so the reference time interval is 1 hour		7.2	
Specific Noise	29	7.3	
Acoustic feature correction	0	9.2	No audible 400Hz tone audible at H17 field location at 200m
Rating Level	29	9.2	
Background Sound Level	43	8	Measured within field backing onto properties in Percival Rd 10th to 17th November 2021
Excess of rating level over background sound level	$(29-43) = -14\text{dB}$		The context is the operation of a radar at Marshall's Airport located in close vicinity of existing residential properties . The sensitive receptor locations are external amenity garden areas and internal living spaces. <b>Assessment indicates low adverse noise impact</b>
Uncertainty of the assessment			The excess of the rating level over the background sound level is -14 and is considered large however the uncertainty of the measurement may have an effect on the significance to the outcome of the assessment due to the use of the a proxy location for source assessment.

**Table 30. BS4142 Assessment H17 Location (Eve)**

H17			
MP1 BS4142 Assessment Eve	Results	Clause	Detail
Measured ambient level	47	7.3.1	Radar noise measured at 24m from the base and clearly measurable and audible tonal component at 400Hz . Period considered representative of typical conditions. Source height is 35m hypotenuse =42m
Residual sound level	45		Measured at MP5 24m from the base when the radar was not in operation. Period considered representative of typical conditions.
Background Sound Level	38		Measured level at MP8 during the November 2021 survey. Modal level = 43, limited data set therefore professional judgement applied = 38dB(A).
Contribution from residual level to measured level	$10\lg(10^{4.7}-10^{4.5})=43$		Equation 4
Propagation to MP8 43-20lg (203/42) =29	29		Hypotenuse to MP8 = 203m
Assessment made during the day time so the reference time interval is 1 hour		7.2	
Specific Noise	29	7.3	
Acoustic feature correction	0	9.2	No audible 400Hz tone audible at H17 field location at 200m
Rating Level	29	9.2	
Background Sound Level	38	8	Measured within field backing onto properties in Percival Rd 10th to 17th November 2021
Excess of rating level over background sound level	$(29-38) = -9\text{dB}$		The context is the operation of a radar at Marshall's Airport located in close vicinity of existing residential properties . The sensitive receptor locations are external amenity garden areas and internal living spaces. <b>Assessment indicates low adverse noise impact</b>
Uncertainty of the assessment			The excess of the rating level over the background sound level is -9 and is considered large however the uncertainty of the measurement may have an effect on the significance to the outcome of the assessment due to the use of the a proxy location for source assessment.

## Cambridge City Airport Radar Noise - Statutory Nuisance & Planning Assessment

**Table 31. BS4142 Assessment H17 Location (Night)**

MP1 BS4142 Assessment Night	Results	Clause	Detail
Measured ambient level	47	7.3.1	Radar noise measured at 24m from the base and clearly measurable and audible tonal component at 400Hz . Period considered representative of typical conditions. Source height is 35m hypotenuse =42m
Residual sound level	45		Measured at MP5 24m from the base when the radar was not in operation. Period considered representative of typical conditions.
Background Sound Level	36		Measured level MP8 10/11/21 to 17/11/21. Modal level
Contribution from residual level to measured level	$10\lg(10^{4.7}-10^{4.5})=43$		Equation 4
Propagation to MP8 43-20lg (203/42) =29	29		Hypotenuse to MP8 = 203m
Assessment made during the day time so the reference time interval is 1 hour		7.2	
Specific Noise	29	7.3	
Acoustic feature correction	0	9.2	No audible 400Hz tone audible at H17 field location at 200m
Rating Level	29	9.2	
Background Sound Level	36	8	Measured within field backing onto properties in Percival Rd 10th to 17th November 2021
Excess of rating level over background sound level	$(29-36) = -7\text{dB}$		The context is the operation of a radar at Marshall's Airport located in close vicinity of existing residential properties . The sensitive receptor locations are external amenity garden areas and internal living spaces. <b>Assessment indicates low adverse noise impact</b>
Uncertainty of the assessment			The excess of the rating level over the background sound level is -7 and is considered large however the uncertainty of the measurement may have an effect on the significance to the outcome of the assessment due to the use of the a proxy location for source assessment.

Appendix C: Measurement Results (background noise frequency distribution charts)

Table 32. MP1 September 2021 Survey 1hour Background and Ambient Noise Monitoring Data

Start	LAeq	LZeq 400 Hz	LAF90.0	LZF90.0 400 Hz	Start	LAeq	LZeq 400 Hz	LAF90.0	LZF90.0 400 Hz	Start	LAeq	LZeq 400 Hz	LAF90.0	LZF90.0 400 Hz
22/09/2021 13:00	46	38	38	31	24/09/2021 09:00	47	38	41	33	26/09/2021 11:00	59	50	37	27
22/09/2021 14:00	50	44	41	33	24/09/2021 10:00	47	39	39	32	26/09/2021 12:00	51	46	38	29
22/09/2021 15:00	46	41	41	33	24/09/2021 11:00	43	37	39	30	26/09/2021 13:00	46	38	38	28
22/09/2021 16:00	50	44	40	32	24/09/2021 12:00	46	39	40	31	26/09/2021 14:00	48	43	38	29
22/09/2021 17:00	47	39	39	31	24/09/2021 13:00	47	41	38	30	26/09/2021 15:00	47	37	38	29
22/09/2021 18:00	44	35	40	30	24/09/2021 14:00	47	41	39	30	26/09/2021 16:00	50	42	38	28
22/09/2021 19:00	50	35	40	31	24/09/2021 15:00	47	41	38	30	26/09/2021 17:00	46	38	37	28
22/09/2021 20:00	44	35	40	30	24/09/2021 16:00	52	41	38	30	26/09/2021 18:00	46	34	37	28
22/09/2021 21:00	41	34	38	30	24/09/2021 17:00	48	36	37	29	26/09/2021 19:00	46	36	38	29
22/09/2021 21:15	41	36	38	29	24/09/2021 18:00	44	32	37	29	26/09/2021 20:00	40	33	37	28
22/09/2021 21:30	46	38	38	30	24/09/2021 19:00	45	35	37	30	26/09/2021 21:00	40	32	36	28
22/09/2021 21:45	40	33	38	30	24/09/2021 20:00	44	35	38	31	26/09/2021 22:00	38	31	35	26
22/09/2021 22:00	39	31	37	29	24/09/2021 21:00	43	34	38	31	28/09/2021 07:00	46	36	41	33
22/09/2021 22:15	39	32	36	28	24/09/2021 22:00	39	33	37	30	28/09/2021 08:00	45	37	40	32
22/09/2021 22:30	39	32	37	29	25/09/2021 07:00	45	31	36	27					
22/09/2021 22:45	43	37	36	29	25/09/2021 08:00	44	31	36	28					
23/09/2021 07:00	49	39	44	36	25/09/2021 09:00	43	30	34	25					
23/09/2021 08:00	48	38	43	35	25/09/2021 10:00	44	29	34	25					
23/09/2021 09:00	50	44	42	34	25/09/2021 11:00	50	37	34	25					
23/09/2021 10:00	48	39	43	34	25/09/2021 12:00	50	41	37	29					
23/09/2021 11:00	48	42	42	34	25/09/2021 13:00	46	34	36	26					
23/09/2021 12:00	46	38	42	32	25/09/2021 14:00	44	35	35	27					
23/09/2021 13:00	47	40	41	32	25/09/2021 15:00	45	36	34	24					
23/09/2021 14:00	43	35	39	30	25/09/2021 16:00	52	37	35	26					
23/09/2021 15:00	49	42	38	30	25/09/2021 17:00	54	39	35	25					
23/09/2021 16:00	48	42	38	30	25/09/2021 18:00	42	34	33	24					
23/09/2021 17:00	51	41	38	30	25/09/2021 19:00	40	29	34	25					
23/09/2021 18:00	46	35	38	30	25/09/2021 20:00	37	29	34	26					
23/09/2021 19:00	52	41	37	28	25/09/2021 21:00	37	30	33	25					
23/09/2021 20:00	39	32	37	28	25/09/2021 22:00	35	28	32	24					
23/09/2021 21:00	39	32	36	28	26/09/2021 07:00	47	31	36	27					
23/09/2021 22:00	38	31	35	27	26/09/2021 08:00	46	30	36	27					
24/09/2021 07:00	47	36	41	33	26/09/2021 09:00	44	30	36	27					
24/09/2021 08:00	45	35	40	32	26/09/2021 10:00	45	32	37	28					



# Cambridge City Airport Radar Noise - Statutory Nuisance & Planning Assessment

**Table 34. MP8 November 2021 15minute Background and Ambient Noise Monitoring Data**

BCKGRND004					BCKGRND005					BCKGRND006					BCKGRND007				
Start	LAeq	LZeQ 400 Hz	LAF90.0	LZF90.0 400 Hz	Start	LAeq	LZeQ 400 Hz	LAF90.0	LZF90.0 400 Hz	Start	LAeq	LZeQ 400 Hz	LAF90.0	LZF90.0 400 Hz	Start	LAeq	LZeQ 400 Hz	LAF90.0	LZF90.0 400 Hz
10/11/2021 23:09	78	64	37	28	11/11/2021 23:00	40	32	38	29	12/11/2021 23:00	42	31	39	29	13/11/2021 23:00	40	28	38	25
10/11/2021 23:24	39	31	36	28	11/11/2021 23:15	40	33	38	30	12/11/2021 23:15	41	31	38	28	13/11/2021 23:15	39	27	38	25
10/11/2021 23:39	37	30	36	28	11/11/2021 23:30	40	33	38	30	12/11/2021 23:30	42	33	39	29	13/11/2021 23:30	39	27	36	24
10/11/2021 23:54	37	30	35	28	11/11/2021 23:45	39	32	37	29	12/11/2021 23:45	40	31	38	28	13/11/2021 23:45	38	27	35	24
11/11/2021 00:00	36	29	35	27	12/11/2021 00:00	38	31	36	29	13/11/2021 00:00	40	31	37	28	14/11/2021 00:00	38	27	36	24
11/11/2021 00:15	36	29	33	27	12/11/2021 00:15	39	32	37	29	13/11/2021 00:15	40	30	37	28	14/11/2021 00:15	37	26	35	23
11/11/2021 00:30	35	29	33	27	12/11/2021 00:30	39	32	37	29	13/11/2021 00:30	41	31	37	27	14/11/2021 00:30	37	26	35	23
11/11/2021 00:45	35	28	33	27	12/11/2021 00:45	39	31	37	29	13/11/2021 00:45	39	29	36	26	14/11/2021 00:45	37	25	35	23
11/11/2021 01:00	35	29	33	27	12/11/2021 01:00	39	31	37	29	13/11/2021 01:00	40	30	37	27	14/11/2021 01:00	38	26	35	24
11/11/2021 01:15	36	29	34	27	12/11/2021 01:15	39	33	37	31	13/11/2021 01:15	40	30	37	28	14/11/2021 01:15	39	27	35	24
11/11/2021 01:30	36	31	35	29	12/11/2021 01:30	39	33	37	31	13/11/2021 01:30	39	29	37	28	14/11/2021 01:30	39	28	36	26
11/11/2021 01:45	36	31	35	29	12/11/2021 01:45	40	34	38	32	13/11/2021 01:45	39	30	36	27	14/11/2021 01:45	38	28	36	26
11/11/2021 02:00	36	31	35	29	12/11/2021 02:00	41	34	38	32	13/11/2021 02:00	39	31	36	27	14/11/2021 02:00	38	29	36	26
11/11/2021 02:15	36	31	35	29	12/11/2021 02:15	43	36	39	33	13/11/2021 02:15	39	31	36	27	14/11/2021 02:15	37	28	35	26
11/11/2021 02:30	36	32	35	30	12/11/2021 02:30	44	38	42	35	13/11/2021 02:30	42	33	37	29	14/11/2021 02:30	37	29	35	26
11/11/2021 02:45	37	32	35	30	12/11/2021 02:45	45	37	42	35	13/11/2021 02:45	42	31	38	29	14/11/2021 02:45	37	29	35	27
11/11/2021 03:00	38	32	36	30	12/11/2021 03:00	44	36	40	34	13/11/2021 03:00	43	32	39	29	14/11/2021 03:00	37	29	35	26
11/11/2021 03:15	38	33	36	31	12/11/2021 03:15	44	36	40	34	13/11/2021 03:15	42	31	38	29	14/11/2021 03:15	36	29	35	27
11/11/2021 03:30	38	32	36	30	12/11/2021 03:30	42	35	38	33	13/11/2021 03:30	43	33	39	29	14/11/2021 03:30	37	29	35	27
11/11/2021 03:45	37	32	36	30	12/11/2021 03:45	39	34	37	32	13/11/2021 03:45	42	32	38	28	14/11/2021 03:45	37	29	35	27
11/11/2021 04:00	39	32	36	30	12/11/2021 04:00	40	34	37	32	13/11/2021 04:00	41	30	37	28	14/11/2021 04:00	36	28	34	26
11/11/2021 04:15	38	32	36	30	12/11/2021 04:15	40	35	38	33	13/11/2021 04:15	40	30	37	27	14/11/2021 04:15	36	28	35	26
11/11/2021 04:30	39	32	36	31	12/11/2021 04:30	42	35	39	33	13/11/2021 04:30	39	30	36	28	14/11/2021 04:30	37	29	35	27
11/11/2021 04:45	38	32	36	30	12/11/2021 04:45	42	36	40	34	13/11/2021 04:45	39	30	37	28	14/11/2021 04:45	37	29	35	26
11/11/2021 05:00	39	31	36	30	12/11/2021 05:00	44	36	41	34	13/11/2021 05:00	39	29	36	27	14/11/2021 05:00	38	28	35	26
11/11/2021 05:15	38	31	36	29	12/11/2021 05:15	43	36	40	34	13/11/2021 05:15	39	30	36	27	14/11/2021 05:15	38	29	35	26
11/11/2021 05:30	39	32	37	29	12/11/2021 05:30	43	37	41	34	13/11/2021 05:30	39	29	37	27	14/11/2021 05:30	39	28	36	26
11/11/2021 05:45	41	34	38	31	12/11/2021 05:45	43	38	40	35	13/11/2021 05:45	39	29	36	27	14/11/2021 05:45	39	29	36	26
11/11/2021 06:00	39	33	37	30	12/11/2021 06:00	43	37	41	34	13/11/2021 06:00	40	30	37	28	14/11/2021 06:00	39	29	36	26
11/11/2021 06:15	44	33	38	30	12/11/2021 06:15	46	40	43	36	13/11/2021 06:15	42	31	37	28	14/11/2021 06:15	43	28	37	26
11/11/2021 06:30	45	33	40	31	12/11/2021 06:30	47	41	44	37	13/11/2021 06:30	48	30	38	28	14/11/2021 06:30	42	29	37	27
11/11/2021 06:45	48	34	40	31	12/11/2021 06:45	47	39	45	37	13/11/2021 06:45	42	30	38	28	14/11/2021 06:45	47	30	39	28
11/11/2021 07:00	44	34	40	32	12/11/2021 07:00	47	39	44	36	13/11/2021 07:00	43	31	39	29	14/11/2021 07:00	41	30	39	28
11/11/2021 07:15	46	35	42	33	12/11/2021 07:15	48	40	46	37	13/11/2021 07:15	44	31	39	29	14/11/2021 07:15	43	32	40	29
11/11/2021 07:30	44	34	41	32	12/11/2021 07:30	48	40	45	37	13/11/2021 07:30	47	33	41	30	14/11/2021 07:30	41	31	40	29
11/11/2021 07:45	48	35	41	32	12/11/2021 07:45	48	39	46	37	13/11/2021 07:45	43	33	41	30	14/11/2021 07:45	44	32	41	30
11/11/2021 08:00	54	45	47	36	12/11/2021 08:00	49	42	46	38	13/11/2021 08:00	45	33	41	31	14/11/2021 08:00	44	32	41	30
11/11/2021 08:15	47	40	42	35	12/11/2021 08:15	48	41	45	37	13/11/2021 08:15	46	34	42	31	14/11/2021 08:15	50	31	41	29
11/11/2021 08:30	45	36	40	33	12/11/2021 08:30	49	41	46	38	13/11/2021 08:30	48	32	42	31	14/11/2021 08:30	47	33	42	31
11/11/2021 08:45	42	33	39	31	12/11/2021 08:45	55	49	50	41	13/11/2021 08:45	45	33	42	31	14/11/2021 08:45	44	34	42	31
11/11/2021 09:00	43	34	40	32	12/11/2021 09:00	54	47	49	41	13/11/2021 09:00	44	34	42	31	14/11/2021 09:00	45	33	43	31
11/11/2021 09:15	42	32	39	30	12/11/2021 09:15	58	53	48	39	13/11/2021 09:15	63	42	42	31	14/11/2021 09:15	46	34	44	31
11/11/2021 09:30	42	33	39	31	12/11/2021 09:30	51	43	47	39	13/11/2021 09:30	51	43	42	31	14/11/2021 09:30	46	34	44	31
11/11/2021 09:45	44	34	39	31	12/11/2021 09:45	49	40	47	38	13/11/2021 09:45	44	33	43	31	14/11/2021 09:45	49	34	44	32
11/11/2021 10:00	44	34	39	31	12/11/2021 10:00	49	40	46	38	13/11/2021 10:00	44	32	42	31	14/11/2021 10:00	45	33	43	31
11/11/2021 10:15	42	34	39	31	12/11/2021 10:15	48	40	46	38	13/11/2021 10:15	44	33	42	30	14/11/2021 10:15	45	32	43	30
11/11/2021 10:30	43	34	40	31	12/11/2021 10:30	48	39	46	37	13/11/2021 10:30	46	32	42	30	14/11/2021 10:30	45	33	43	30
11/11/2021 10:45	43	34	40	31	12/11/2021 10:45	51	39	48	36	13/11/2021 10:45	46	34	42	30	14/11/2021 10:45	46	31	42	29
11/11/2021 11:00	43	34	40	32	12/11/2021 11:00	53	41	49	38	13/11/2021 11:00	45	37	42	30	14/11/2021 11:00	44	32	42	29
11/11/2021 11:15	43	35	41	32	12/11/2021 11:15	52	40	47	37	13/11/2021 11:15	52	45	43	31	14/11/2021 11:15	46	31	43	30
11/11/2021 11:30	44	36	41	33	12/11/2021 11:30	48	38	46	36	13/11/2021 11:30	45	35	43	30	14/11/2021 11:30	45	32	43	30
11/11/2021 11:45	45	34	41	32	12/11/2021 11:45	47	38	45	35	13/11/2021 11:45	45	34	42	30	14/11/2021 11:45	45	33	43	30
11/11/2021 12:00	49	43	42	33	12/11/2021 12:00	49	39	46	36	13/11/2021 12:00	56	49	42	30	14/11/2021 12:00	44	32	43	30
11/11/2021 12:15	49	42	42	33	12/11/2021 12:15	50	42	46	37	13/11/2021 12:15	45	32	43	30	14/11/2021 12:15	44	33	43	30
11/11/2021 12:30	48	42	42	32	12/11/2021 12:30	48	40	46	36	13/11/2021 12:30	45	33	42	30	14/11/2021 12:30	47	34	44	31
11/11/2021 12:45	51	46	42	32	12/11/2021 12:45	52	44	46	36	13/11/2021 12:45	51	41	43	31	14/11/2021 12:45	47	37	44	31
11/11/2021 13:00	46	38	41	32	12/11/2021 13:00	60	56	47	36	13/11/2021 13:00	47	34	42	30	14/11/2021 13:00	46	35	44	31
11/11/2021 13:15	47	41	40	32	12/11/2021 13:15	54	48	47	37	13/11/2021 13:15	55	49	44	31	14/11/2021 13:15	48	37	44	32
11/11/2021 13:30	44	35	40	31	12/11/2021 13:30	49	40	47	37	13/11/2021 13:30	56	35	43	30	14/11/2021 13:30	47	37	44	32
11/11/2021 13:45	46	40	40	32															

# Cambridge City Airport Radar Noise - Statutory Nuisance & Planning Assessment

BCKGRND008					BCKGRND009					BCKGRND010				
Start	LAeq	LZeq 400 Hz	LAF90.0	LZF90.0 400 Hz	Start	LAeq	LZeq 400 Hz	LAF90.0	LZF90.0 400 Hz	Start	LAeq	LZeq 400 Hz	LAF90.0	LZF90.0 400 Hz
14/11/2021 23:00	38	27	36	25	15/11/2021 23:00	43	37	40	31	16/11/2021 23:00	41	33	38	30
14/11/2021 23:15	39	28	36	26	15/11/2021 23:15	43	36	41	32	16/11/2021 23:15	39	32	37	30
14/11/2021 23:30	38	28	36	26	15/11/2021 23:30	42	35	40	32	16/11/2021 23:30	39	32	37	29
14/11/2021 23:45	37	27	35	25	15/11/2021 23:45	41	33	39	31	16/11/2021 23:45	43	38	37	30
15/11/2021 00:00	37	27	35	25	16/11/2021 00:00	41	36	38	30	17/11/2021 00:00	39	32	37	30
15/11/2021 00:15	36	26	34	24	16/11/2021 00:15	40	35	36	30	17/11/2021 00:15	40	34	37	31
15/11/2021 00:30	35	26	34	24	16/11/2021 00:30	38	32	36	30	17/11/2021 00:30	39	34	37	31
15/11/2021 00:45	36	27	34	25	16/11/2021 00:45	38	31	37	29	17/11/2021 00:45	39	32	37	30
15/11/2021 01:00	37	27	35	24	16/11/2021 01:00	38	32	35	29	17/11/2021 01:00	38	31	36	29
15/11/2021 01:15	37	29	35	25	16/11/2021 01:15	37	31	35	29	17/11/2021 01:15	38	31	36	29
15/11/2021 01:30	38	30	36	28	16/11/2021 01:30	38	31	35	30	17/11/2021 01:30	38	30	36	28
15/11/2021 01:45	37	29	36	28	16/11/2021 01:45	38	31	36	30	17/11/2021 01:45	37	30	34	28
15/11/2021 02:00	38	29	36	28	16/11/2021 02:00	38	32	36	30	17/11/2021 02:00	38	31	35	28
15/11/2021 02:15	39	29	36	28	16/11/2021 02:15	39	33	36	31	17/11/2021 02:15	36	30	34	28
15/11/2021 02:30	39	30	36	28	16/11/2021 02:30	38	33	36	31	17/11/2021 02:30	38	30	35	28
15/11/2021 02:45	39	31	36	29	16/11/2021 02:45	37	33	35	31	17/11/2021 02:45	36	31	35	29
15/11/2021 03:00	37	31	35	29	16/11/2021 03:00	38	32	36	31	17/11/2021 03:00	37	32	36	30
15/11/2021 03:15	39	31	36	29	16/11/2021 03:15	39	33	36	31	17/11/2021 03:15	38	33	36	30
15/11/2021 03:30	38	31	36	30	16/11/2021 03:30	40	33	36	31	17/11/2021 03:30	38	32	37	30
15/11/2021 03:45	38	31	36	29	16/11/2021 03:45	41	34	38	32	17/11/2021 03:45	39	32	37	31
15/11/2021 04:00	38	31	36	29	16/11/2021 04:00	40	33	38	32	17/11/2021 04:00	38	33	36	31
15/11/2021 04:15	40	31	36	29	16/11/2021 04:15	39	33	37	32	17/11/2021 04:15	39	33	37	31
15/11/2021 04:30	42	33	39	30	16/11/2021 04:30	40	34	37	32	17/11/2021 04:30	40	33	38	31
15/11/2021 04:45	42	34	39	30	16/11/2021 04:45	42	35	39	33	17/11/2021 04:45	40	33	38	31
15/11/2021 05:00	41	32	38	30	16/11/2021 05:00	42	35	40	33	17/11/2021 05:00	40	34	39	32
15/11/2021 05:15	42	34	40	31	16/11/2021 05:15	43	35	41	34	17/11/2021 05:15	40	34	39	32
15/11/2021 05:30	43	34	41	31	16/11/2021 05:30	44	38	42	35	17/11/2021 05:30	42	35	40	33
15/11/2021 05:45	45	35	43	32	16/11/2021 05:45	43	37	42	35	17/11/2021 05:45	43	36	42	34
15/11/2021 06:00	45	36	43	33	16/11/2021 06:00	44	38	43	36	17/11/2021 06:00	43	35	42	33
15/11/2021 06:15	46	37	44	34	16/11/2021 06:15	46	39	44	37	17/11/2021 06:15	44	36	43	34
15/11/2021 06:30	47	36	45	33	16/11/2021 06:30	47	39	45	37	17/11/2021 06:30	46	37	44	35
15/11/2021 06:45	47	36	44	34	16/11/2021 06:45	48	39	45	37	17/11/2021 06:45	47	36	45	34
15/11/2021 07:00	47	37	45	35	16/11/2021 07:00	49	40	46	37	17/11/2021 07:00	47	38	45	35
15/11/2021 07:15	48	38	46	35	16/11/2021 07:15	51	42	48	39	17/11/2021 07:15	46	36	45	35
15/11/2021 07:30	47	37	46	34	16/11/2021 07:30	49	40	46	38	17/11/2021 07:30	47	37	45	35
15/11/2021 07:45	49	41	45	35	16/11/2021 07:45	48	40	47	38	17/11/2021 07:45	47	38	45	36
15/11/2021 08:00	55	45	49	39	16/11/2021 08:00	47	40	46	38	17/11/2021 08:00	48	41	45	37
15/11/2021 08:15	49	40	44	34	16/11/2021 08:15	47	40	45	37	17/11/2021 08:15	46	38	44	36
15/11/2021 08:30	48	37	44	34	16/11/2021 08:30	46	40	44	37	17/11/2021 08:30	49	40	45	37
15/11/2021 08:45	45	35	43	33	16/11/2021 08:45	49	39	44	37	17/11/2021 08:45	47	38	44	36
15/11/2021 09:00	45	35	43	33	16/11/2021 09:00	54	50	44	37	17/11/2021 09:00	46	37	44	35
15/11/2021 09:15	45	34	42	32	16/11/2021 09:15	48	42	45	38	17/11/2021 09:15	45	36	44	35
15/11/2021 09:30	45	34	43	32	16/11/2021 09:30	48	41	44	37	17/11/2021 09:30	49	42	43	34
15/11/2021 09:45	45	34	43	32	16/11/2021 09:45	50	45	44	37	17/11/2021 09:45	51	44	43	34
15/11/2021 10:00	44	34	42	31	16/11/2021 10:00	51	44	43	37	17/11/2021 10:00	44	35	42	33
15/11/2021 10:15	49	40	42	31	16/11/2021 10:15	52	47	42	35	17/11/2021 10:15	48	43	42	33
15/11/2021 10:30	47	33	42	31	16/11/2021 10:30	47	42	43	35	17/11/2021 10:30	47	37	42	32
15/11/2021 10:45	46	36	41	30	16/11/2021 10:45	50	45	43	35	17/11/2021 10:45	51	45	42	32
15/11/2021 11:00	50	42	45	37	16/11/2021 11:00	49	43	43	35	17/11/2021 11:00	48	41	41	31
15/11/2021 11:15	46	33	40	29	16/11/2021 11:15	51	45	43	34	17/11/2021 11:15	47	36	40	31
15/11/2021 11:30	44	32	41	29	16/11/2021 11:30	52	46	42	33	17/11/2021 11:30	52	45	44	32
15/11/2021 11:45	45	33	42	31	16/11/2021 11:45	50	45	42	32	17/11/2021 11:45	55	47	46	33
15/11/2021 12:00	46	34	41	31	16/11/2021 12:00	52	47	42	32					
15/11/2021 12:15	43	32	40	29	16/11/2021 12:15	54	49	42	31					
15/11/2021 12:30	43	31	39	29	16/11/2021 12:30	55	44	42	32					
15/11/2021 12:45	42	30	39	28	16/11/2021 12:45	51	44	42	32					
15/11/2021 13:00	44	28	38	26	16/11/2021 13:00	50	43	42	33					
15/11/2021 13:15	46	40	37	26	16/11/2021 13:15	51	45	41	33					
15/11/2021 13:30	41	31	38	26	16/11/2021 13:30	53	47	42	33					
15/11/2021 13:45	43	30	38	26	16/11/2021 13:45	48	40	41	32					
15/11/2021 14:00	47	40	42	34	16/11/2021 14:00	45	34	41	32					
15/11/2021 14:15	45	36	39	28	16/11/2021 14:15	48	41	42	33					
15/11/2021 14:30	48	39	37	25	16/11/2021 14:30	53	47	42	34					
15/11/2021 14:45	45	39	37	26	16/11/2021 14:45	52	45	44	35					
15/11/2021 15:00	40	30	37	26	16/11/2021 15:00	55	49	44	35					
15/11/2021 15:15	41	33	38	29	16/11/2021 15:15	53	47	44	36					
15/11/2021 15:30	44	36	39	31	16/11/2021 15:30	49	43	43	34					
15/11/2021 15:45	46	41	42	33	16/11/2021 15:45	50	42	42	34					
15/11/2021 16:00	49	43	42	33	16/11/2021 16:00	44	36	42	33					
15/11/2021 16:15	44	37	42	33	16/11/2021 16:15	45	36	43	34					
15/11/2021 16:30	50	36	44	34	16/11/2021 16:30	55	50	44	35					
15/11/2021 16:45	48	44	44	34	16/11/2021 16:45	45	36	43	33					
15/11/2021 17:00	45	38	44	34	16/11/2021 17:00	45	38	43	34					
15/11/2021 17:15	46	37	45	35	16/11/2021 17:15	45	36	43	34					
15/11/2021 17:30	46	37	45	35	16/11/2021 17:30	51	46	44	35					
15/11/2021 17:45	45	36	44	34	16/11/2021 17:45	48	39	44	34					
15/11/2021 18:00	46	35	44	33	16/11/2021 18:00	47	36	45	34					
15/11/2021 18:15	48	43	44	34	16/11/2021 18:15	47	37	45	34					
15/11/2021 18:30	48	40	45	34	16/11/2021 18:30	44	35	43	33					
15/11/2021 18:45	46	35	44	34	16/11/2021 18:45	45	36	44	34					
15/11/2021 19:00	45	35	44	33	16/11/2021 19:00	45	36	44	34					
15/11/2021 19:15	45	34	43	32	16/11/2021 19:15	44	35	43	33					
15/11/2021 19:30	44	34	43	32	16/11/2021 19:30	44	36	43	33					
15/11/2021 19:45	45	36	44	34	16/11/2021 19:45	44	35	42	32					
15/11/2021 20:00	45	36	44	34	16/11/2021 20:00	44	36	42	33					
15/11/2021 20:15	45	36	44	34	16/11/2021 20:15	43	34							

# Cambridge City Airport Radar Noise - Statutory Nuisance & Planning Assessment

**Table 35. MP1 September 2021 15minute Background and Ambient Noise Monitoring Data**

EXTRRNAL003					EXTRRNAL004					EXTRRNAL005					EXTRRNAL006					EXTRRNAL007				
Start	L <sub>Aeq</sub> 400 Hz	L <sub>Zeq</sub> 400 Hz	LAF90.0 400 Hz	LZF90.0 400 Hz	Start	L <sub>Aeq</sub> 400 Hz	L <sub>Zeq</sub> 400 Hz	LAF90.0 400 Hz	LZF90.0 400 Hz	Start	L <sub>Aeq</sub> 400 Hz	L <sub>Zeq</sub> 400 Hz	LAF90.0 400 Hz	LZF90.0 400 Hz	Start	L <sub>Aeq</sub> 400 Hz	L <sub>Zeq</sub> 400 Hz	LAF90.0 400 Hz	LZF90.0 400 Hz	Start	L <sub>Aeq</sub> 400 Hz	L <sub>Zeq</sub> 400 Hz	LAF90.0 400 Hz	LZF90.0 400 Hz
22/09/2021 19:31	42	36	39	30	23/09/2021 23:00	38	34	36	29	23/09/2021 23:00	38	32	34	26	24/09/2021 23:00	39	32	37	29	25/09/2021 23:00	34	26	31	23
22/09/2021 19:45	41	33	39	30	22/09/2021 23:15	38	34	35	28	23/09/2021 23:15	38	32	33	24	24/09/2021 23:15	37	31	35	28	25/09/2021 23:15	33	25	31	22
22/09/2021 20:00	41	33	39	30	22/09/2021 23:30	38	34	35	27	23/09/2021 23:30	36	30	33	25	24/09/2021 23:30	40	34	38	31	25/09/2021 23:30	32	24	30	21
22/09/2021 20:15	40	32	38	30	22/09/2021 23:45	37	30	34	26	23/09/2021 23:45	34	28	31	25	24/09/2021 23:45	38	32	35	29	25/09/2021 23:45	29	21	27	18
22/09/2021 20:30	44	37	39	31	23/09/2021 00:00	38	32	35	27	24/09/2021 00:00	34	28	31	25	25/09/2021 00:00	36	30	35	28	26/09/2021 00:00	30	21	27	18
22/09/2021 20:45	40	33	38	30	23/09/2021 00:15	36	31	33	24	24/09/2021 00:15	38	32	31	27	25/09/2021 00:15	36	29	34	27	26/09/2021 00:15	29	23	26	17
22/09/2021 21:00	41	34	38	30	23/09/2021 00:30	34	27	32	24	24/09/2021 00:30	40	33	31	27	25/09/2021 00:30	35	30	33	27	26/09/2021 00:30	29	20	27	18
22/09/2021 21:15	41	36	38	29	23/09/2021 00:45	34	27	32	24	24/09/2021 00:45	41	33	30	25	25/09/2021 00:45	36	30	34	27	26/09/2021 00:45	28	19	26	17
22/09/2021 21:30	46	38	38	30	23/09/2021 01:00	35	28	32	24	24/09/2021 01:00	32	27	29	24	25/09/2021 01:00	38	32	33	27	26/09/2021 01:00	29	21	26	17
22/09/2021 21:45	40	33	38	30	23/09/2021 01:15	34	26	31	23	24/09/2021 01:15	31	26	29	24	25/09/2021 01:15	35	29	33	26	26/09/2021 01:15	37	26	25	16
22/09/2021 22:00	39	31	37	29	23/09/2021 01:30	34	27	32	24	24/09/2021 01:30	33	27	30	25	25/09/2021 01:30	34	28	32	26	26/09/2021 01:30	27	19	25	16
22/09/2021 22:15	39	32	36	28	23/09/2021 01:45	33	26	31	23	24/09/2021 01:45	34	28	31	25	25/09/2021 01:45	34	28	32	26	26/09/2021 01:45	27	19	25	16
22/09/2021 22:30	39	32	37	29	23/09/2021 02:00	33	25	31	23	24/09/2021 02:00	34	27	30	25	25/09/2021 02:00	34	28	31	25	26/09/2021 02:00	28	19	26	17
22/09/2021 22:45	43	37	36	29	23/09/2021 02:15	35	26	31	23	24/09/2021 02:15	34	27	29	24	25/09/2021 02:15	43	38	32	26	26/09/2021 02:15	27	18	25	16
					23/09/2021 02:30	33	25	31	22	24/09/2021 02:30	34	29	29	24	25/09/2021 02:30	33	28	31	26	26/09/2021 02:30	28	19	25	17
					23/09/2021 02:45	33	26	31	23	24/09/2021 02:45	32	27	30	25	25/09/2021 02:45	34	29	31	26	26/09/2021 02:45	27	18	25	16
					23/09/2021 03:00	34	26	32	24	24/09/2021 03:00	31	26	29	24	25/09/2021 03:00	33	28	31	25	26/09/2021 03:00	27	18	25	16
					23/09/2021 03:15	33	26	31	24	24/09/2021 03:15	34	28	30	25	25/09/2021 03:15	32	27	30	25	26/09/2021 03:15	30	21	25	16
					23/09/2021 03:30	33	27	31	24	24/09/2021 03:30	34	29	32	26	25/09/2021 03:30	32	28	30	25	26/09/2021 03:30	29	20	26	17
					23/09/2021 03:45	34	27	32	25	24/09/2021 03:45	37	31	34	28	25/09/2021 03:45	31	26	30	24	26/09/2021 03:45	28	20	26	18
					23/09/2021 04:00	35	29	33	26	24/09/2021 04:00	38	32	35	29	25/09/2021 04:00	32	27	30	24	26/09/2021 04:00	29	23	28	21
					23/09/2021 04:15	34	27	32	25	24/09/2021 04:15	37	31	35	29	25/09/2021 04:15	33	28	31	25	26/09/2021 04:15	29	23	28	21
					23/09/2021 04:30	34	28	32	26	24/09/2021 04:30	37	32	35	29	25/09/2021 04:30	34	30	32	26	26/09/2021 04:30	29	23	28	21
					23/09/2021 04:45	35	28	33	26	24/09/2021 04:45	36	30	34	27	25/09/2021 04:45	34	29	32	26	26/09/2021 04:45	29	24	28	22
					23/09/2021 05:00	36	30	34	27	24/09/2021 05:00	36	31	34	28	25/09/2021 05:00	33	29	32	26	26/09/2021 05:00	30	24	28	22
					23/09/2021 05:15	39	31	35	28	24/09/2021 05:15	37	31	35	29	25/09/2021 05:15	35	29	32	26	26/09/2021 05:15	32	28	21	
					23/09/2021 05:30	38	31	36	29	24/09/2021 05:30	37	31	35	29	25/09/2021 05:30	35	28	32	25	26/09/2021 05:30	30	24	28	22
					23/09/2021 05:45	42	32	37	30	24/09/2021 05:45	40	31	36	29	25/09/2021 05:45	38	28	33	26	26/09/2021 05:45	32	25	29	23
					23/09/2021 06:00	48	33	39	31	24/09/2021 06:00	48	31	37	29	25/09/2021 06:00	48	28	34	26	26/09/2021 06:00	42	25	30	23
					23/09/2021 06:15	45	36	40	34	24/09/2021 06:15	46	32	38	30	25/09/2021 06:15	49	30	35	27	26/09/2021 06:15	50	28	32	25
					23/09/2021 06:30	46	36	42	34	24/09/2021 06:30	45	34	38	31	25/09/2021 06:30	48	29	34	26	26/09/2021 06:30	46	28	33	25
					23/09/2021 06:45	45	36	42	34	24/09/2021 06:45	48	34	39	31	25/09/2021 06:45	43	30	35	27	26/09/2021 06:45	43	29	34	26
					23/09/2021 07:00	48	40	44	35	24/09/2021 07:00	48	37	40	33	25/09/2021 07:00	43	32	36	28	26/09/2021 07:00	44	28	35	26
					23/09/2021 07:15	50	37	43	35	24/09/2021 07:15	46	35	41	33	25/09/2021 07:15	45	31	37	28	26/09/2021 07:15	49	30	37	27
					23/09/2021 07:30	49	38	44	36	24/09/2021 07:30	47	35	41	32	25/09/2021 07:30	48	30	37	27	26/09/2021 07:30	47	33	37	28
					23/09/2021 07:45	49	38	45	36	24/09/2021 07:45	47	35	42	33	25/09/2021 07:45	44	30	36	27	26/09/2021 07:45	47	31	36	28
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					23/09/2021 08:45	47	39	42	35	24/09/2021 08:45	46	35	40	32	25/09/2021 08:45	45	32	37	30	26/09/2021 08:45	44	30	36	27
					23/09/2021 09:00	54	49	48	40	24/09/2021 09:00	44	37	40	32	25/09/2021 09:00	42	32	36	30	26/09/2021 09:00	44	30	36	27
					23/09/2021 09:15	49	42	42	34	24/09/2021 09:15	47	37	41	34	25/09/2021 09:15	39	30	33	25	26/09/2021 09:15	47	29	36	27
					23/09/2021 09:30	44	35	41	33	24/09/2021 09:30	47	39	41	33	25/09/2021 09:30	46	30	35	26	26/09/2021 09:30	40	30	36	28
					23/09/2021 09:45	45	37	42	34	24/09/2021 09:45	48	39	42	34	25/09/2021 09:45	43	29	35	25	26/09/2021 09:45	39	30	36	28
					23/09/2021 10:00	47	40	43	34	24/09/2021 10:00	46	37	40	33	25/09/2021 10:00	43	30	34	24	26/09/2021 10:00	40	32	36	28
					23/09/2021 10:15	46	38	42	33	24/09/2021 10:15	46	34	39	31	25/09/2021 10:15	44	29	34	25	26/09/2021 10:15	42	31	37	28
					23/09/2021 10:30	48	37	43	34	24/09/2021 10:30	50	43	39	31	25/09/2021 10:30	45	28	34	25	26/09/2021 10:30	44	30	37	27
					23/09/2021 10:45	50	41	45	35	24/09/2021 10:45	46	37	40	32	25/09/2021 10:45	43	30	34	25	26/09/2021 10:45	49	34	38	28
					23/09/2021 11:00	47	38	45	35	24/09/2021 11:00	44	38	39	31	25/09/2021 11:00	43	29	35	25	26/09/2021 11:00	42	30	37	27
					23/09/2021 11:15	47	36	41	33	24/09/2021 11:15	43	38	38	29	25/09/2021 11:15	45	28	34	24	26/09/2021 11:15	40	30	36	27
					23/09/2021 11:30	50	46	42	34	24/09/2021 11:30	41	33	39	30	25/09/2021 11:30	53	40	35	25	26/09/2021 11:30	44	32	36	27
					23/09/2021 11:45	48	43	42	33</															

Figure 13. MP1 Daytime September Survey 2021 07:00-23:00 LA90,1hour Frequency Distribution Chart

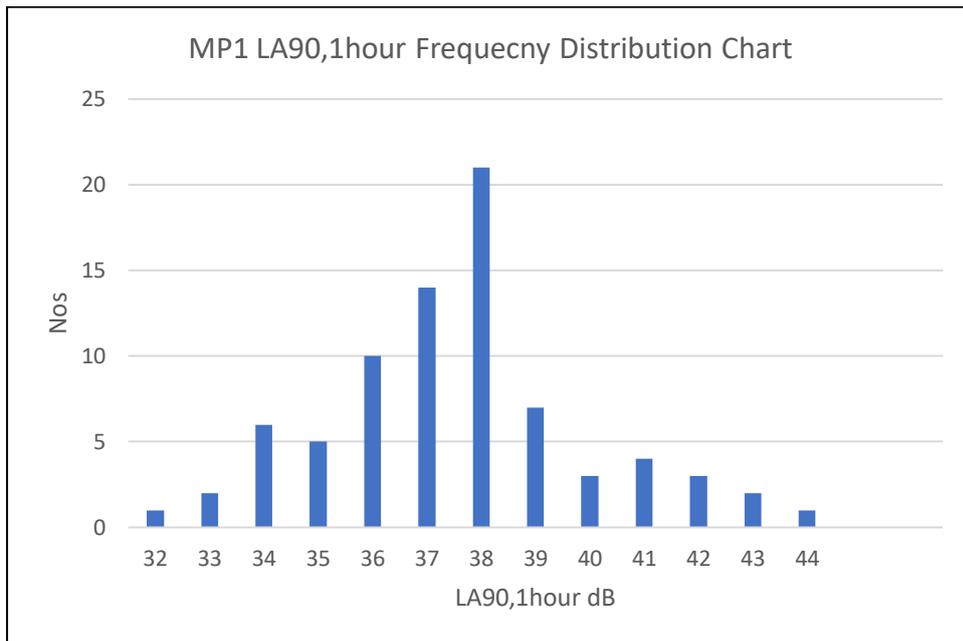


Figure 14. MP1 September Survey 2021 Evening (19:00-23:00) LA90,1hour Frequency Distribution Chart

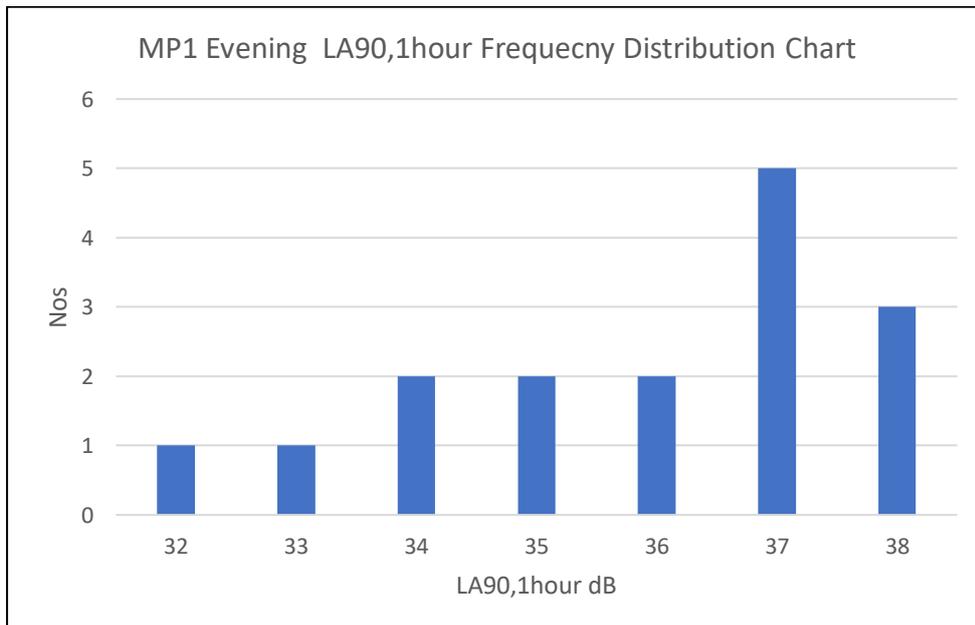


Figure 15. MP1 September Survey 2021 Night Time (23:00-07:00) LAeq,15minute Frequency Distribution Chart

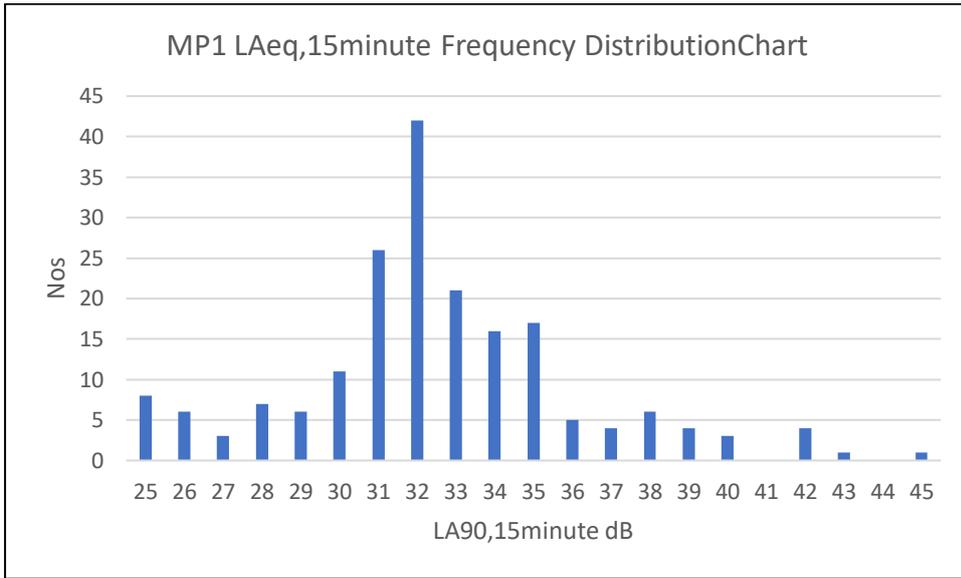


Figure 16. MP8 November 2021 Survey Daytime (07:00-23:00) LA90,1hour Frequency Distribution Chart

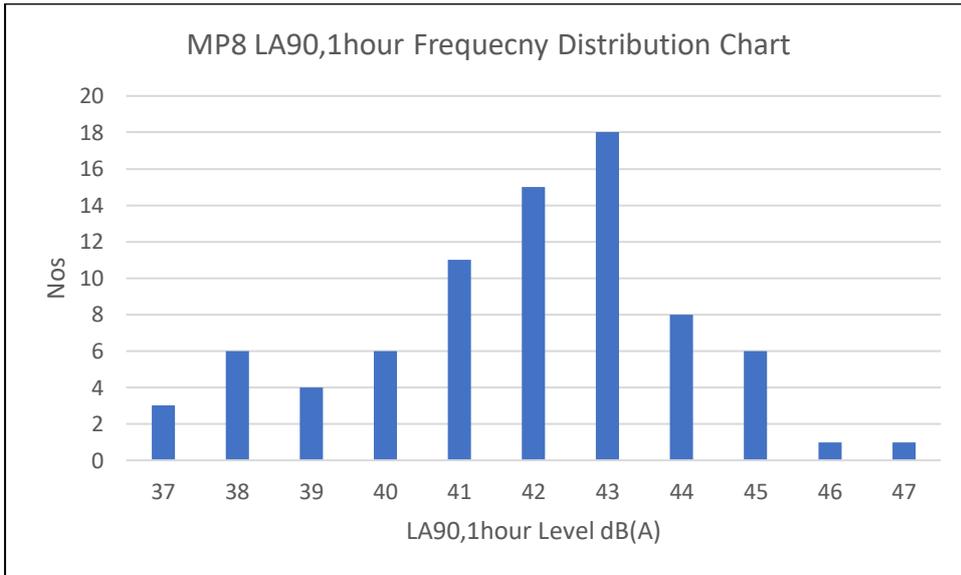


Figure 17. MP8 November Survey Evening (19:00-23:00) LA90,1hour Frequency Distribution Chart

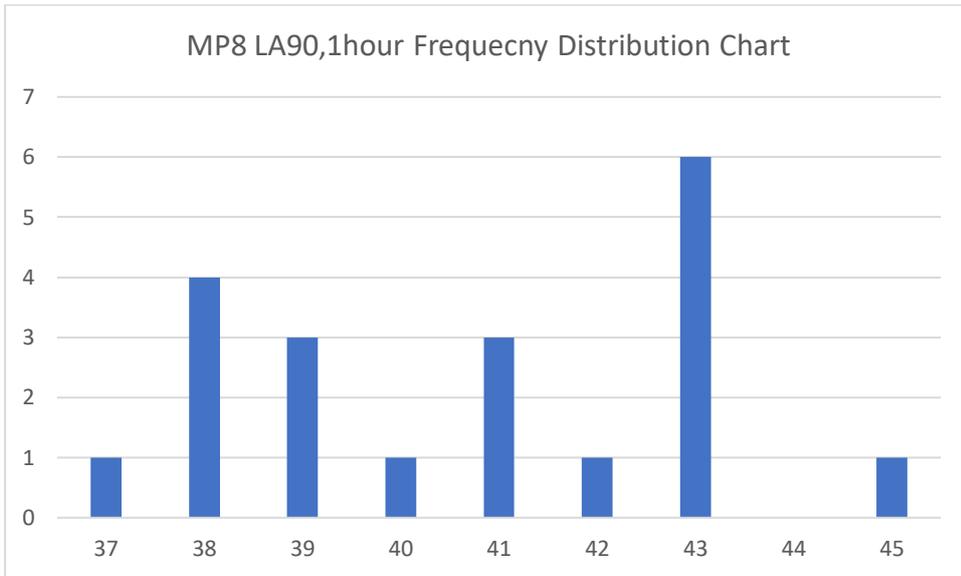
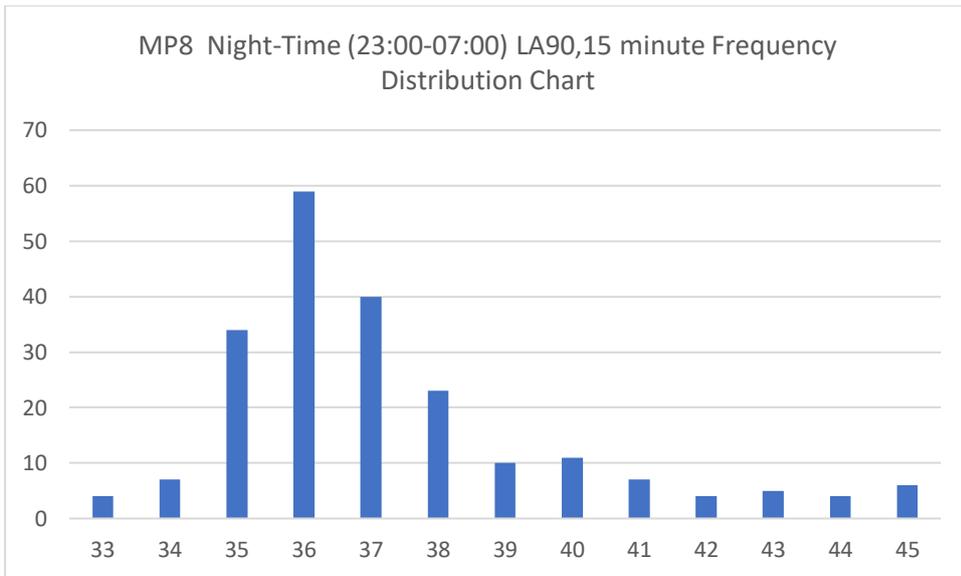
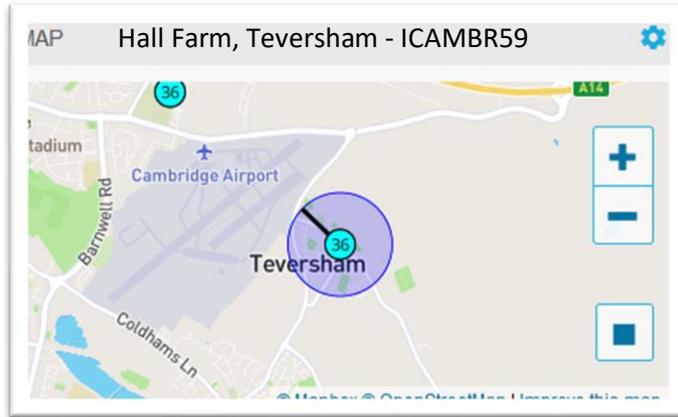


Figure 18. MP8 November 2021 Survey Night-Time (23:00-07:00) LA90,15 minute Frequency Distribution Chart



Appendix D: Meteorological Data

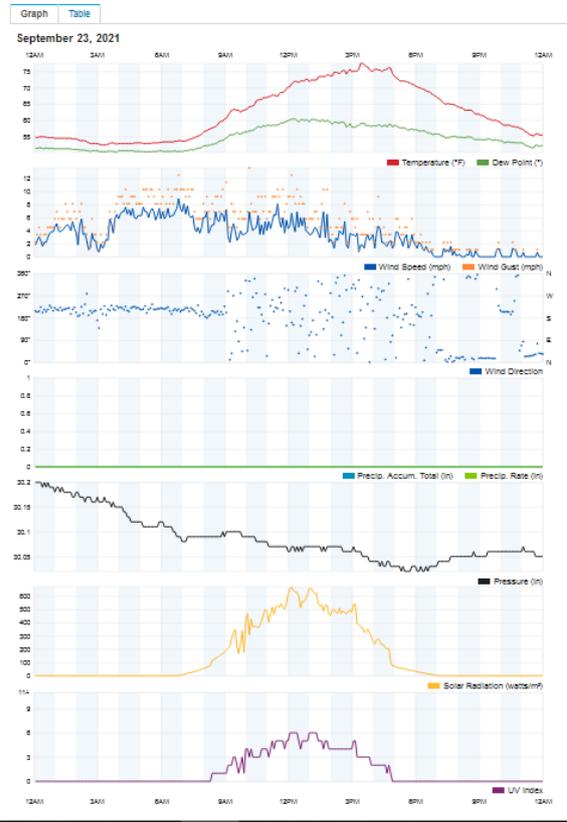
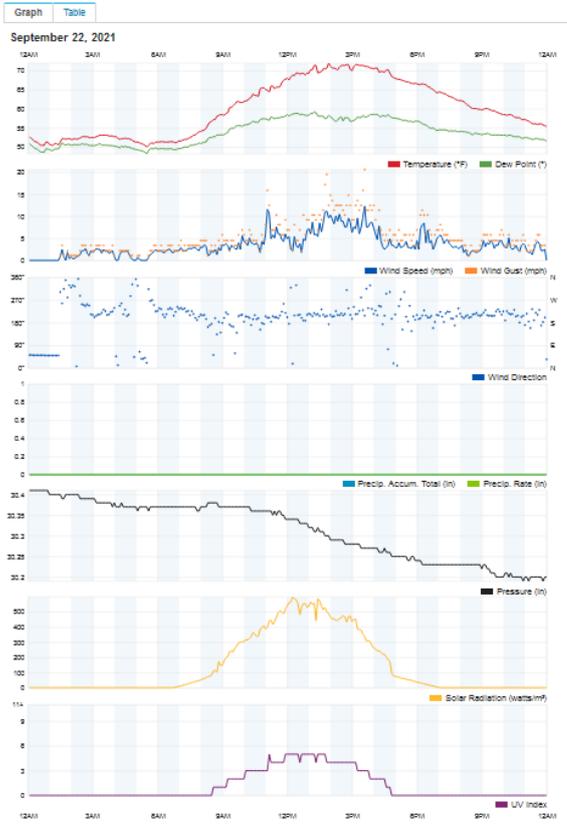


Summary September 22, 2021

	High	Low	Average		High	Low	Average
Temperature	72.0 °F	49.3 °F	60.0 °F	Wind Speed	12.3 mph	0.0 mph	1.8 mph
Dew Point	69.2 °F	43.0 °F	63.6 °F	Wind Gust	20.8 mph	-	2.7 mph
Humidity	88 %	68 %	80 %	Wind Direction	-	-	SSW
Precipitation	0.00 in	-	-	Pressure	30.41 in	30.18 in	-

Summary September 23, 2021

	High	Low	Average		High	Low	Average
Temperature	77.4 °F	62.5 °F	69.9 °F	Wind Speed	9.8 mph	0.0 mph	1.7 mph
Dew Point	60.4 °F	60.2 °F	64.4 °F	Wind Gust	13.8 mph	-	2.7 mph
Humidity	92 %	60 %	77 %	Wind Direction	-	-	SW
Precipitation	0.00 in	-	-	Pressure	30.20 in	30.02 in	-



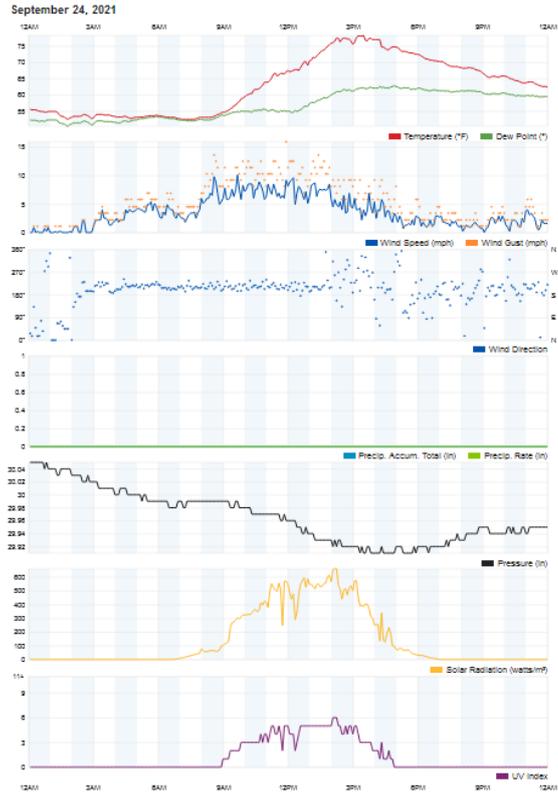
# Cambridge City Airport Radar Noise - Statutory Nuisance & Planning Assessment

Previous Daily Mode Septemb 2 2021 View Next

## Summary September 24, 2021

	High	Low	Average		High	Low	Average
Temperature	78.0 °F	62.2 °F	62.8 °F	Wind Speed	10.1 mph	0.0 mph	1.9 mph
Dew Point	62.9 °F	60.2 °F	66.4 °F	Wind Gust	16.9 mph	--	2.8 mph
Humidity	88 %	66 %	81 %	Wind Direction	--	--	88W
Precipitation	0.00 in	--	--	Pressure	30.06 in	29.80 in	--

Graph Table

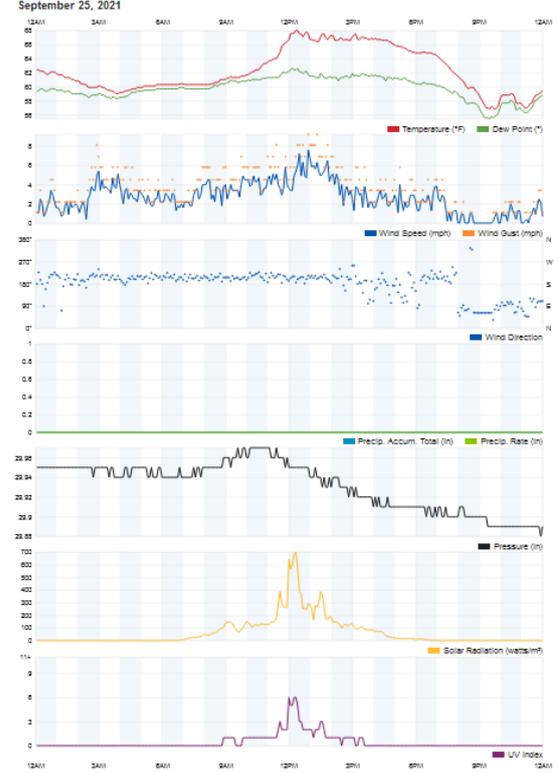


Previous Daily Mode Septemb 2 2021 View Next

## Summary September 25, 2021

	High	Low	Average		High	Low	Average
Temperature	68.0 °F	66.0 °F	67.2 °F	Wind Speed	7.8 mph	0.0 mph	1.4 mph
Dew Point	62.8 °F	64.9 °F	66.7 °F	Wind Gust	9.2 mph	--	2.0 mph
Humidity	88 %	80 %	82 %	Wind Direction	--	--	88W
Precipitation	0.00 in	--	--	Pressure	29.97 in	29.87 in	--

Graph Table

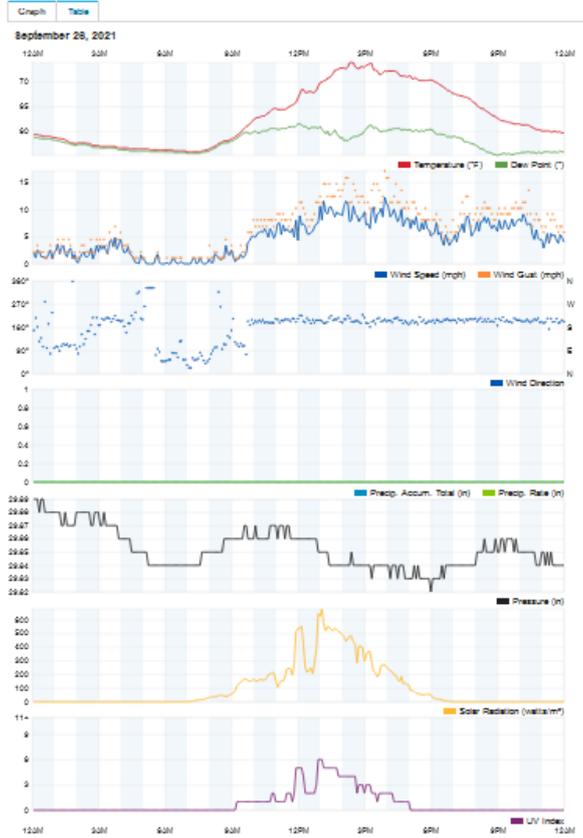


# Cambridge City Airport Radar Noise - Statutory Nuisance & Planning Assessment

## Weather History for ICAMBR59

Previous  
**Summary**  
 September 28, 2021

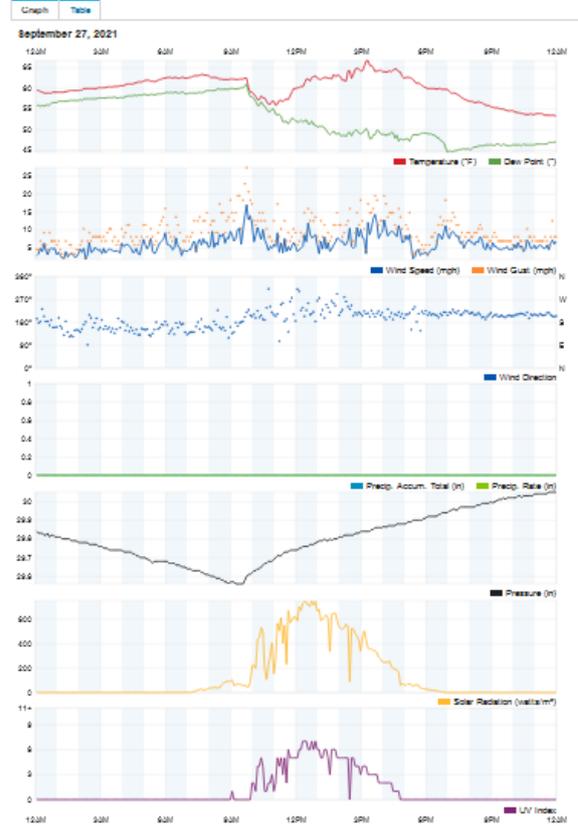
	High	Low	Average		High	Low	Average
Temperature	73.8 °F	55.8 °F	62.9 °F	Wind Speed	12.3 mph	0.0 mph	2.8 mph
Dew Point	61.5 °F	54.9 °F	57.9 °F	Wind Gust	17.2 mph	--	4.1 mph
Humidity	99 %	97 %	95 %	Wind Direction	--	--	SSW
Precipitation	0.00 in	--	--	Pressure	29.99 in	29.92 in	--



## Weather History for ICAMBR59

Previous  
**Summary**  
 September 27, 2021

	High	Low	Average		High	Low	Average
Temperature	66.7 °F	53.2 °F	59.9 °F	Wind Speed	17.8 mph	0.0 mph	3.3 mph
Dew Point	61.0 °F	43.9 °F	52.4 °F	Wind Gust	27.3 mph	--	5.1 mph
Humidity	96 %	59 %	77 %	Wind Direction	--	--	South
Precipitation	0.00 in	--	--	Pressure	30.05 in	29.95 in	--



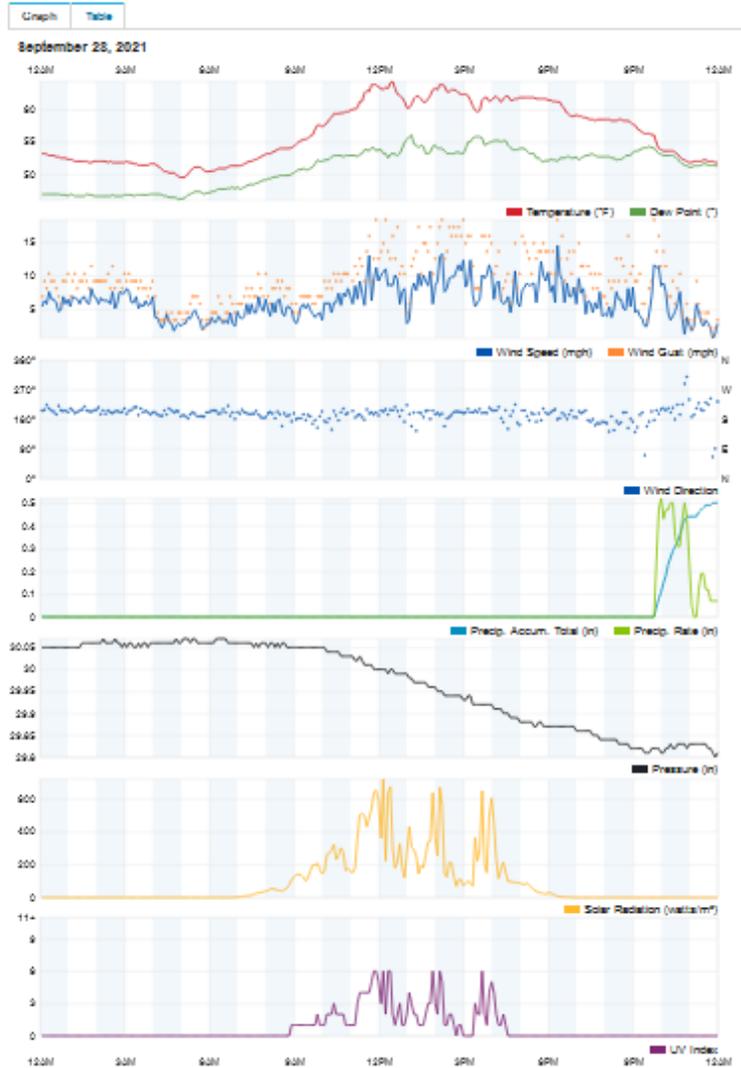
# Cambridge City Airport Radar Noise - Statutory Nuisance & Planning Assessment

## Weather History for ICAMBR59

←
Day Mode
Septemb
2
2021
View
Next
→

Previous  
 Summary  
 September 28, 2021

	High	Low	Average		High	Low	Average
Temperature	84.4 °F	42.5 °F	56.3 °F	Wind Speed	14.5 mph	0.0 mph	3.4 mph
Dew Point	56.1 °F	45.9 °F	50.8 °F	Wind Gust	18.3 mph	--	5.2 mph
Humidity	35 %	67 %	62 %	Wind Direction	--	--	SSW
Precipitation	0.50 in	--	--	Pressure	30.07 in	29.79 in	--

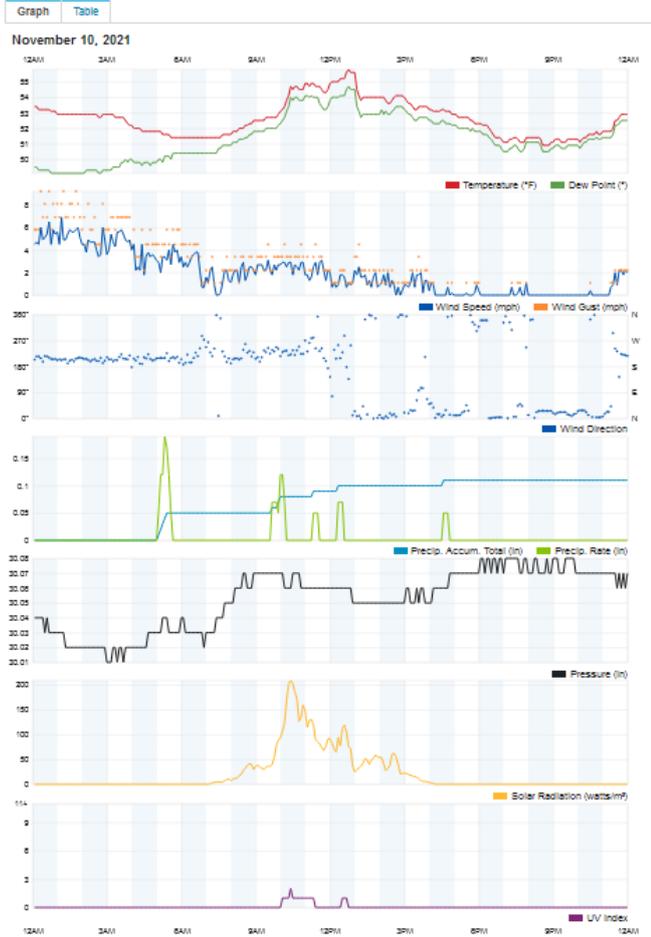


# Cambridge City Airport Radar Noise - Statutory Nuisance & Planning Assessment

Previous Daily Mode November 1 2021 View Next

**Summary**  
**November 10, 2021**

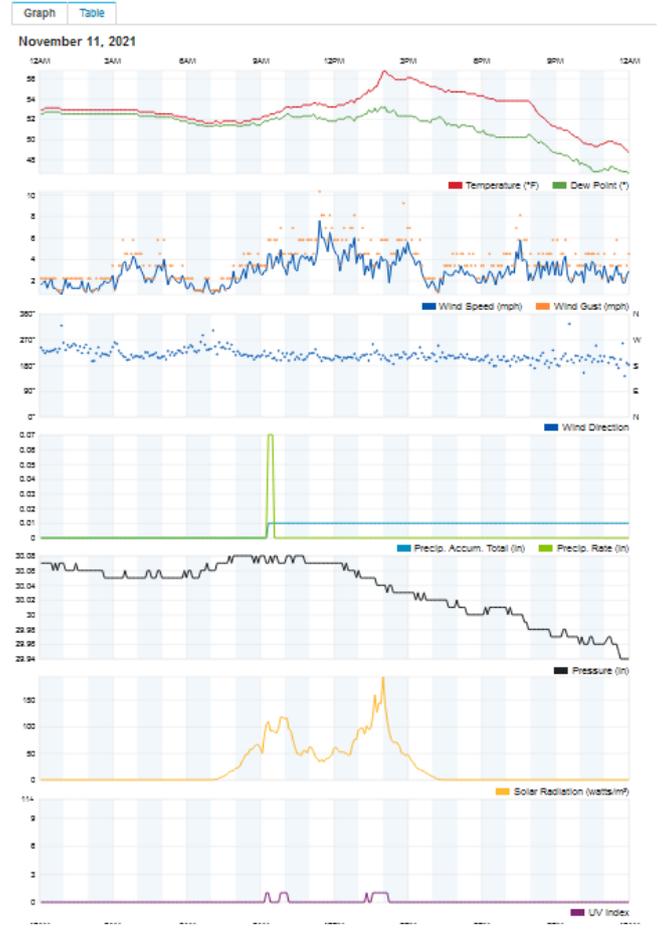
	High	Low	Average		High	Low	Average
Temperature	66.8 °F	60.9 °F	62.8 °F	Wind Speed	8.9 mph	0.0 mph	1.0 mph
Dew Point	64.7 °F	48.9 °F	61.3 °F	Wind Gust	9.2 mph	--	1.4 mph
Humidity	89 %	88 %	86 %	Wind Direction	--	--	88W
Precipitation	0.11 in	--	--	Pressure	30.08 in	30.00 in	--



Previous Daily Mode November 11 2021 View Next

**Summary**  
**November 11, 2021**

	High	Low	Average		High	Low	Average
Temperature	68.8 °F	48.4 °F	62.9 °F	Wind Speed	7.8 mph	0.0 mph	1.5 mph
Dew Point	63.2 °F	48.2 °F	61.2 °F	Wind Gust	10.8 mph	--	2.1 mph
Humidity	89 %	88 %	84 %	Wind Direction	--	--	88W
Precipitation	0.01 in	--	--	Pressure	30.08 in	29.98 in	--

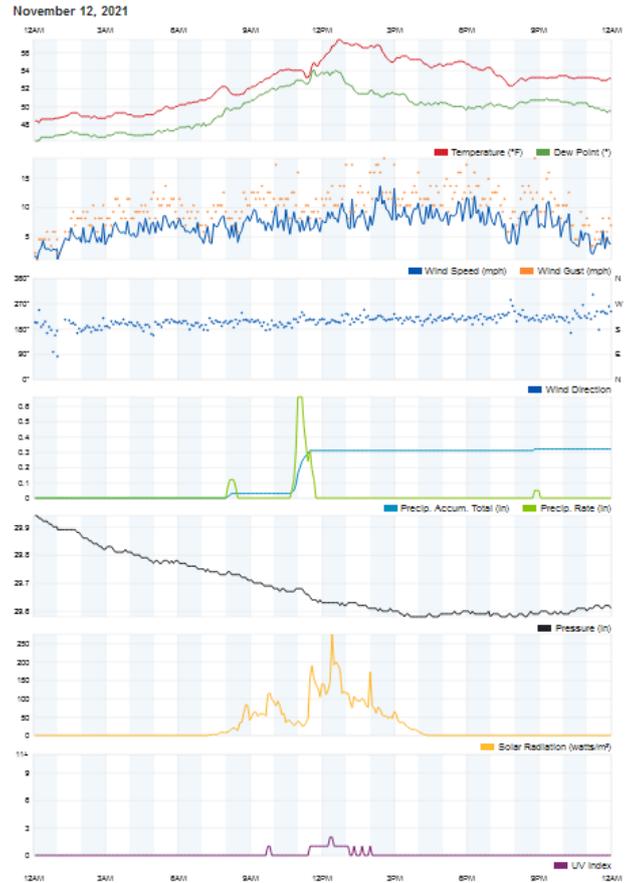


# Cambridge City Airport Radar Noise - Statutory Nuisance & Planning Assessment

## Weather History for ICAMBR59

### Summary November 12, 2021

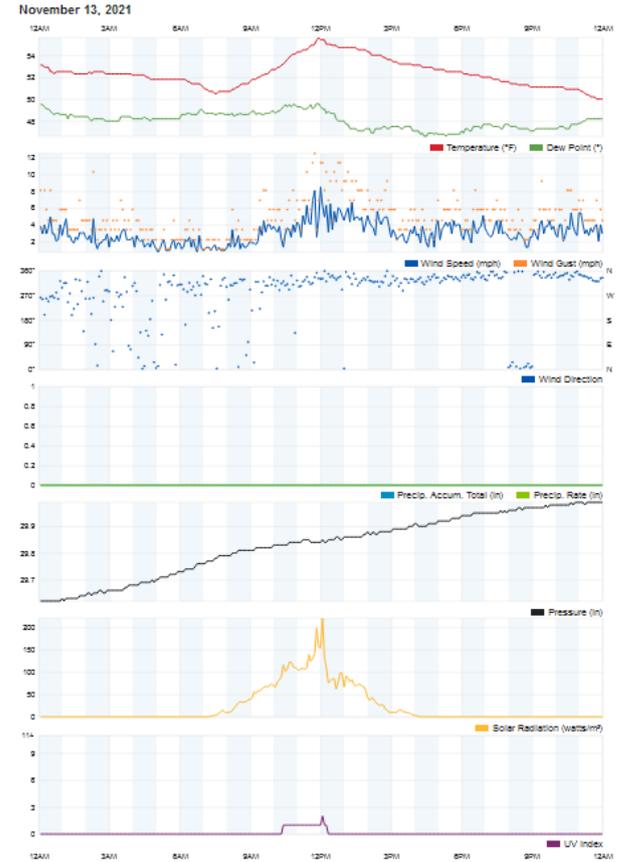
	High	Low	Average		High	Low	Average
Temperature	67.4 °F	43.2 °F	62.8 °F	Wind Speed	13.8 mph	0.0 mph	4.0 mph
Dew Point	64.1 °F	48.0 °F	49.7 °F	Wind Gust	18.3 mph	--	6.8 mph
Humidity	87 %	80 %	80 %	Wind Direction	--	--	8 SW
Precipitation	0.52 in	--	--	Pressure	29.84 in	29.67 in	--



## Weather History for ICAMBR59

### Summary November 13, 2021

	High	Low	Average		High	Low	Average
Temperature	66.8 °F	48.5 °F	62.4 °F	Wind Speed	8.6 mph	0.0 mph	1.2 mph
Dew Point	49.8 °F	48.8 °F	48.0 °F	Wind Gust	12.6 mph	--	2.0 mph
Humidity	84 %	76 %	86 %	Wind Direction	--	--	NW
Precipitation	0.00 in	--	--	Pressure	29.89 in	29.81 in	--



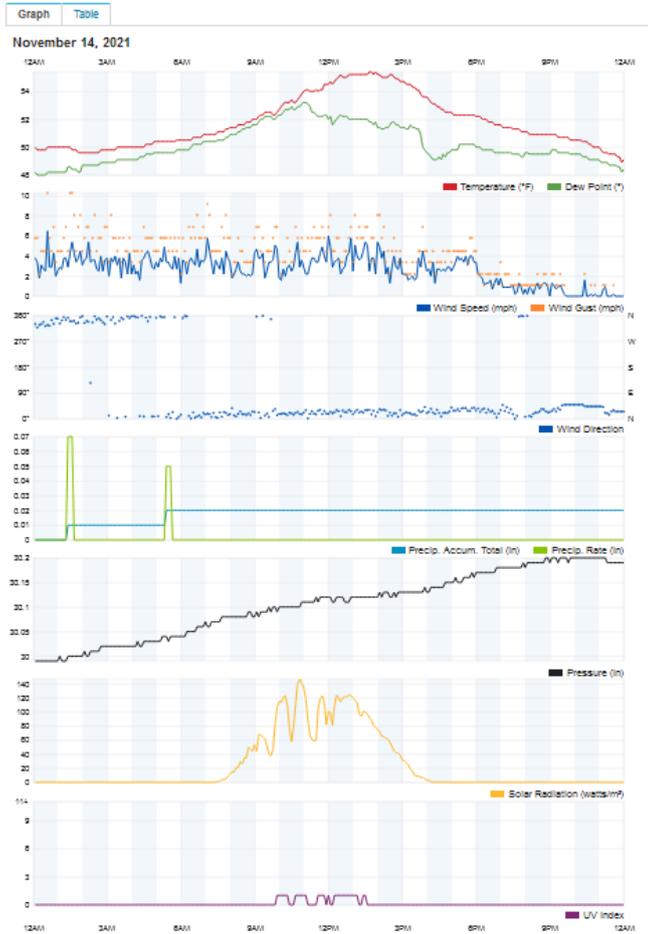
# Cambridge City Airport Radar Noise - Statutory Nuisance & Planning Assessment

## Weather History for ICAMBR59

Daily Mode
November
1
2021

**Summary**  
November 14, 2021

	High	Low	Average		High	Low	Average
Temperature	66.4 °F	48.8 °F	61.7 °F	Wind Speed	8.6 mph	0.0 mph	1.1 mph
Dew Point	63.2 °F	48.0 °F	60.1 °F	Wind Gust	10.3 mph	--	1.3 mph
Humidity	98 %	98 %	94 %	Wind Direction	--	--	North
Precipitation	0.02 in	--	--	Pressure	30.20 in	29.88 in	--

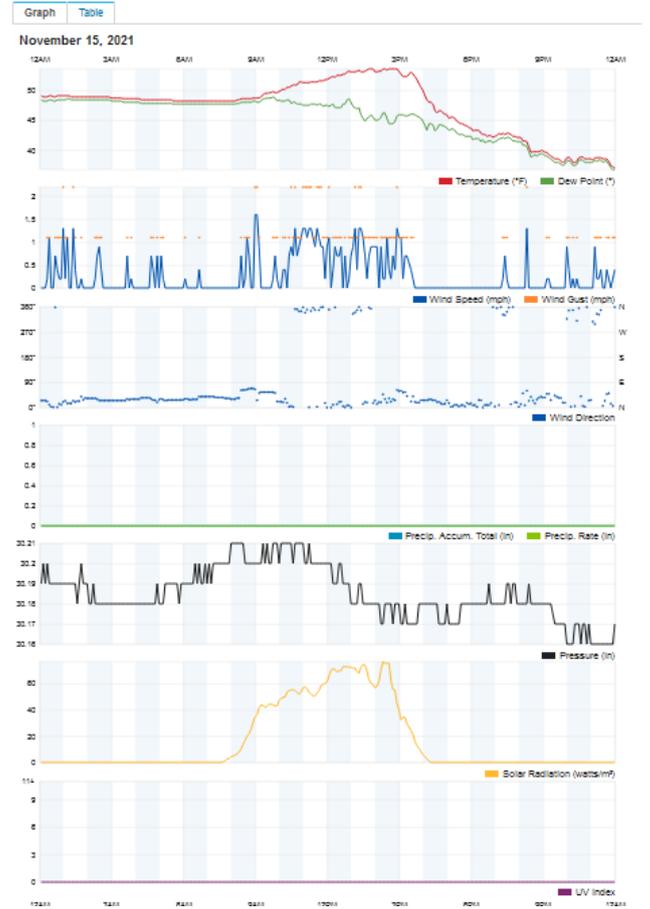


## Weather History for ICAMBR59

Daily Mode
November
1
2021

**Summary**  
November 15, 2021

	High	Low	Average		High	Low	Average
Temperature	63.8 °F	38.8 °F	47.1 °F	Wind Speed	1.8 mph	0.0 mph	0.1 mph
Dew Point	48.8 °F	38.3 °F	46.1 °F	Wind Gust	2.2 mph	--	0.1 mph
Humidity	89 %	89 %	88 %	Wind Direction	--	--	North
Precipitation	0.00 in	--	--	Pressure	30.21 in	30.16 in	--



# Cambridge City Airport Radar Noise - Statutory Nuisance & Planning Assessment

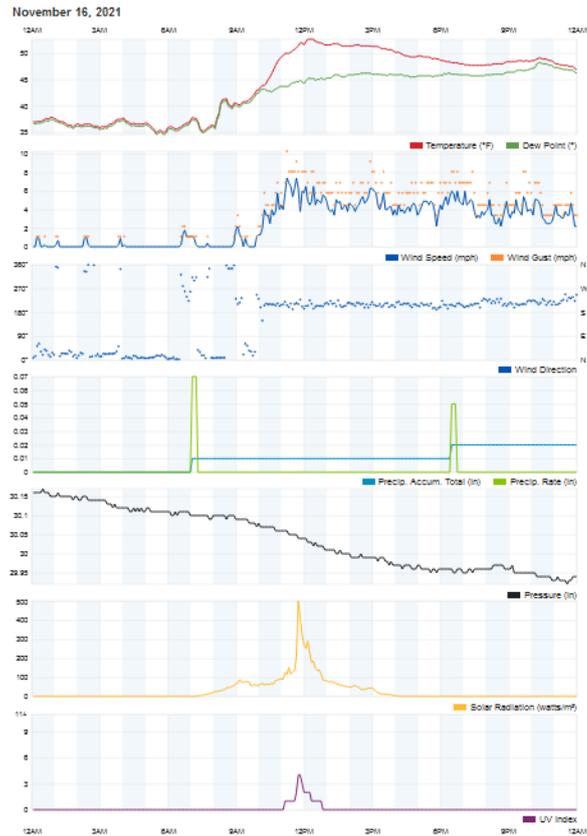
## Weather History for ICAMBR59

Previous Daily Mode November 1 2021 View Next

### Summary November 16, 2021

	High	Low	Average		High	Low	Average
Temperature	62.7 °F	34.6 °F	44.2 °F	Wind Speed	7.4 mph	0.0 mph	1.8 mph
Dew Point	48.2 °F	34.2 °F	41.9 °F	Wind Gust	10.5 mph	--	2.2 mph
Humidity	88 %	74 %	82 %	Wind Direction	--	--	8 SW
Precipitation	0.02 in	--	--	Pressure	30.17 in	29.82 in	--

Graph Table



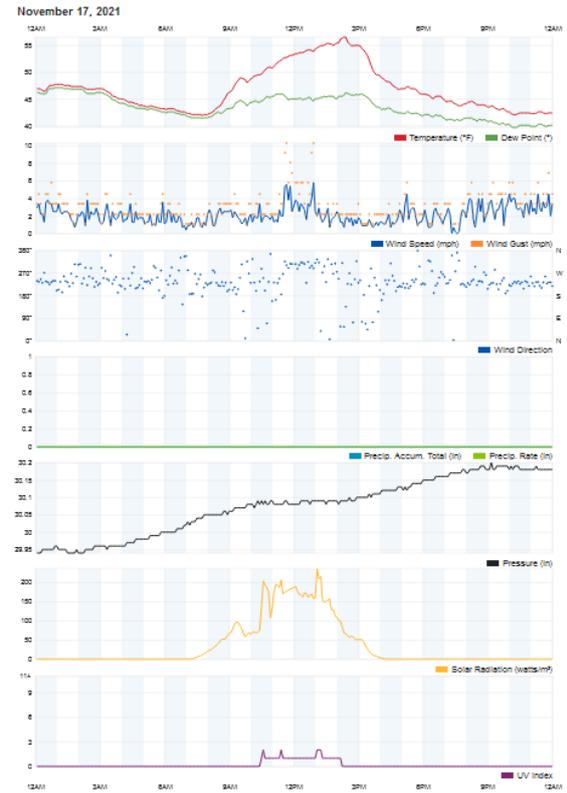
## Weather History for ICAMBR59

Previous Daily Mode November 1 2021 View Next

### Summary November 17, 2021

	High	Low	Average		High	Low	Average
Temperature	68.6 °F	41.9 °F	48.9 °F	Wind Speed	6.8 mph	0.0 mph	0.9 mph
Dew Point	47.1 °F	38.7 °F	43.3 °F	Wind Gust	10.5 mph	--	1.4 mph
Humidity	88 %	88 %	88 %	Wind Direction	--	--	WSW
Precipitation	0.00 in	--	--	Pressure	30.20 in	29.93 in	--

Graph Table



Appendix E: Glossary of Terms

**'A' weighting (dB(A)):** A frequency dependent correction which weights sound to correlate with the sensitivity of the human ear to sounds of different frequencies.

**Ambient Noise:** A measure of the typical noise (excluding any unusual events) present at a site, or in a room. This is usually described in terms of *L<sub>Aeq,T</sub>*.

**Audible:** Sound that can be heard or is perceptible by the human ear.

**Background Noise:** A measure of the underlying noise (excluding any unusual events) which is present at a site before a new noise source is introduced. This is usually described in terms of the *L<sub>A90</sub>* level: the sound pressure level exceeded for 90% of the time.

**Decibel (dB):** A unit used for many acoustic quantities to indicate the level of sound with respect to a reference level.

**External Amenity Space:** An outdoor area near to a residential building which is designed and intended primarily for leisure and recreational use by the occupants of the dwelling. This will include gardens, patios, balconies, roof gardens and terraces.

**Hertz (Hz):** The tonal quality of a sound is described and measured in terms of the frequency content and is commonly expressed as octave or third octave bands, the latter being the division of the octave bands into three for finer analysis, across the frequency spectrum. The smaller the octave band or third octave band centre frequency number defined in terms of Hz, the lower the sound. For example 63 Hz is lower than 500 Hz and is perceived as a deeper sound. The attenuation due to air absorption and natural barriers increases with frequency i.e. low frequencies are always the most difficult to control

**Inaudible:** Sound that cannot be heard or is imperceptible to the human ear.

**L<sub>A90,T</sub>:** Sound pressure level exceeded for 90% of the measurement period "T" or 'background level'.

**L<sub>Aeq,T</sub>:** Equivalent continuous sound pressure level measured over the time period "T"

**L<sub>Amax</sub>:** The maximum RMS A weighted sound pressure level

**Music Noise Level (MNL):** The Leq of music noise measured at a particular location.

**Noise:** Unwanted sound.

**Noise assessment:** A basic evaluation of an acoustic environment by a suitably qualified person to assist in the determination of a planning application..

**Noise impact:** the noise level of the source under consideration, and/or any change in noise levels due to the scheme, and/or the relationship between the noise level of the source under consideration and a descriptor of the existing noise climate; at a receptor or group of receptors.

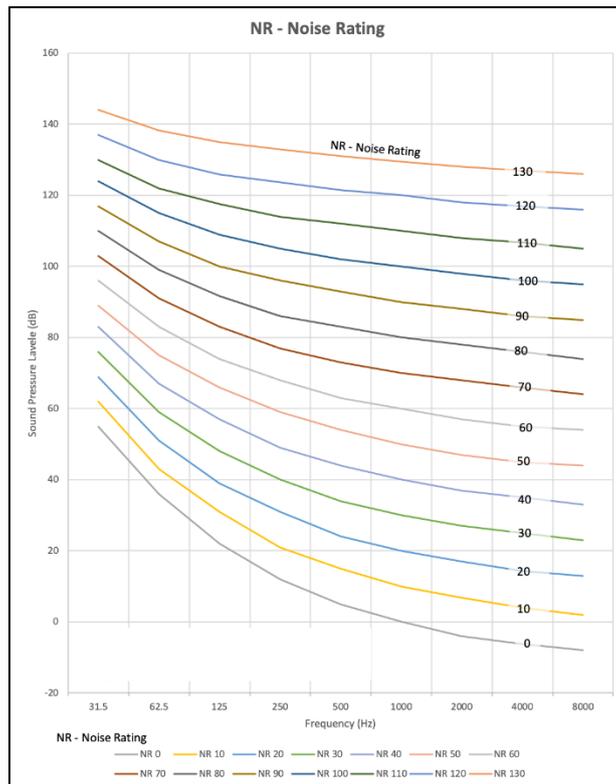
**Noise effect:** the consequence of the noise impact e.g. annoyance, sleep disturbance, speech interference, disruption of learning/teaching, health consequences, fauna displacement etc. Noise

impact and noise effect are related to each other and the noise effect is related to the magnitude of the noise impact as well as other factors e.g. sensitivity of the receptor, duration of the noise, how frequently it occurs, the time of day or night it occurs, whether the noise is temporary, reversible or permanent etc.

**Noise Emission & Noise Immissions** – Noise emissions are the sound emitted by a source. Noise immissions is the sound heard by an observer. The former is relatively independent of the environment in which the noise source is located (outdoors, in a room, etc.) Noise immissions may come from several sources and are always dependent on the environment in which the sources are located. The position of a source in a room, the size of the room, and the amount of sound absorption in the room all influence noise immissions. Outdoors, immissions levels can be influenced by the nature of the terrain, sound absorption by the ground, and wind and temperature gradients—among other effects.

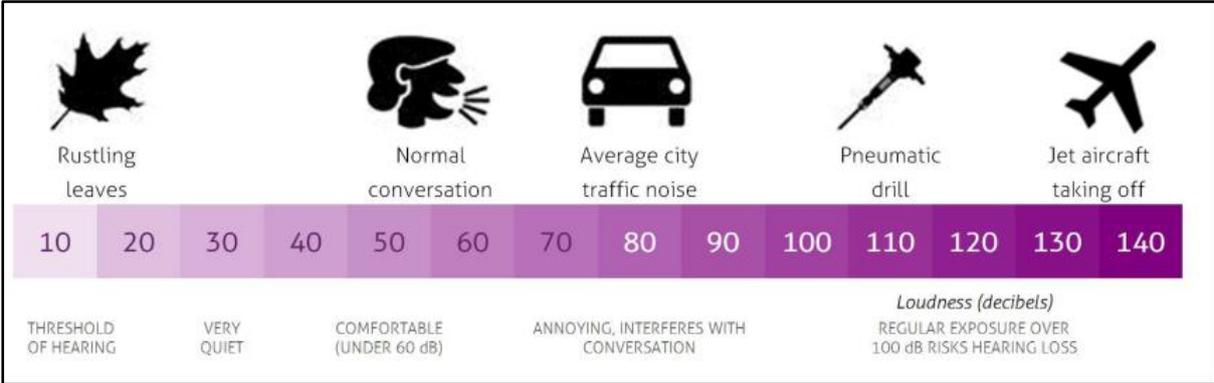
**Noise level (Lp):** the logarithmic measure of the RMS sound pressure of a sound relative to a reference value that represents the threshold of hearing. It is measured in decibels (dB) e.g.  $L_p = 20 \lg(p/p_0)$  dB re 20  $\mu$ Pa for air.

**Noise Rating (NR) Level:** is a graphical method for assigning a single-number rating to a noise spectrum. It can be used to specify the maximum acceptable level in each octave band of a frequency spectrum, or to assess the acceptability of a noise spectrum for a particular application.



**Noise sensitive premises / developments:** Principally comprising residential premises, hospitals, schools and hotels. Other premises and sites may be deemed to be noise sensitive depending upon circumstances.

Typical sound pressure levels



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**21/03224/FUL**

**Dismantling and removal of two existing radars and the construction of a new radar and other associated works**

**Land at Cambridge Airport**

# Location Plan



The Westering



Hangar H16

Hangar H17

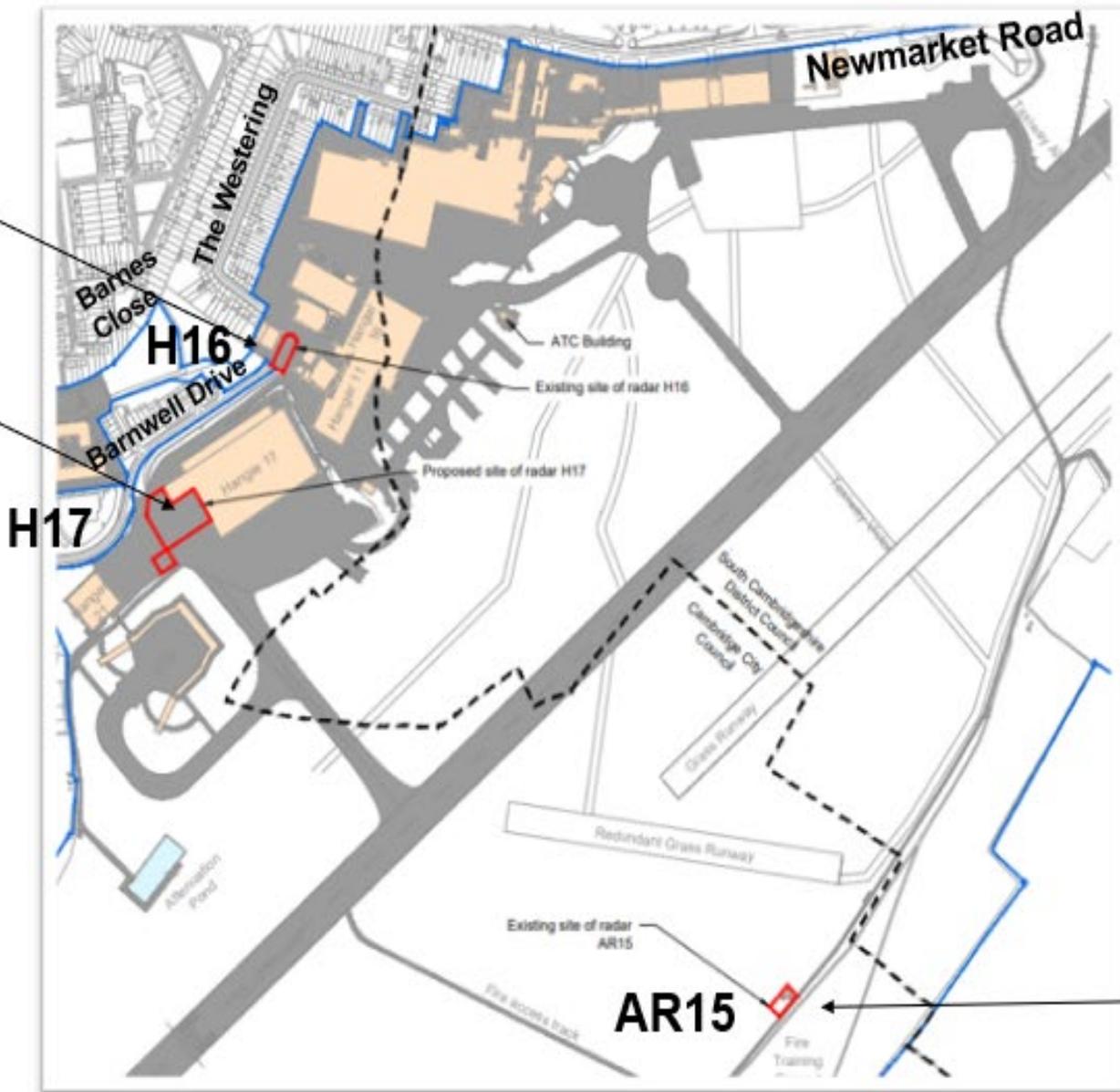
Primary runway

Fire training ground and access track

# Site Location Plan

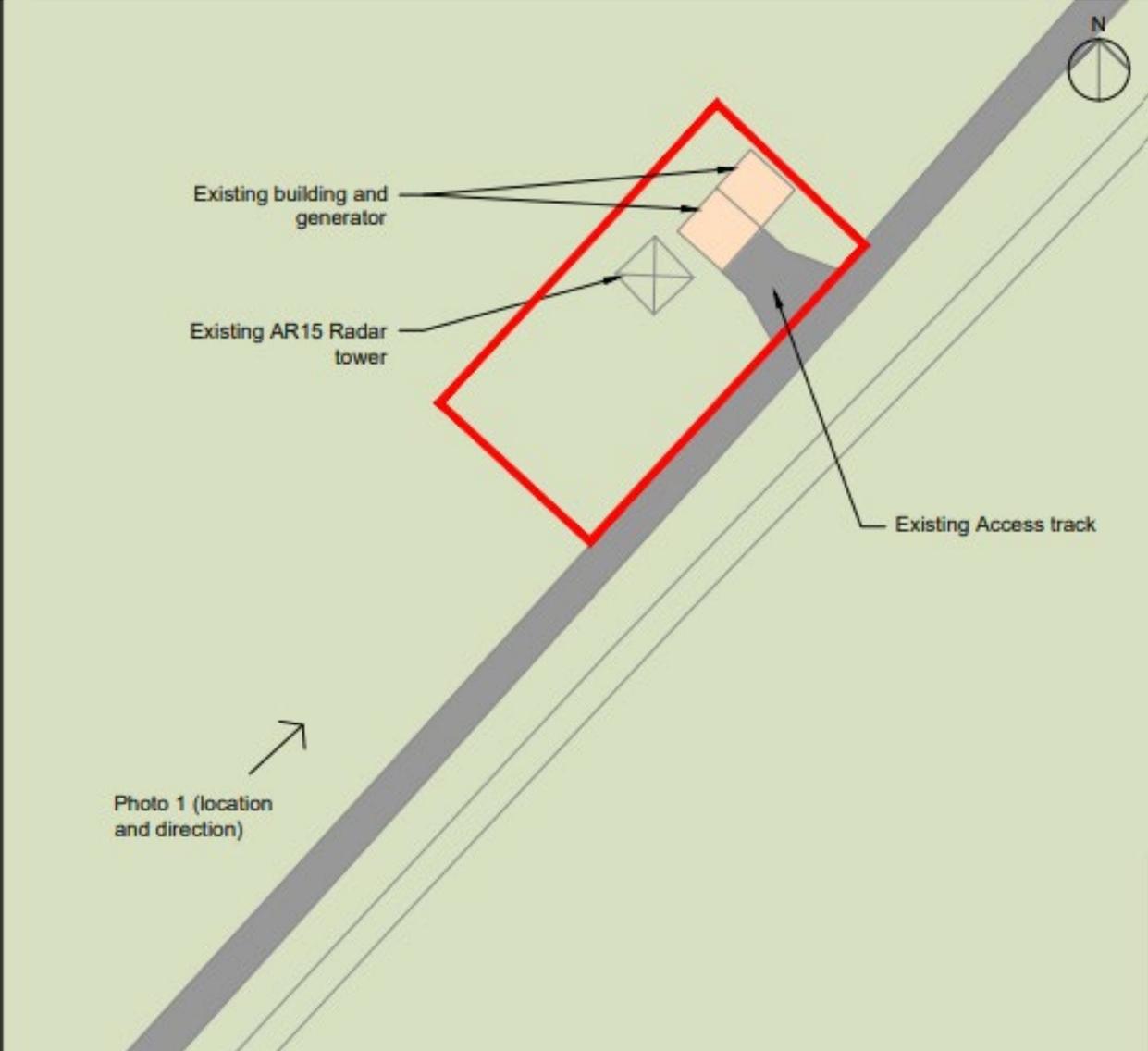
Existing Radar

Site of Proposed Radar



Existing Historic Radar

# Existing Site and Radar – AR15



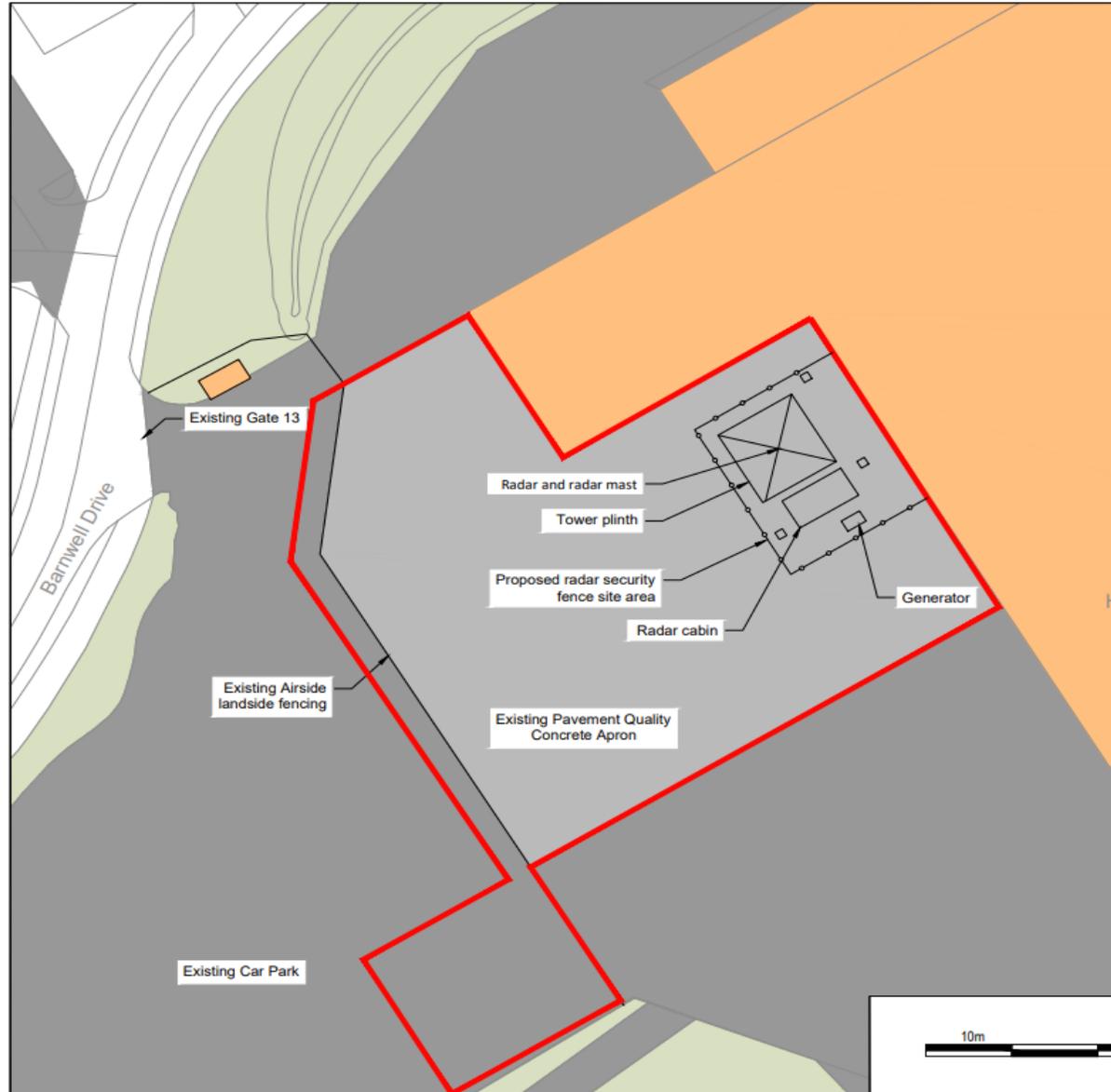
# Existing Site and Radar - H16



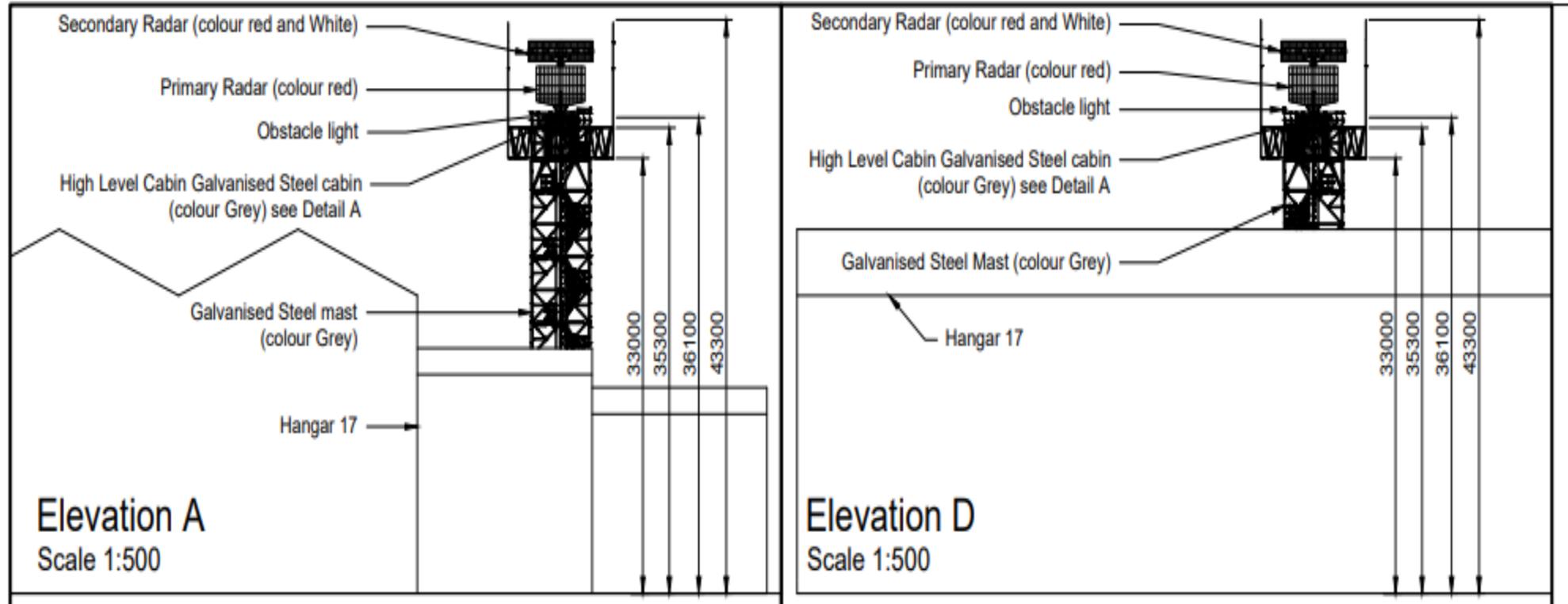
# Existing Site Layout – Proposed H17 Radar



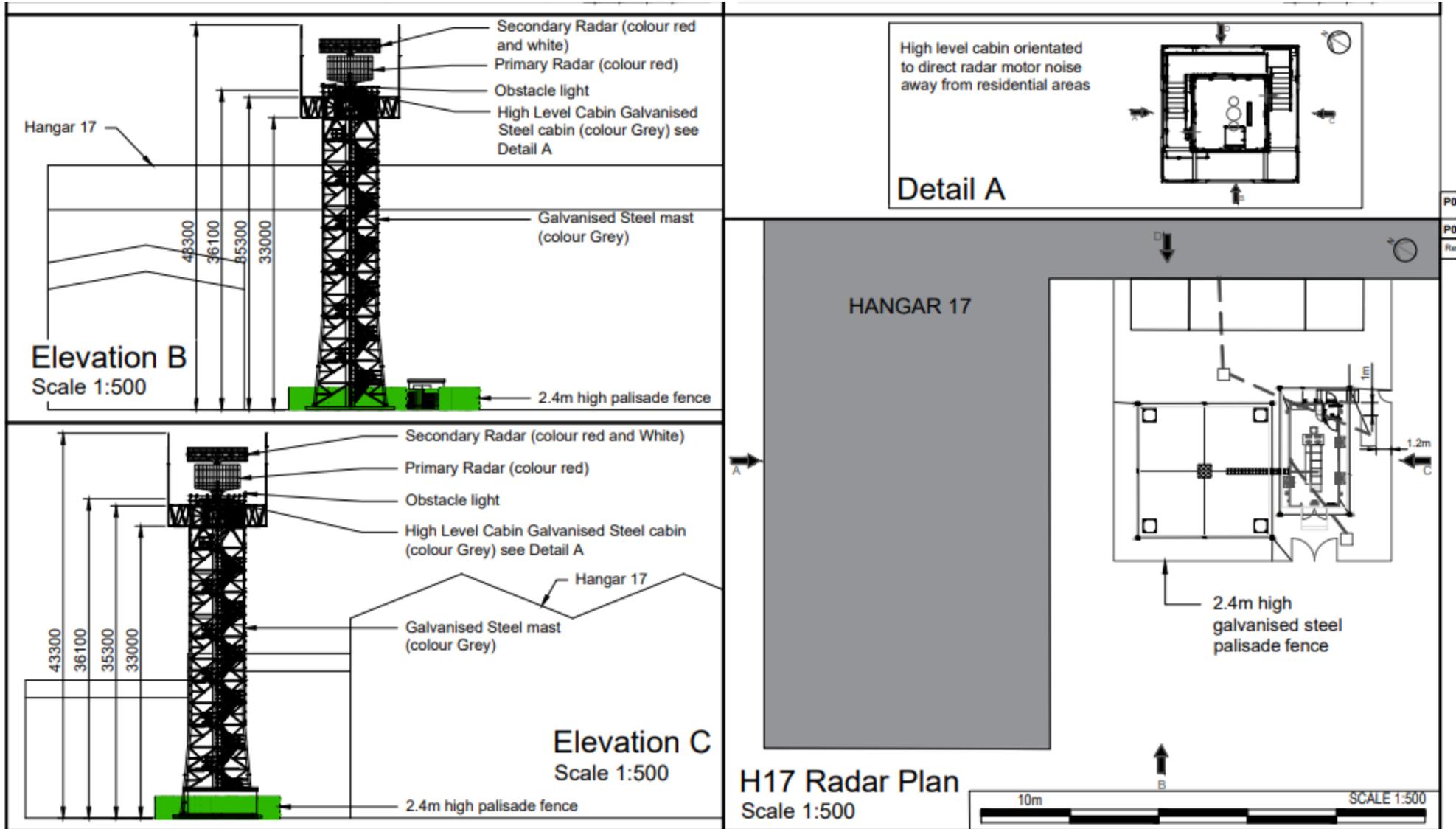
# Proposed Site Layout – H17 Radar



# H17 Radar - Proposed Elevations



# H17 Radar - Proposed Elevations



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<b>Planning Committee Date</b>	22 June 2022
<b>Report to</b>	Joint Development Control Committee
<b>Lead Officer</b>	Joint Director of Planning and Economic Development
<b>Reference</b>	21/04036/REM
<b>Site</b>	Lots S1 and S2 North West Cambridge Development, Eddington Avenue, Cambridge CB3 0LH
<b>Ward / Parish</b>	Girton/ Girton
<b>Proposal</b>	Reserved Matters approval for appearance, landscaping, layout and scale for 373 dwellings, access roads, cycle and pedestrian routes, cycle and car parking, landscaping, utilities and associated ancillary structures at Lots S1 and S2, North West Cambridge Development following outline planning permission S/1886/11 as varied by planning permission S/2036/13/VC
<b>Applicant</b>	Present Made Eddington Property Company Limited and University of Cambridge
<b>Presenting Officer</b>	Guy Wilson
<b>Reason Reported to Committee</b>	Third party representations Application raises special planning policy or other considerations
<b>Member Site Visit Date</b>	N/A
<b>Key Issues</b>	<ol style="list-style-type: none"><li>1.Compliance with the outline planning permission</li><li>2. Housing mix and tenure</li><li>3. Scale, massing and layout</li><li>4.Sustainable design and construction</li><li>5. Biodiversity and trees</li><li>6.Amenity</li></ol>
<b>Recommendation</b>	<b>APPROVE</b> subject to conditions <b>Part Discharge outline planning conditions:</b> <ul style="list-style-type: none"><li>• 1 – Layout, scale, appearance, and landscaping</li><li>• 8 – Design code compliance</li><li>• 11 – Hard and soft landscaping details</li><li>• 12 – Arboricultural assessment</li></ul>

- 20 – Distribution of market & keyworker housing
- 27 – Detailed surface water drainage strategy
- 35 – Biodiversity survey & assessment
- 43 – Cycle parking details
- 50 – Noise attenuation / insulation
- 51 – Lighting details
- 55 – Waste & recycling details
- 64 – Public art
- 65 – Fire hydrants

## **1.0 Executive Summary**

- 1.1 The application seeks planning permission for 373 dwellings, access roads, car and cycling parking, landscaping, and associated infrastructure and amenities. 2-3 storey houses are proposed on the northern part of the site. 4 apartment buildings of 4-5 storeys are proposed to be arranged around a central podium courtyard on the southern part of the site.
- 1.2 The proposals are in general compliance with the outline planning permission parameter plans approved as part of the outline planning permission, as well as relevant site-wide strategies. There are a number of areas where the Proposals do not fully comply with the Design Code including the guidance on storey heights, parking, and block typologies. However, it is considered that this is justified with the proposal adopting an innovative landscape-led approach to the northern part of the site (S1), and apartments buildings on the southern part of the site (S2) adopting an appropriate scale and massing for the site with a high-quality landscape proposals and architectural design.
- 1.3 The development will provide significant social benefits in the form of 373 houses and flats for private rent, diversifying the housing offer at Eddington. A range of dwellings are proposed, all designed to meet the Nationally Described Space Standards. All dwellings are designed to be accessible and adaptable to the different needs of individuals with all dwellings meeting the Lifetime Homes Standards and Building Regulations M4(2). The development will offer a range of amenities to residents, contributing to the development of a new community at Eddington.
- 1.4 The development will also offer significant environmental benefits, with all dwellings designed to meet Code for Sustainable Homes Level 5, with a fabric-first approach utilising modern methods of construction, supplemented by connections to the District Heating system and extensive photovoltaics. Dwellings will also be connected to the site-wide non-potable water network, with estimated potable water use of 80 litres per person per day. The development complies with the site wide Biodiversity Strategy and will also deliver a Biodiversity Net Gain, extensive and diverse planting proposed throughout the site. Landscaping also includes

a number of SuDS features including swales and rain gardens for water management. The layout and design of the site is intended to promote active travel.

- 1.5 The development will deliver significant economic benefits including significant employment during construction as well as long-term employment associated with the on-going management of the site.
- 1.6 Officers recommend approval of the application subject to conditions and informatives.

## **2.0 Site Description and Context**

- 2.1 The site is a broadly 'J' shaped measuring approximately 4.9ha. predominately flat with ground levels varying from approximately 22-24m AOD, and is predominately covered with grass and ruderal vegetation. Milne Avenue, a secondary street within Eddington, bisects the site on a southeast-northwest axis. The site is formed of two development parcels, with S1 north of Milne Avenue where it crosses the site, and S2 being the southern part of the site.
- 2.2 There is established residential development along Huntingdon Road to the north and east of the site, primarily in the form of detached dwellings in substantial plots. To the southeast of the site is a neighbourhood park and swale, with residential development beyond. The site is bordered by the temporary Ridgeway pedestrian/cycle route to the west, with future development parcels beyond this.
- 2.3 The site forms part of the North West Cambridge allocation in the South Cambridgeshire Local Plan 2018 and North West Cambridge Area Action Plan. The site is in Flood Zone 1, where there is a low risk of fluvial flooding.

## **3.0 The Proposal**

- 3.1 The application is for 373 dwellings, comprising 112 houses and 261 apartments together with shared amenity spaces, gardens, and parking.
- 3.2 Houses are proposed to be arranged as semi-detached or as terraces set within a hierarchy of streets ranging from a loop road, liveable streets, and pedestrian routes. 2-storey pitched roof, and 3-storey flat roof houses are proposed.
- 3.3 The apartments are proposed to be arranged in a group of four blocks arranged around a central podium garden with parking below. The proposed blocks are designed to step down from 5-storeys on the south and western boundaries of the site, to 4-storeys (including a set-back top floor) towards the proposed housing in the north east.

- 3.4 The scheme is proposed as Build-to-Rent (BtR) with all dwellings offered for private rent and the scheme owned and managed in the long-term by a single operator (Present Made).
- 3.5 The proposed density of the site (within the red-line site boundary for this application) is 75 dwellings per hectare (dph). For S1 and the houses on S2 the density is approximately 35dph, The density of the apartment blocks on S2 is approximately 165dph.
- 3.6 A total of 233 car parking spaces are proposed across the site a ratio of 0.6 spaces per dwelling, with a mixture of on-plot, limited on-street, and in the parking undercroft provided. There are also currently 18 visitor parking bays on Milne Avenue adjacent to the development, and 4 visitor bays are proposed to be delivered on Dobb Terrace. 792 resident cycle parking spaces are proposed, at a ratio of just over 1 space per bedroom plus 39 visitor spaces.
- 3.7 The application has been amended to address representations from Third Parties and consultees and further consultations have been carried out as appropriate.
- 3.8 Prior to submission of a formal application, the proposals evolved through pre-application discussions with Officers, and the proposals were presented to the Joint Development Control Committee, Cambridgeshire Quality Panel, and North West Cambridge Community Forum.

### **Environmental Impact Assessment**

- 3.9 Condition 6 of the outline planning application (S/2036/13/VC) requires development to be carried out in accordance with the Environmental Statement (ES) which accompanied the outline applications. The ES concluded that subject to appropriate mitigation measures secured by conditions and planning obligations, the development would not have any significant environmental impact. The topics covered within the ES are:
- Socio-economic issues
  - Landscape and visual issues
  - Ecology and nature conservation
  - Geological resources (SSSI)
  - Archaeology
  - Cultural heritage
  - Agricultural circumstances
  - Traffic and transport
  - Noise
  - Air quality
  - Hydrology, drainage, and flood risk
  - Geotechnical issues and contaminated land
  - Utilities and services
  - Sustainability considerations

3.10 The proposals comply with the parameters agreed through the outline planning permission and do not vary materially from the outline consent. The ES does date from 2012, however it is considered the development is not likely to result in significant effects in relation to environmental issues which haven't previously been considered. On this basis it is considered an Environmental Impact Assessment is not required as part of this reserved matters application.

### 3.11 Procedural Matters

3.12 Following submission of the application, representations were received questioning the accuracy of the submitted site location plan. This is understood to be due to the boundary between the neighbouring property (Arcady) and the University of Cambridge not being accurately reflected in Land Registry documents. The application site has been revised as a consequence to effectively move Lot S1 5m to the northwest. The application has been subject to a full reconsultation.

3.13 A resident has highlighted that the submitted location plan was mislabelled to show land edged in blue as the extent of the University of Cambridge land ownership. The area edged in blue actually shows the extent of the outline planning permission. The plan has been updated to correct this error.

3.14 Additional information and amended plans to reflect minor changes to the scheme, specifically changes around underground bin points, have also been subsequently received in response to comments from and discussions with consultees.

### 4.0 Relevant Site History

Reference	Description	Outcome
S/1886/11 & 11/1114/OUT	Proposed development comprising up to 3000 dwellings Up to 2000 student bedspaces 100000 sq.m. employment floorspace of which: up to 40000 sq.m. commercial floorspace (Class B1(b) and sui generis research uses) and at least 60000 sq.m. academic floorspace (Class D1) up to 5300 sq.m. gross retail floorspace (Use Classes A1 to A5) (of which the supermarket is 2000 sq.m. net floorspace) Senior Living up to 6500sq.m. (Class C2) Community Centre Indoor Sports Provision Police Primary Health	Granted 22.02.2013

	Care Primary School Nurseries (Class D1) Hotel (130 rooms) Energy Centre and associated infrastructure including roads (including adaptations to Madingley Rd and Huntingdon Rd) pedestrian cycle and vehicle routes parking drainage open spaces and earthworks	
S/2036/13/VC & 13/1402/S73	Section 73 applications to vary condition 69 (Drawing Numbers) of S/1886/11 & 11/1114/OUT	Granted 25.11.2013 & 21.11.2013
13/1402/NMA1 & S/1220/18/NM	Non-material amendment to S/2036/13/VC & 13/1402/S73 to amend condition 34 (Site Wide Biodiversity Strategy) to allow changes to the approach to monitoring and the provision of bird nest boxes in place of the originally proposed artificial badger set	Granted 20.04.2018
S/1716/18/NM & 13/1402/NMA2	Non-material amendment to Condition 44 (Parking Management Arrangements) on applications S/2036/13/VC & 13/1402/S73. The Car Park Management Plan has been revised so that the scheme for pay and display parking enforcement can be operated on private land, by a contractor that is a member of the British Parking Association	Granted 08.06.2018 & 29.05.2018
S/0227/20/PO	Modification of planning obligations in relation to Keyworker housing allocations	Granted 20.01.2020
S/2036/13/NMA1 & 13/1402/NMA3	Non-material amendment to planning permission S/2036/13/VC & 13/1402/S73 to amend wording of condition 5 (Phasing Plan) of the consent, to read "The development shall be carried out in accordance with the North West Cambridge Phasing Plan, dated December 2020.", such as to allow an alternative sequence for the delivery of development plots within the scheme	Granted 17.02.2021

S/0655/14/RM	Ridgeway (central section) - Reserved Matters (access appearance landscaping layout and scale) pursuant to S/2036/13/VC for surfacing of a shared used pedestrian and cycle path along the Ridgeway Green Corridor (02) and works along Bunker's Hill to create a shared use pedestrian and cycle route connecting the Ridgeway to Huntingdon Road (including vegetation clearance fencing demolition and resurfacing) along with associated landscaping and drainage swales	Granted 19.06.2014
S/0977/14/RM & 14/0630/REM	Secondary Street (Milne Avenue) and Neighbourhood Park - Reserved Matters Application (access appearance landscaping layout and scale) pursuant to S/2036/13/VC and 13/1402/S73 for the Secondary Street and the Neighbourhood Park (including play facilities) hard and soft landscaping car and cycle parking a bring site utilities and associated ancillary structures	Granted 19.08.2014 & 22.07.2014
S/2219/15/RM & 15/1663/REM	Lots M1/M2 (Athena) – 240 market residential units (121 units in Cambridge City Council and 119 units in South Cambridgeshire District Council) access roads (including cycle and pedestrian routes) cycle parking car parking landscaping utilities and associated ancillary structures	Granted 07.12.2015
14/1028/REM & S/1447/14/RM	Lot 4 - 70 residential units including 49 market units and 21 key worker units access roads (including cycle and pedestrian routes) cycle parking car parking landscaping utilities and associated ancillary structures	Granted 18.09.2014 (not implemented)
22/01168/REM	Lot 4 - Reserved matters application for access, appearance, landscaping, layout and scale for 88 dwellings, a shared surface service road (for	Granted 07.06.2022

refuse collection and pedestrian access), cycle parking, car parking, landscaping, utilities and associated ancillary structures following outline planning permission S/1886/11 as varied by application S/2036/13/VC

## **5.0 Policy**

### **5.1 National**

National Planning Policy Framework 2021

National Planning Practice Guidance

National Design Guide 2019

Local Transport Note 1/20 (LTN 1/20) Cycle Infrastructure Design

Circular 11/95 (Conditions, Annex A)

Technical Housing Standards – Nationally Described Space Standard (2015)

EIA Directives and Regulations - European Union legislation with regard to environmental assessment and the UK's planning regime remains unchanged despite it leaving the European Union on 31 January 2020

Conservation of Habitats and Species Regulations 2017

Environment Act 2021

ODPM Circular 06/2005 – Protected Species

Equalities Act 2010

### **5.2 South Cambridgeshire Local Plan 2018**

LP/1 – Superseded Policies referred to in Adopted Area Action Plans

S/1 – Vision

S/2 – Objectives of the Local Plan

S/3 – Presumption in Favour of Sustainable Development

S/5 – Provision of New Jobs and Homes

S/6 – The Development Strategy to 2031

CC/1 – Mitigation and Adaption to Climate Change

CC/3 – Renewable and Low Carbon Energy in New Developments

CC/4 – Water Efficiency  
 CC/6 – Construction Methods  
 CC/7 – Water Quality  
 CC/8 – Sustainable Drainage Systems  
 CC/9 – Managing Flood Risk  
 HQ/1 – Design Principles  
 HQ/2 – Public Art and New Development  
 NH/2 – Protecting and Enhancing Landscape Character  
 NH/3 – Protecting Agricultural Land  
 NH/4 – Biodiversity  
 NH/6 – Green Infrastructure  
 NH/7 – Ancient Woodlands and Veteran Trees  
 NH/14 – Heritage Assets  
 H/8 – Housing Density  
 H/9 – Housing Mix  
 H/10 – Affordable Housing  
 H/12 – Residential Space Standards  
 SC/7 – Outdoor Play Space, Informal Open Space & New Developments  
 SC/9 – Lighting Proposals  
 SC/10 – Noise Pollution  
 SC/11 – Contaminated Land  
 SC/12 – Air Quality  
 TI/2 – Planning for Sustainable Travel  
 TI/3 – Parking Provision  
 TI/8 – Infrastructure and New Developments  
 TI/10 – Broadband

### **5.3 North West Cambridge Area Action Plan 2009 (NWCAAP)**

NW1: Vision  
 NW2: Development Principles  
 NW3: Implementing the Area Action Plan  
 NW4: Site and Setting  
 NW5: Housing Supply  
 NW6: Affordable Housing  
 NW7: Balanced and Sustainable Communities  
 NW11: Sustainable Travel  
 NW17: Cycling Provision  
 NW18: Walking Provision  
 NW22: Public Art  
 NW23: Open Space and Recreation Provision  
 NW24: Climate Change & Sustainable Design and Construction  
 NW25: Surface Water Drainage  
 NW26: Foul Drainage and Sewage Disposal  
 NW27: Management and Maintenance of Surface Water Drainage Systems  
 NW28: Construction Process  
 NW29: Strategic Landscaping  
 NW31: Infrastructure Provision

**5.4 Cambridgeshire & Peterborough Minerals & Waste Plan 2021**

**5.5 Supplementary Planning Documents**

Biodiversity SPD – Adopted February 2022

Sustainable Design and Construction SPD – Adopted January 2020

Cambridgeshire Flood and Water SPD – Adopted November 2016

- 5.6 The following SPDs were adopted to provide guidance to support previously adopted Development Plan Documents that have now been superseded by the South Cambridgeshire Local Plan 2018. These documents are still material considerations when making planning decisions, with the weight in decision making to be determined on a case-by-case basis:

Public Art SPD – Adopted January 2009

Landscape in New Developments SPD – Adopted March 2010

Trees and Development Sites SPD – Adopted January 2009

**5.7 Other Guidance**

- 5.8 Greater Cambridge Housing Strategy 2019 – 2023

## **6.0 Consultations**

### **6.1 Parish Council – No comments**

6.2 No comments have been received from Girton Parish Council.

### **6.3 Highways Development Management – No objection**

6.4 As the proposed streets do not junction with an existing or proposed adopted public highway and are to remain private under the control of the applicant, the Highway Authority has no comment to make on this application.

### **6.5 County Transport Team – No comments**

6.6 No comments have been received.

### **6.7 Lead Local Flood Authority – No objection**

#### Initial Comments

6.8 At present we object to the approval of the Reserved Matters Application for the following reasons:

6.9 Key information is missing from the drainage layout general arrangements

6.10 Hydraulic calculations to show the performance of the system for a range of summer and winter storm durations from 15 minutes up to the 10080 minute (7 day) should be undertaken;

6.11 Half drains times are in excess of 24 hours.

6.12 It's noted that Table 4-1 of the drainage strategy indicates Lot S1 has a total impermeable area of 12,390 m<sup>2</sup>; however, hydraulic calculations for Lot S1 show a total contributing area of 11,720m<sup>2</sup> has been accounted for. 670m<sup>2</sup> has not been accounted for within the calculations, and drainage features may be undersized.

#### Subsequent comments

6.13 It's noted that Planning Condition 27 of the aforementioned outline planning permission stipulates that any reserved matters application shall include a detailed surface water drainage strategy, which must be in accordance with the agreed site wide surface water strategy, pursuant to the reserved matters site for which approval is sought. A detailed review of the provided drainage strategy has therefore been undertaken as a part of this reserved matters planning application.

6.14 Following review of additional information and discussion with the applicant, the Lead Local Flood Authority have no objection in principle to the proposed development.

6.15 The additional documents demonstrate that surface water from the development can be managed through the use of various SuDS techniques restricting surface water discharge to suit the overall site surface water management plan.

6.16 Water quality has been adequately addressed when assessed under the Simple Index Approach outlined in the CIRIA SuDS Manual.

6.17 An informative on the control of pollution is recommended.

#### **6.18 Environment Agency – No objection**

6.19 Have no objection in principle. It is necessary to consult with the LLFA in respect of its statutory consultee role in planning. Notwithstanding this, infiltration drainage, including soakaways, will only be acceptable where it has been demonstrated that the land is uncontaminated.

6.20 The design of any surface water system should ensure there is no possibility of contamination polluting surface or underground waters. The use of soakaways would need to be supported by infiltration testing. Foul water should be discharged to the public sewer, and Anglian Water should be consulted. If unexpected contamination is found during development a remediation strategy should be put in place. Opportunities should be provided for wildlife enhancement.

6.21 General Informatives are recommended on pollution control.

#### **6.22 Anglian Water – No objection**

Initial comments

6.23 Foul Water - We have reviewed the applicant's submitted foul drainage strategy documentation and consider that the impact on the public foul sewerage network has not been adequately addressed at this stage. Anglian Water have found that this proposal may result in an increased risk of flooding in the downstream network.

6.24 Surface Water - We have reviewed the applicant's submitted surface water drainage strategy and have found that the proposed method of surface water discharge does not relate to an Anglian Water owned asset. As such, it is outside of our jurisdiction and we are unable to provide comments on the suitability of the surface water discharge.

6.25 The Local Planning Authority should seek the advice of the Lead Local Flood Authority or the Internal Drainage Board. The Environment Agency should be consulted if the drainage system directly or indirectly involves

the discharge of water into a watercourse. Should the proposed method of surface water management change to include interaction with Anglian Water operated assets, we would wish to be re-consulted to ensure that an effective surface water drainage strategy is prepared and implemented. A connection to the public surface water sewer may only be permitted once the requirements of the surface water hierarchy as detailed in Building Regulations Part H have been satisfied. This will include evidence of the percolation test logs and investigations in to discharging the flows to a watercourse proven to be unfeasible.

Subsequent comments

6.26 Foul Water – we have reviewed the applicant’s submitted foul drainage strategy and flood risk documentation and consider that the impacts on the public foul sewerage network are acceptable to Anglian Water at this stage.

**6.27 GCSP Urban Design – No objection**

Application as submitted

6.28 Whereas the proposals for Lot S1 meet the general description of the Neighbourhood Village Character Area, the proposals for Lot S2 are larger, denser and more urban than envisaged in the Design Code. Furthermore, it delivers predominately apartments rather than family housing, more appropriate to the Ridgeway Character Area, effectively stretching this more urban character further out than envisaged in the Code. This has a knock-on effect on the compliance with Design Code elements such as the Block Structure, Building Heights, Massing, and Frontages.

6.29 In pre-application discussions the applicants stated that the build-to-rent model requires a denser development, than that a finer-grained development of smaller blocks and higher proportion of family dwellings would not be viable.

6.30 In considering the proposals, it has been acknowledged that there is a general trend to build at increased densities when compared to the time the Design Code was written. But the proposed apartment-led scheme is very different from the housing-led scheme envisaged in the Design Code, and therefore the scheme is unlikely to fully comply with the Design Code. Where there is divergence, the key consideration will focus on the key objectives in the code of providing a suitable transition from the higher density Local Centre to low density development on Huntingdon Road, and to coordinate the development with adjoining land parcels (existing or future).

6.31 Lot S1

- 6.32 The site is residential other than the introduction of a small pavilion to strengthen placemaking, which is welcomed.
- 6.33 The proposals for S1 comply with the parameter plan requirements.
- 6.34 Access to the site aligns with the Design Code. Although not fully compliant with the Design Code, the hierarchy and design of streets including the loop road, Green Spine is supported.
- 6.35 A 20m wide no-build zone is retained against the edge of existing properties on Huntingdon Road. This is partly proposed to be used for private gardens, but will also contain an ecological zone. Further details is required to show how this area will be planted, maintained, and secured.
- 6.36 Houses front on the Ridgeway and Milne Avenue to create an active frontage, with parking to the rear. This is supported. Some terraces will exceed the 30m frontage length advised in the Design Code however this is considered acceptable.
- 6.37 The Design Code also sets out that houses should follow a traditional urban block structure with back-to-back gardens and defined frontages. The approach to S1 differs with a series of green lanes and liveable streets with less defined boundaries between public and private space, and where vehicle access is permitted but is subservient to walking. This approach has been much debated and refined through the pre-application process to balance privacy, security, and visual interest. Subject to management and maintenance by Present Made, it is considered acceptable.
- 6.38 The proposed arrangement of house types and heights are considered acceptable. The house types are relatively narrow and deep, and the modular construction method proposed means there are limited house types, meaning units do not hold corners and present blank side facades. This is proposed to be addressed through soft landscaping, public art, and flank wall amenity features such as seating, together with the use of a pavilion to create a focal point at the key Ridgeway/Milne Avenue corner. This strategy is an innovative solution and is acceptable. The management and maintenance of these features will be important.
- 6.39 Internal layouts of homes are acceptable.
- 6.40 Most homes have 1 on-plot parking space, with narrow streets and landscaping used to prevent on-street parking. Cycle parking is proposed to be incorporated into garden boundaries which is supported.
- 6.41 The proposed materials and finishes to homes is supported.
- 6.42 S2 Houses

- 6.43 Flank wall treatments for the end terraces for houses on S2 are not identified in the Design Code.
- 6.44 There are still concerns about the lack of privacy to rear gardens, with a building-to-building distance of 20m between houses and apartments.
- 6.45 S2 Apartments
- 6.46 The proposals for apartments comply with the parameter plans. The proposed storey heights of 4-5 exceed those set in the Design Code, which range from 2-3, 3-4, and 4 across different parts of Lot S2. The block also exceeds the 30m-60m maximum advised in the Design Code, with individual blocks up to 86m, and no through routes, affecting cross-parcel permeability. This non-compliance has been subject of discussion. The proposals importantly retain a hierarchy of height and massing, stepping down away from the Ridgeway and Neighbourhood Park. Pedestrian desire lines are also not significantly affected by the large block sizes. The architectural design of the blocks is also effective in reducing the apparent massing and scale of the blocks, and introduces a finer-grain rhythm to surrounding streets. As such the height and massing is considered acceptable.
- 6.47 Ground floor apartments face the street and most are individually accessed from the street, which will help activate the street and is welcomed. However many ground floor units only have access to the street, resulting in long walking distances to secure bike storage.
- 6.48 Further details of ground floor boundary treatments are requested.
- 6.49 Ground levels across the blocks vary by almost 1m and further detail on the interface of the site and the level floor plate is requested, to demonstrate all units can have level access.
- 6.50 The proposals use a series of bays and recesses, with 'champagne' coloured metal cladding to parts of the top floor, and set back elements. Different material treatments to blocks are proposed, with brick set within a slender frame, use of 'champagne' coloured window frames, balconies and other detailing. Brick patterns and colours vary between blocks, with light grey and buff tones proposed. The main entrance/ communal area is defined by a feature building. The architectural treatment of blocks is supported.
- 6.51 Blocks A, B, and C each have two cores whilst Block D has a single core, with entrances from the street defined by understated entrances. This is acceptable.
- 6.52 Some internal routes appear convoluted, and on upper floors there are long double-loaded corridors, some without natural daylight. There is a serious concern that the lobbies and corridors will feel restrictive and oppressive. These should be designed out as far as possible. Can double

height lobbies be provided, more natural light to corridors, and stair and lift cores rearranged to provide more windows?

- 6.53 At pre-app concerns were raised about the spaces between blocks, in particular in relation to safety and security. Hidden corners have been designed out, together with the use of soft planting, overlooking and lighting to soften and secure these spaces. This is supported.
- 6.54 The main access to the podium is via a series of steps, with lift access close by. It is understood the podium would be locked to non-residents at night. This is considered acceptable. Vehicular access to the car park is from Dobbs Terrace which is considered acceptable.
- 6.55 Almost all apartments are single-aspect. Concerns about daylighting and overheating have been addressed by careful detailing and material choices, including balcony arrangements and window sizes. Whilst these elements are welcomed, the large number of single-aspect units remains a concern. Assessment of overheating requires scrutiny by the Sustainability Officer.
- 6.56 Conditions are recommended in relation to materials, design of flank elevation features, and a management and maintenance plan.
- Subsequent comments
- 6.57 The applicant has clarified that the S1 ecology buffer is not proposed to be publicly accessible. A 1.2m high fence and gates are proposed, is this sufficient to keep people out?
- 6.58 The proposals have been amended to show flank wall treatments to the end of terrace units on S2, which is acceptable.
- 6.59 The applicant has provided further detail on travel distances from ground floor apartments to bike stores, with the longest distances varying from 67 to 145m from front door to bike store. This represents a significant detour. Ground floor residents may bring bikes into their apartments or store them outside. This may take up valuable internal space, or lead to clutter outside.
- 6.60 There is still concern in relation to the 20m back to back distance between the S2 houses and apartments facing them, with single aspect apartments overlooking houses being a different condition to two rows of houses. The cross-sections highlight the importance of trees along this street, and the advice of the landscape officer is sought to ensure the size, species, and planting conditions of trees is sufficient to provide sufficient privacy.
- 6.61 Concerns remain about the number of double loaded and largely windowless corridors within the apartment blocks.

6.62 The advice of the sustainability officer is sought in relation to whether the large number of single-aspect units proposed is acceptable.

6.63 Concerns regarding level changes and details of thresholds around apartments have been addressed.

**6.64 County Archaeology – No objection**

6.65 Archaeological matters have previously been addressed under the associated outline planning permissions 11/1114/OUT and S/1886/11. We have no objections and no further requirements for development in this location and do not consider further archaeological works to be necessary in relation to the current application for Reserved Matters.

**6.66 GCSP Sustainability Officer – No objection**

Initial comments

6.67 The Sustainability Strategy is based around the sustainability principles established at outline planning stage, which is welcomed. The proposal includes a range of approaches all of which are supported, including: Connections to the site-wide district heating system, and extensive use of photovoltaic panels (1.35kWp per apartment and 4 kWp per home); Connection to the site-wide non-potable water network; Minimisation of construction waste including through the use of Modern Methods of Construction; Use of green roofs; and Integration of production planting and gardens.

6.68 A key area of sustainability discussed as part of the pre-application process is the approach to mitigating the risk of overheating, particularly due to the large number of single-aspect apartments proposed, and the associated difficulties in providing adequate ventilation.

6.69 The DAS and Sustainability and Energy Statement include detail on the approach that has been taken to address this, involving parametric modelling of each building and façade to determine the optimum approach to a range of environmental considerations including overheating and daylighting. The response to this analysis sees variation in façade design, glazing ratios, window reveals, and balcony design depending on the elevation. For south-west and west facing facades, dumbbell balconies allow enhanced ventilation. The approach to design and modelling is welcomed. In addition to this modelling, a sample of units have been assessed using the CIBSE TM59 overheating analysis, with apartments tested against 2020, 2050, and 2080 climate scenarios. All spaces are compliant without mechanical cooling for 2020 and 2050, with some spaces failing the assessment criteria under the 2080 scenario. It would be helpful if the applicant could clarify what additional measures have been considered for use, or future retrofit.

- 6.70 It is noted that some units are subject to noise constraints where opening windows may not be the first choice for residents. Whilst windows will be openable, these units are proposed to be fitted with mechanical cooling. Clarification would be helpful on whether acoustically attenuated natural cooling has been considered, as has been used elsewhere in Eddington, as well as which units are affected, and the system proposed for all affected apartments and houses.
- 6.71 The outline planning permission requires compliance with Level 5 of the Code for Sustainable Homes. A pre-assessment has been included within the Sustainability Statement showing a minimum score of 85.08% is achievable. It is recommended additional points are targeted to provide a buffer. It should also be clarified what housing typology the pre-assessment relates to, and it would have been useful to see a pre-assessment for different typologies.
- 6.72 In conclusion, the scheme is supported subject to clarification of the above points.

#### Subsequent comments

- 6.73 The applicants have addressed all of my points with regards to overheating/ventilation and I am satisfied with the response on these issues. With regards to Code pre-assessments, they have confirmed that two house types have been assessed and given that we have the conditions related to certification, this approach is considered acceptable.
- 6.74 On the approach being taken to the ancillary uses, it is recognised that it would be difficult at this stage to provide complete details, and given the area of floorspace, their requirements will be relatively small in comparison to the rest of the scheme. It would be useful if the applicant could set out a high level commitment to ensuring that these spaces are as energy efficient as possible and utilise sustainable materials and construction techniques, connecting to site wide infrastructure where appropriate.

#### **6.75 GCSP Landscape Officer – No objection**

##### Initial Comments

- 6.76 Although Blocks A and B are five storeys and more than envisaged in the Design Code, they are compliant with the Code and Parameter Plans in terms of height. From a landscape and visual impact perspective the height is acceptable.
- 6.77 The overriding landscape/ public realm design concept has been to create shared spaces to promote community living and has been subject to lengthy pre-app discussions. The proposed built-to-rent scheme will be supported by a robust management regime, managed by the applicant.
- 6.78 S1 Landscape – The use of the proposed shared spaces are crucial to their success. The main circulation street has a relatively tight, variable

configuration which somewhat blurs the vehicle/pedestrian edges with planting beds which interrupts the line of the carriageway and should foster slow and careful driving. The design of the street is not compliant with the Design Code but is expected to foster a place for people and landscape and is supported. Tracking diagrams have been provided, however we would request that several fully dimensioned sections are provided to explain the kerbs, edges of planting beds, parking areas, width of footpath etc.

- 6.79 The two liveable streets have an even tighter configuration, and rely on 'green paving' to demarcate sinuous and traffic calmed routes. There remains a slight nervousness about the green paving, and that vegetation will not survive during dry periods.
- 6.80 Garden boundaries such as those along the green lane are not high enough to preclude some views but are high enough for privacy.
- 6.81 We would request further information on how the ecological buffer is proposed to be secured and accessed, detail on boundary treatments, and further details of the ponds and swales.
- 6.82 We do not have enough information on how existing trees will be protected during construction, particularly protection of roots and branches during excavation for swales etc.
- 6.83 The success of the proposed flank wall treatments such as follies will rely on the quality of materials used etc. Details of flank wall treatments should be provided, and this can be secured by condition.
- 6.84 The podium courtyard offers a flexible space which is designed to engender community use for all ages, and is welcomed.
- 6.85 Much of the podium courtyard is mounded and it is anticipated that the area will be irrigated and recommend a automatic irrigation is used.
- 6.86 We fully support the use of biodiverse roofs.
- 6.87 We fully support the choice of species contained within the planting palette, particularly the use of larger tree species with broad canopies. The Ginkgo biloba is questioned however as although beautiful is exceptionally slow to mature.
- 6.88 The choice of hard landscaping materials is supported other than the use of self-binding gravel which can have a loose and slippery surface.
- 6.89 The use of site-won soils is supported, and the use of Amsterdam soils for tree planting to accommodate vehicle movement above root zones.

Subsequent comments

- 6.90 With regard to S1, there remains concern that the landscaped areas in such a tightly configured arrangement will be free of overrun and intense wear.
- 6.91 We note the commitment to landscape management and maintenance. The cost of management and maintenance will be considerably higher than a traditional development. Adequate maintenance will be needed through the lifetime of the development to ensure planting is retained and the development does not acquire a scruffy appearance.
- 6.92 We previously requested dimensioned sections of the streets, a number of which have been provided. An informative cross section would have been through the parking spaces between the semi-detached units where there remain concerns about damage to planting beds.
- 6.93 Concerns about the long-term maintenance of the green paving remain.
- 6.94 The section for Stockholm soils is the amended DAS is not dimensioned but the layer of soil looks shallow which may result in root activity lifting paving above. Please review the depth.
- 6.95 The utilities general arrangement appears to show conflict between utilities and tree locations. This should be reviewed and coordinated. This should not be left to the construction stage when little can be done to resolve any issues.
- 6.96 We need details of if/how utilities will need additional protection where they share space with Stockholm soils. This can be conditioned.
- 6.97 We still require further technical details of ponds, swales, headwalls, etc. within the ecological buffer. This can be conditioned.
- 6.98 An arboricultural assessment has been provided. An arboricultural method statement can be conditioned.
- 6.99 The choice of materials is fully supported, except perhaps the self-binding gravel which may have a loose and slippery surface. This should be tested before being used site-wide.
- 6.100 Further information on the appearance of solar panels and mitigation of their landscape and visual impact should be provided.
- 6.101 Issues with S2 landscape have been resolved. The inclusion of an automatic irrigation system for the podium is welcomed.
- 6.102 Conditions are recommended on hard and soft landscaping, tree protection, and roof planting irrigation systems.

Subsequent comments

6.103 The additional cross section across the parking areas of the semi-detached housing of S1 is very useful. It addresses the issue of the rain garden being run over by car wheels. The remaining issues were clarification which can be provided through condition.

**6.104 GCSP Ecology Officer – No objection**

6.105 The survey effort, landscaping and biodiversity enhancements proposed are acceptable.

6.106 I welcome proposed planting to support biodiversity. I also support the proposed number, specification and locations of integrated bird box provision, in excess of that required by the approved site wide Biodiversity Strategy.

6.107 I agree that the proposals for Lots S1 and S2 of the North West Cambridge Development are in accordance with the aims and objectives of the site wide Biodiversity Strategy, and are also predicted to deliver an onsite net gain for biodiversity if the proposed habitats are subject to a suitable management plan. I note that this BNG does not include additional wetland and grassland habitat already enhance or created on site as part of the wider site landscaping and SUDs along the West Pit brook, prior to measurable BNG requirements.

6.108 I note a previously closed badger sett may be active or occupied prior to construction and agree with current monitoring proposals to inform a further Natural England closure license as required. If minded to approve we could request a condition that asks for either a copy of the relevant license prior to closure or evidence that a license is not required.

6.109 If minded to approve I would also recommend a standard Ecological and Landscape Management Plan to ensure the proposed habitats are establish and maintained to achieve the condition on which the BNG target relies.

**6.110 Shared Waste Service**

6.111 Full tracking document are needed to understand the journey of the vehicle.

6.112 There do appear to be trees beside a number of the bins which needs to be avoided as it will interfere with the crane operation

6.113 The strip from the bend at Tertiary Street down towards Milne Avenue has the potential to be problematic as its showing rows of car charging points, a sub station and a loading zone. The set of bins on the bend may be inaccessible if there is insufficient space for our vehicle to line up with the bins. The bin platforms must not open onto the sub-station or charging points.

- 6.114 There appear to be a number of raised traffic calming areas beside bins and street furniture which may provide an obstruction. Road surfaces beside the bins must be flat and level and each set of bins needs to have pressure pads for vehicle feet.
- 6.115 We need a breakdown of flats/houses/number of beds in order to look at capacities.
- 6.116 N.B. the proposals have subsequently been discussed and amended to the satisfaction of officers.

**6.117 Natural England – No objection**

- 6.118 No objection - based on the plans submitted, Natural England are satisfied that the Planning Statement (Bidwells, August 2021) confirms that the proposed scheme will implement biodiversity mitigation and enhancement measures, including delivery of biodiversity net gain, in accordance with the site wide Biodiversity Strategy and Design Code and the recommendations of the lot-specific Biodiversity Survey and Assessment, hence we have no objection to the application.

**6.119 GCSP Tree Officer – No objection**

Initial comments

- 6.120 There is no arboricultural or hedgerow objections to this application.
- 6.121 Trees on or adjacent site have no statutory protection.
- 6.122 Tree and hedgerow information: An Arboricultural Impact Assessment (dated July 2021) has been submitted along with Draft Tree Protection Plan (ref. 4727/01/21-0352 V1). As these documents are indicative etc they do not contain some the essential detail required, such as fencing specifications. These documents are sufficient for this stage of the application, but a further detailed Tree Protection Plan will be required if the application is approved.
- 6.123 Defer to the opinion of the consultee Landscape Architect on proposed planting

Subsequent Comments

- 6.124 No objection subject to conditions requiring an Arboricultural Method Statement and Tree Protection Plan.

**6.125 National Highways – No objection**

- 6.126 No objection – The principle of development has been established through the variation to the outline planning permission (S/2036/13/VC). The

reserved matters addressed in this application would not have a material impact on the Strategic Road Network. Consequently, we offer no objection

**6.127 SCDC Environmental Health (Contamination) - No objection**

6.128 There are no details submitted that required comment from a contaminated land officer. Our conditions and the relevant details are being dealt with in separate applications for this site.

**6.129 SCDC Environmental Health (Air Quality) – No objection**

6.130 The air quality implications have been considered. A condition is recommended to secure the EV charging provision as set out within the DAS.

**6.131 Police Architectural Liaison Officer – No objection**

6.132 While it is important that security and crime prevention are considered at an early stage of design, we have had early consultation with the applicant and discussed a Secured by Design application. As is shown in paragraph 7.13 of the Design and Access statement the applicant is targeting SBD Silver accreditation. No further comments.

**6.133 Cambs Fire & Rescue – No objection**

6.134 With regard to the above application, should the Planning Authority be minded to grant approval, the Fire Authority would ask that adequate provision be made for fire hydrants.

6.135 Access and facilities for the Fire Service should also be provided in accordance with the Building Regulations Approved Document B5 Vehicle Access. Dwellings Section 13 and/or Vol 2. Buildings other than dwellings Section 15 Vehicle Access.

6.136 If there are any buildings on the development that are over 11 metres in height (excluding blocks of flats) not fitted with fire mains, then aerial (high reach) appliance access is required

**6.137 Airport Safeguarding (Marshalls) – No objection**

6.138 The proposed development has been examined from an aerodrome safeguarding perspective and does not conflict with safeguarding criteria. We, therefore, have no objection to this proposal.

**6.139 Sustrans – No objection**

6.140 National Cycle Network sits about 150 meters to the north-east side of the planning site

6.141 It is important that the commitment to walking and cycling on site is provided to by the developer. These include: Maximize the use of sustainable travel, with priority given to cycling and walking; Bike parking is provided in the garden of houses and throughout the lot; residential lobby entrances provide direct connection from the main pedestrian and cycling route

#### **6.142 Design Review Panel Meeting of 28 January 2021**

6.143 The proposals were presented to the Quality Panel prior to submission of a formal application. The main conclusions and recommendations of the Panel were:

- 1) The Panel would have welcomed plans, sections and elevations in order to better understand how the proposals would work.
- 2) The aspirational proposals need editing to calm the design.
- 3) The Panel were impressed with the SUDs proposals.
- 4) The landscape vision approach, tree planting and community gardens are welcome.
- 5) There is built in conflict in the community spaces that may require significant maintenance and management if not resolved.

6.144 A copy of the review letter is attached in full at appendix 2.

### **7.0 Third Party Representations**

7.1 Representations have been received objecting to the development from 11 addresses:

- Arcady, Huntingdon Road
- Arcady Halt, Huntingdon Road
- Westchester, Huntingdon Road
- Middlefield, Huntingdon Road,
- Farmfield, Huntingdon Road
- Huntingfields, Huntingdon Road
- Howelands, Huntingdon Road
- College Holt, Huntingdon Road
- New Hayes, Huntingdon Road
- 38 Thornton Road, Girton
- Church Cottage, Pitcot Lane, Owslebury (owner of land adjacent to the site)

7.2 Those in objection have raised the following issues:

Scale, Layout, landscaping

- Concerns about the scale, mass, and density of development proposed which relates poorly to the existing residential character

along Huntingdon Road and in Girton, including that the proposed 5-storey block is a departure from the Design Code.

- Concerns about the use of terraced housing along the boundary with Arcady.
- Concern about the impact of the development on existing trees and fencing on/close to the site boundary, and request that high-quality and secure fencing is provided.

#### Flood Risk & Drainage

- Concern about the impact of the proposed drainage features within the wildlife corridor and associated risk of flooding neighbouring properties.

#### Transport and access

- Concern about the lack of traffic analysis.
- Concerns that the right of residents to use the track to the rear of their properties hasn't been considered.
- Suggestion that there should be better linkages between the neighbourhood park and the ecological buffer.

#### Residential amenity

- Concerns about the lack of a construction management plan, and that the provisions of the site wide construction management plan are inadequate, in particular that construction hours should be limited to 8:30am to 5pm Monday-Friday only, and noise muffling is used for vehicles, alongside monitoring of dust and noise and a 24/7 contact for residents.
- Concerns that poor construction management practice on other parcels within Eddington will also be experienced with the current proposals.
- Concerns about the large spoil mounds which have caused significant disruption for a number of years, and a request any spoil is not added to the existing mounds.
- Concern that existing trees and planting are being relied upon to provide a barrier to overlooking and noise etc.
- Concern about the lack of mature evergreen planting proposed for the wildlife buffer

#### Accuracy of plans

- Concerns that submitted CGIs significantly overstate the extent of tree cover within neighbouring gardens.
- Concerns over the accuracy of the application red line boundary, particularly in relation to the neighbouring dwelling 'Arcady'

7.3 The above representations are a summary of the comments that have been received. Full details of the representations are available on the Council's website.

## **8.0 Member Representations**

8.1 No comments have been received from District or County Councillors.

## 9.0 Assessment

### 9.1 Principle of Development and compliance with outline planning permission

Compliance with outline planning permission and parameter plans

9.2 The parameter plan requirements relevant to this site are:

- Parameter Plan 3 –Open Land and Landscape Areas – The Secondary Street (Milne Avenue) has been delivered, the proposal will not prejudice the delivery of the pedestrian/cycle route or green corridor where they borders the site – compliant.
- Parameter Plan 4 – Land Use – The site is zoned for C3 and C4 uses – compliant.
- Parameter Plan 5 – Building Zones:

	Parameter Plan requirement (max-min)	S1 (Zone H)	S2 (Zone E)
Building Frontage	4-150m	14-51m	44-86m
Building Depth	4-25m	9-11.5m	9-19m
Building Height	3-10m (Zone H) 3-18m (Zone E)	8.3-9.5m	10.3-16m

As can be seen in table 1 above, the proposals are compliant with Parameter Plan 5.

- Parameter Plan 6 – Building heights – The maximum height permitted S1 is 33.5m AOD, and the maximum building height proposed is 33m AOD. Within S2 the maximum height permitted is 39m AOD and the maximum building height proposed is 39m AOD – Compliant

9.3 On the basis of the above the proposed development is considered compliant with the parameter plans.

Design Code

9.4 The Design Code for Eddington sets out a detailed set of requirements and guidance ranging from defining character areas, block typologies, to details such as indicative planting mixes. There are a number of areas where the proposals diverge from the Design Code, which is discussed further in the design section below.

Conditions

9.5 There are a number of planning conditions attached to the outline planning permission which set requirements for reserved matters applications.

Those relevant to this site are:

Condition 1 – Reserved matters details

Condition 6 – Environmental statement compliance

Condition 8 – Design Code compliance statement

Condition 11 – Landscaping details

Condition 12 – Tree surveys and assessment

Condition 20 – Plan showing distribution of market and keyworker units

Condition 22 – Lifetime Home standards

Condition 23 – Code for Sustainable Homes

Condition 27 – Detailed surface water strategy

Condition 35 – Biodiversity survey and assessment

Condition 40 – Car parking

Condition 43 – Cycle parking details

Condition 50 – Noise attenuation scheme

Condition 51 – Lighting details

Condition 53 – Construction method statement

Condition 54 – Detailed waste management plan

Condition 55 – Waste and recycling details

Condition 64 – Public art

Condition 65 – Fire hydrants

9.6 Compliance with these conditions is discussed further in the relevant sections below.

Uses

9.7 The development is for 373 dwellings. Although proposed as Built to Rent (BtR), the proposed houses and apartments are all dwellinghouses within Use Class C3, and as such are part of the 1,500 market dwellings approved under the outline planning permission.

9.8 The proposals include a number of other facilities including a bike workshop/ kiosk within S1, a pavilion within the podium garden, games court, and communal amenity space. These facilities and amenities are limited in scale and primarily for the use of residents and are considered to be ancillary to the main residential use of the site.

## **9.9 Housing Provision**

9.10 The development proposes a total of 373 dwellings across lots S1 and S2, split between 112 houses and 261 apartments. All units within the site are proposed as market housing, as a 'built-to-rent' (BTR) scheme where the applicant (Present Made) will retain ownership and management of the housing.

## Tenure

- 9.11 The tenure mix at Eddington was determined through the outline planning applications, which set out that housing (C3) would be split 50:50 between open market housing and 'keyworker' housing for staff of the University and associated institutions, in place of conventional forms of affordable housing. Provision for housing for older people and 2,000 postgraduate rooms is also made under the outline planning permission.
- 9.12 The outline planning permission does not set any requirements in relation to private rented accommodation and there are no policies in the Local Plan or NWCAAP relating to Build to Rent development. Annex 9 of the Greater Cambridge Housing Strategy sets out how Built to Rent schemes will be assessed, however this is only a material consideration, and the current application is for approval of reserved matters, it can only be afforded limited weight in relation to this application.
- 9.13 No 'keyworker' housing is proposed within the site. Condition 20 of the outline planning permission requires details of the distribution of market and 'keyworker' housing to be provided within any residential reserved matters application, and for the number of 'keyworker' units fronting onto any street to be limited to 25, with no corresponding limit specified for market housing.
- 9.14 Other than a reserved matters scheme on Lot 4 which has not been implemented, no development lots within Eddington have been for a mixed tenure. The application sets out that a single management structure is essential to the success of the BTR scheme, to ensure the site is well-managed in the long-term, and has the critical mass to support amenities for residents.
- 9.15 Within the context of the wider site, it is considered the provision of BTR accommodation will increase the diversity of housing within Eddington and as such the proposals are considered to support the delivery of a mixed and balanced community. On this basis the proposed tenure is considered acceptable.

## Mix

- 9.16 A detailed breakdown of the proposed housing mix is set out in the table below:

Type/Block	1-bed	2-bed	3-bed	4-bed	Total units
<b>Block A</b>	45	24	0		69
<b>Block B</b>	35	43	0		78
<b>Block C</b>	32	37	4		73
<b>Block D</b>	25	14	2		41

<b>Apartments</b>	137	118	6		261
<b>Houses</b>			100	12	112
<b>Total</b>	137	118	106	12	373
<b>Total %</b>	37%	32%	28%	3%	

- 9.17 As shown in the table above, the proposed development is weighted towards smaller units. This mix is based on market research by the developer to understand local demographics and demand within the private rented sector.
- 9.18 The Council commissioned Savills to produce Build to Rent Market Demand, which was completed in 2020. This indicated the demand for private rented accommodation is weighted towards single people and couples without children compared to the general population. Eddington is also a relatively high-density development, with a significant proportion of keyworker accommodation and a higher proportion of small units than the wider Cambridge area. On this basis the mix is considered to reflect local demand and the character of North West Cambridge and as such is considered acceptable.

#### Accessible Homes

- 9.19 The outline planning application requires that 50% of dwellings are built to the Lifetime Homes standard. All dwellings are proposed to be built to the Lifetime Homes Standard, as well as the optional Building Regulations M4(2) standard for Accessible and adaptable dwellings, exceeding the requirements of the outline planning permission, which is supported.

#### Conclusion on housing provision

- 9.20 Details of housing provision have been provided and are considered sufficient to discharge condition 20 of the outline planning permission in relation to this site.
- 9.21 It is considered the development will increase the diversity housing provision within the wider site and support the delivery of a mixed and balanced community at Eddington, in the context of the NWCAAP vision of creating a new University Quarter in North West Cambridge. The proposals offer a range of housing sizes and types for different groups, and are designed to be accessible and adaptable to individual's needs. On this basis the proposals are considered to comply with the outline planning permission, Local Plan Policies HQ/1 & H/9 and NWCAAP Policies NW2 & NW7

#### **9.22 Appearance, Layout, Scale and Landscaping**

- 9.23 A detailed Design Code was approved under condition 7 of the outline planning permission which includes detailed guidance on the delivery of a sustainable mixed-use new community in North West Cambridge. The

Design Code recognises that future designs may come forward which are not fully Design Code compliant, and that any areas of non-compliance should be clearly justified.

#### Layout, scale, and massing of houses

- 9.24 The Design Code specifies that housing along the development edge should generally be 2-3 storeys, with semi-detached, detached, and terraced houses permitted. 2 storey semi-detached dwellings are proposed, with 2-storey terraces along the southeast boundary with the neighbouring dwelling, Arcady. The layout, scale, and massing of houses along the boundary is considered to be in compliance with the Design Code. A 20m buffer is also proposed between the site boundary and the proposed dwellings as required by the Design Code.
- 9.25 One key area where the site is not consistent with the Design Code is in relation to car parking, with parking for a number of houses proposed as on-plot driveway parking to the front or rear. This in turn results in houses in the central part of S1 being set back behind parking spaces, rather than 2m privacy strips. This approach was discussed extensively through the pre-application process, with the proposals amended to significantly reduce the amount of on-plot parking and to introduce more vehicle-free routes. Benefits of the proposed layout include facilitating a landscape-led approach, with set back houses generating space for larger trees. The relatively open garden arrangement also allows them to act as social spaces, in order to foster a sense of community. As such whilst a departure from the Design Code the layout is considered acceptable.
- 9.26 Concerns have been raised by neighbours that development along the site edge is out of character with existing development along Huntingdon Road, particularly in relation to the proposed terraces. The development has its own distinct character which will differ to neighbouring development, particularly given development along Huntingdon Road is exceptionally low density. The proposed layout of the site however has been designed to provide an appropriate transition to existing development, with 2-storey houses along the development edge, a 20m landscape buffer, and a mix of semi-detached houses and short terraces which is consistent with the Design Code.
- 9.27 Overall, the layout, scale, and massing of the proposed houses is considered acceptable.

#### Layout, scale, and massing of apartment blocks

- 9.28 The apartments on S2 are proposed to arranged in a perimeter block of four buildings set around a central podium, stepping up from 4 storeys with the top floor set back on the northeast elevation, to 5 storeys on the southern and southwestern elevations.

- 9.29 The apartment blocks do diverge from the Design Code in a number of respects. Guidance on storeys for this part of the site range from '4 storeys generally' fronting the Ridgeway, '3 storeys generally' fronting the green corridor and Neighbourhood Park, and '2/3 storeys generally' for the rest of S2. The proposals also exceed the Design Code's guidance on frontages which recommends frontages of 30-60m fronting the green corridor and Neighbourhood Park, and 12-30m for other frontages. The closest block typology in the Design Codes to the proposals is the apartment led 'residential perimeter block, however this is not recommended for this part of the site, with finer-grained typologies which combine houses as well as apartments instead being recommended. The Design Code also envisages that this block would be broken up, with tertiary/ mews access routes within it.
- 9.30 A number of elements are used to reduce the scale and massing of the proposed apartment blocks. Firstly, the top floor on parts of Blocks B, C, and D have been set back. For Blocks A and B metal cladding is proposed to the top floor to contrast with the predominately brick facade and given the top floor a lighter appearance. The facades of the buildings are also proposed to be articulated by a series of bays, with a concrete frame and balconies also used to further break up the elevations. In combination, these elements serve to reduce the perceived scale and massing of the buildings.
- 9.31 S2 is also in a relatively prominent location, fronting a proposed park within the Ridgeway on one side, and a green corridor and neighbourhood park on another side, with the taller elements intended to frame these open spaces. As such it is considered, as set out in the Design Code, that the buildings should be an appropriate scale to define the urban fabric and create a sense of place.
- 9.32 There is also a significant benefit in the proposed block structure in that it allows for a substantial podium garden, with capacity to accommodate a greater range of planting and amenities than would be achievable with a more fragmented space.
- 9.33 On the basis of the above, it is considered the scale and massing of the blocks is acceptable.
- 9.34 The layout of the apartment blocks is designed to ensure active frontages and to be permeable for pedestrians with ground floor units having direct access from the street. The courtyard access is also accessible via steps from Milne Avenue, with a gate to restrict access at night. This is considered a reasonable balance between making the site accessible whilst also secure. Entrances to cores and the podium garden are well defined with most cores being accessed through landscaped courts.

Density

- 9.35 The outline planning permission and Design Code do not set specific requirements in relation to density, instead supporting a design-led approach in accordance with Policy NW5 of the NWCAAP which sets out that an overall minimum density of 50dph will be achieved across the wider site, with higher densities around the local centre, and development at an appropriate scale and form where it adjoins existing housing.
- 9.36 The red line site area is approximately 4.88ha, with a proposed density of approximately 75 dwellings per hectare (dph). This comprises a density of approximately 35dph for the area of houses, and 165dph for the apartments. For comparison apartments on Lot S3 (overlooking the Park & Ride) have a density of 260dph, whilst the approved scheme on Lot 4, with a mix of houses and apartments, has a density of 120dph.
- 9.37 The density proposed for the apartments is considered appropriate, reflecting higher density development towards the Ridgeway and close to the local centre. Housing immediately neighbouring the site along Huntingdon Road is exceptionally low density, and density varies significantly within the surrounding area. With the provision of a landscape buffer, the proposed density for the houses is considered an appropriate balance between respecting local character and ensuring the efficient use of land.
- 9.38 Landscaping, open space and amenities
- 9.39 The outline planning permission sets out that the primary open space within Eddington will be delivered in the Western Edge Parkland, the green gap between Phase 1 and the eastern part of the site, and through a series of green corridors which lead into the Western Edge. The site is adjacent to a neighbourhood park and green corridor, as well as being adjacent to the Ridgeway which is anticipated to deliver an additional park to the southwest of the site.
- 9.40 Within the site the primary open space proposed is the podium garden, which is typically 38m wide and is over 110m long. This space will provide a high-quality shared amenity space, with a pavilion and games court also proposed for use by residents. The podium will also support a range of planting including larger tree species with canopies of up to 8-12m. Sections have been provided to demonstrate that the podium will have sufficient soil depth to support the mix of trees and planting proposed. The provision and design of the podium garden is supported.
- 9.41 Privacy strips are proposed around the edges of the apartment blocks, which vary depending on the elevation to reflect different street/ public realm designs and uses. These are typically 1.5-2m deep with gravel and paving behind hedgerows. These privacy strips are considered compliant with the Design Code and will ground the development and provide some privacy.

- 9.42 A landscape-led approach has been taken to Lot S1, and the houses on S2. The design seeks to maximise planting within the site with car-free green streets, and with rain gardens and green paving used to calm traffic as well as green paving to parking spaces and other area. Hedging and climbing plants are proposed boundaries and flank walls. Tree planting has been carefully considered in the street design to seek to resolve conflicts between trees and vehicles, as well as underground services. The landscape design has been subject to extensive discussion through the pre-application process to seek to ensure the vision for the site is deliverable.
- 9.43 Water management and biodiversity have been effectively integrated into the landscape proposals with a typically 10m wide 'wet woodland' ecology buffer proposed along the edge of the site, rain gardens, species rich turf, and biodiverse green roofs all also proposed.
- 9.44 As well as the facilities in the podium courtyard, a bike workshop/kiosk is proposed on the corner of the Ridgeway and Milne Avenue. This is intended to be a flexible space which could be used as a bike workshop, café, exhibition space etc. This building will activate this corner and is considered a positive addition to the scheme.
- 9.45 Overall, the landscape design is considered to be high quality, with a wide mix of planting amenities to support biodiversity, water management as well as making a positive contribution to the character and appearance of the development and amenity of existing and future residents. As noted by the Landscape Officer, the landscape design is complex and will require regular maintenance to ensure it is effective and its quality is maintained in the long-term. A condition (Condition 7) is recommended to secure a detailed landscape and ecological management plan for the site. Conditions are also recommended in relation to details of landscape features (Conditions 5 and 6), proposed amenity buildings (Condition 4), details of roof planting irrigation (Condition 10), and implementation of landscape works (Condition 9).
- 9.46 Architectural Design
- 9.47 Three house types in a contemporary style are proposed across the site, with a mix of pitched and flat roofs. Buildings are proposed to be finished in textured buff brick with a varied brick pattern to add interest. Grey slate tiles are proposed for pitched roofs. Windows, window panels, railings, and other metalwork are proposed to be finished in a bronze colour which will be similar in appearance to that used in the neighbouring Athena development.
- 9.48 Whilst only 3 housetypes are proposed, there is variation in how they are proposed to be arranged, with more formal and defined frontage to the

Ridgeway and Milne Avenue, and with houses staggered and set back within the site. All of the housetypes have blank flank walls, which was raised as a concern during pre-application discussions. In response the applicant has proposed a range of flank wall treatments to activate the sides of buildings, including climbing plants, public art and amenity features such as alcove seating. The proposed bike workshop/kiosk will also help to define the Milne Avenue/ Ridgeway corner. Whilst these elements will require long-term maintenance, they are considered an innovative and interesting feature and an acceptable means to add visual interest to flank walls.

- 9.49 Each of the apartment blocks is proposed with a different combination of bays, balconies, a light brick frame, and different styles of brick panels in grey and buff tones. The top storey on Blocks A and B is proposed to be finished in a bronze metal cladding, which matches windows, railings and other metal work. A 'signature building' with a rounded corner is proposed on Block A to define the primary pedestrian entrance to the site, adjacent to steps up to the podium garden.
- 9.50 The proposed architectural design of the apartment buildings is considered to be well-considered, helping to significantly break up the massing of the buildings. Whilst there are a wide range of design elements proposed, these are tied together by a constrained material palette. As with the houses, the proposed design and detailing reflects the contemporary character established within Phase 1 of Eddington, whilst also introducing some variation.
- 9.51 Overall, the proposed appearance of both the houses the apartment buildings is considered high-quality and is supported. Conditions are recommended to secure details of materials for the houses and apartments (Conditions 2 and 3).

#### Accessibility

- 9.52 As set out above, all dwellings are designed to meet the Lifetime Homes Standard and Building Regulations M4(2). Level thresholds are proposed to all dwellings, as well as all balconies and private amenity areas. The podium garden on S2 is at first floor level with the primary access being a set of steps. There is however lift access to the podium from each of the blocks, including from close to the main access stairs.
- 9.53 8 parking spaces in the podium car park are proposed to be designated accessible bays. Whilst not formally marked-up as such, most on-plot parking spaces for houses across S1 and S2 are sized and designed to be wheelchair accessible. As a consequence, the proposed level of accessible parking, at 35% of spaces across the site, is well in excess of the 5% NWCAAP requirement.
- 9.54 The streets within the site have been designed with accessibility in mind, with segregated pedestrian paths through most of the development, and a

largely level surface to allow ease of access for all users. Shared surfaces are proposed within the site, however dedicated pedestrian footways are provided on the loop road within S1, whilst the green lanes will have very limited traffic.

#### Public art

- 9.55 A Public Art Strategy was secured as part of the outline planning application, which will deliver a number of commissions across the wider site. Whilst public art is envisaged to be delivered along the Ridgeway, the site wide strategy does not propose any public art within the site. Public art is however proposed to be incorporated into the flank wall treatment for houses. Details of this is proposed to be secured by way of a condition (Condition 5).

#### Conclusion on design

- 9.56 Details of compliance with the Design Code are included in the Design and Access Statement, which is considered sufficient to discharge condition 8 of the outline planning permission in relation to the site. Details of hard and soft landscaping and public art which have been included in the application are considered sufficient to discharge conditions 11 and 64 of the outline planning permission.
- 9.57 The proposals do diverge from the Design Code in a number of respects as discussed above. However the Design Code does allow for schemes to depart from the Design Code, and it is considered that this is sufficiently justified with appropriate scale and massing for the site, a layout which is designed around walkability, and is landscape-led. The layout, scale, massing, and detailed design of the development is considered to represent a high standard of architectural design and the development will make a positive contribution to the character and appearance of the area. The development is considered to comply with the outline planning permission, Local Plan Policies HQ/1, HQ/2, H/8 and NWCAAP Policies NW2, NW5, & NW22

#### **9.58 Trees**

- 9.59 A tree survey accompanies the application. There are a number of trees within the site, the majority of which are trees which have been planted along the length of Milne Avenue. There are also a number of established trees and hedging along the boundaries of dwellings along Huntingdon Road, including a Category A cedar.
- 9.60 The majority of trees within the site are proposed to be retained through the course of the development, although 8 trees along Milne Avenue are proposed to be removed to facilitate changes to junctions etc. along Milne Avenue, and will be compensated by replacement planting. One large group of Category C trees (mostly elm and hawthorn) is proposed to be reduced. The 20m offset from the boundary for buildings will limit the

potential for any impact on retained trees along the boundary and in neighbouring properties.

- 9.61 A tree protection plan has been submitted which shows Tree Protection Fencing to be installed around the root areas of retained trees. Construction works, including creating of drainage features and any regrading of the site will only be permitted outside of the protective fencing. An Arboricultural Method Statement has also been submitted which provides further detail on how any potential impacts on retained trees will be mitigated. The submitted information is considered sufficient to discharge condition 12 of the outline planning permission in relation to the site.
- 9.62 Subject to a condition securing implementation of the proposed tree protection measures (Condition 11), the impact on trees is considered acceptable in accordance with the outline planning permission, Local Plan Policy HQ/1 and NWCAAP Policy NW2.

### **9.63 Heritage Assets**

- 9.64 The nearest designated heritage assets are the Grade II\* Listed Girton College, and Grade II Listed Girton College Lodge, located approximately 300m to the northwest of the site along Huntingdon Road. Given the distance to these buildings and intervening development, it is not considered the proposals will have any material impact on the setting of these heritage assets.
- 9.65 A detailed archaeological assessment of the wider development site was undertaken as part of the outline planning application, and as confirmed by the County Council archaeological officer, it is not considered any further archaeological works are required in relation to this site.
- 9.66 It is considered that the proposal, by virtue of its scale, massing and design, would not harm the character and appearance of the area or any heritage assets and is compliant with the provisions of the outline planning permission, the NPPF and Local Plan policy NH/14.

### **9.67 Carbon Reduction and Sustainable Design**

Sustainable design & construction

- 9.68 The outline planning permission requires all dwellings to be built to Code for Sustainable Homes Level 5. Whilst the Code has been withdrawn it continues to apply to legacy developments such as Eddington. For comparison to current policy, Code Level 5 requires, amongst other things, measures equivalent to a 100% cut in carbon dioxide emissions in relation to space heating, water heating, and lighting compared to a dwelling built to Building Regulations minimum standards; and to limit water use of 80l per dwelling per day.

- 9.69 All dwellings are proposed to meet Code for Sustainable Homes Level 5. Photovoltaic panels are proposed to all roofs, with 4kWhp for each house and 1.35kWhp per apartment. All dwellings are also proposed to be connected to the site-wide district heating and non-potable water networks.
- 9.70 Modern Methods of Construction are proposed for the houses, with modules constructed off-site. This will assist in achieving high levels of airtightness and reduced construction waste compared to traditional construction.

#### Ventilation & Overheating

- 9.71 The Design Code sets out that buildings should be designed to make use of passive ventilation, with mechanical ventilation only used where passive measures are not possible.
- 9.72 All houses have opportunity for through ventilation, and mechanical cooling is only proposed where homes are exposed to higher noise levels.
- 9.73 The majority (80%) of apartments are proposed to be single-aspect limiting the effectiveness of passive ventilation. The need to ensure adequate daylighting for northern facing units, and to control heating in more southern facing units has been considered from an early stage of development, and through discussions with the Council's Sustainability Officer. The applicant has analysed different balcony types, glazing ratios, and glass type and the effect these have on daylight performance, heating demand, and overheating risk. This has resulted in two main apartment typologies with recessed balconies in front of living areas used on south-east and west facades to provide shade and reduce the risk of overheating. On north and north-west facades, exposed balconies positioned in front of bedrooms are designed to ensure adequate daylighting to living areas in winter. Side windows are also proposed to open onto balconies for all apartment types to provide exposure to different wind directions and improve natural ventilation.
- 9.74 A sample of units have been assessed for their overheating potential using the industry standard CIBSE TM59 methodology. This assessment has also accounted for units which are exposed to higher noise levels where opening windows may not be a preference for residents. The development complies with the assessment criteria, with all units are compliant without mechanical ventilation under the 2020 and 2050 climate scenarios. Mechanical cooling is proposed for units which expected to be subject to elevated noise levels from the M11.
- 9.75 Overall, whilst the proposed development includes a significant number of single-aspect apartments, the design of apartments and their balconies has been carefully considered to minimise the risk of overheating and ensure adequate daylighting for all units. The proposals have been subject to extensive discussion through the pre-application process and the

Sustainability Officer is satisfied with the proposed approach. The proposals are considered to ensure adequate ventilation and address the risk of overheating.

#### Electric Vehicles

- 9.76 Electric vehicle charging points are proposed for all parking spaces on S1 and the houses on S2. EV charging is proposed to 16 spaces (10%) within the podium. The outline planning permission does not set a specific requirement for EV charging provision is considered acceptable, and as such the proposed level of EV charging provision is considered acceptable. A condition is recommended to secure the provision of EV charging points (Condition 8).
- 9.77 The applicants have suitably addressed the issue of sustainability and renewable energy and subject to conditions the proposal is compliant with the outline planning permission, Local Plan policies CC/1, CC/3, CC/4, HQ/1 and NWCAAP Policies NW2, & NW24.

#### **9.78 Biodiversity**

- 9.79 A site-wide biodiversity strategy was approved as part of the outline planning permission, the primary requirement of which with respect to residential parcels is the incorporation of bird boxes. The proposed development is considered to be compliant with the site-wide biodiversity strategy, providing bird box provision in excess of that required. A range of features such as rain gardens and biodiverse green roofs are also proposed which will support biodiversity. Conditions are recommend to secure implementation of landscape works and for a landscape and ecological management plan (Conditions 7 and 9).
- 9.80 Although not a requirement of the outline planning permission, the site is anticipated to achieve a biodiversity net gain with a 1.6% increase in habitat units and a gain of 2.1 hedgerow units, which is supported.
- 9.81 The submitted information is considered sufficient to discharge condition 35 of the outline planning permission in relation to the site. With respect to biodiversity the development is considered in compliance with the outline planning application, Local Plan Policy NH/4, and NWCAAP Policy NW2.

#### **9.82 Water Management and Flood Risk**

- 9.83 The site is in Flood Zone 1 where there is a low risk of flooding from rivers. The site was subject to a detailed flood risk assessment at the outline planning application stage, and a site-wide drainage strategy has been developed which is designed to accommodate a 1 in 100 year storm, together with a 30% climate change allowance. Surface water from the site is directed to the Washpit Brook via a series of swales within green corridors, and attenuation basins within the western edge.

- 9.84 As part of the wider sustainability measures for the site, dwellings are designed to achieve water consumption of 80 litres per person per day, including through the use of a non-potable water system which is fed by surface water from the site.
- 9.85 The surface water drainage system for S1 proposes to use shallow attenuation features including permeable paving and attenuation tanks, as well as an attenuation pond in the wildlife corridor, which then gravity feed into the site-wide drainage system. Within S2 permeable paving, an attenuation tank and the podium garden are proposed as attenuation features which will then drain into the site-wide drainage system.
- 9.86 Attenuation ponds and swales within the wildlife corridor will be lined and are not considered likely to increase the risk of flooding to any neighbouring properties. The applicant has also tested exceedance flow routes for storm event which exceeds the 1 in 100 year plus 30% climate change allowance design, or for blockages. This shows exceedance flows will be directed towards streets and on to swales with proposed buildings and neighbouring properties not impacted.
- 9.87 Additional surface water drainage features including rain gardens and green roofs are proposed, which have not been included in the drainage design, and will provide additional surface water attenuation.
- 9.88 Foul water is proposed to be conveyed using a gravity system into the existing site network within Milne Avenue, with onward flows into the wider public foul sewer network.
- 9.89 Following the submission of additional information by the application, Anglian Water have confirmed they have no objection to the proposals.
- 9.90 The applicant has submitted further details on the proposed surface water drainage system, on the basis of which the Lead Local Flood Authority has confirmed they have no objection to the proposals. The submitted information is considered sufficient to discharge condition 27 of the outline planning permission in relation to the site.
- 9.91 The applicants have suitably addressed the issues of water management and flood risk, and the proposal is in accordance with the outline planning permission, Local Plan policies CC/7, CC/8 & CC/9 and NWCAAP Policies NW25, NW26, and NW27.

## **9.92 Transport, access, and parking**

### Strategic Routes

- 9.93 The site is adjacent to the Ridgeway, an off-road walking and cycling route through the site proving connections to Girton via Bunker's Hill, and towards the city centre via Storey's Way. The Ridgeway has been

provided in a temporary form, with the design of the permanent Ridgeway anticipated to be delivered as part of the future reserved matters application for wider Infrastructure works.

- 9.94 Concerns have been raised by local residents about the impact of the development on the route of the Ridgeway, following amendment to the red-line boundary. Indicative plans for the Ridgeway have been included on the submitted plans, however these do not form part of this reserved matters application. Properties fronting the Ridgeway will be set back from Bunker's Hill and it is considered that the amendment to the red-line will not obstruct the delivery of the permanent Ridgeway to a design which complies with the Design Code.
- 9.95 Vehicular access to the site is via Milne Avenue, which has already been provided and which connects to Eddington Avenue. Part of Dobb Terrace is also proposed to be delivered as part of the proposals and has been designed in accordance with the Design Code. Transport and traffic impacts were considered at the outline planning permission stage and appropriate mitigation secured. The County Council as highways authority have not raised any objection to the proposal. Given the limited level of parking proposed and promotion of active travel measures, it is considered that the development is not likely to result in a significant increase in traffic using Milne Avenue and no further assessment is required at this stage.

#### Internal Streets and Access

- 9.96 The development proposes a hierarchy of streets which differ in their design to the tertiary street set out in the Design Code. The Design Code sets out that tertiary streets should be either be a shared space at least 6m wide with a service strip either side, or should be a conventional street with a typical width of 15m overall, a 5m wide carriageway, and footpaths on either side.
- 9.97 The loop road is intended to be a shared space with a typical width of 8m including a 5.5m wide carriageway and a 2m footpath on one side. Liveable streets are proposed off the loop road and Dobb Terrace with a typical width of 6m, with green paving and planting used to provide a winding path for vehicles. A green lane and green spine are also proposed through the site, providing dedicated routes for pedestrians and cyclists.
- 9.98 The implications of this proposed street hierarchy on the character of the development and landscaping is discussed above. The design of the streets with narrow carriageways and extensive traffic calming measures is intended to slow vehicles and ensure the streets are usable by pedestrians and cyclists, with the loop road having a design speed of 10mph.
- 9.99 Footways and motor green routes allow pedestrians to navigate the site without sharing space with motor vehicles, other than on the liveable streets which have a very low design speed of 5mph.

- 9.100 Vehicle tracking diagrams has been provided to show the site can be accessed safely by refuse vehicles, fire engines, and delivery vans.
- 9.101 Whilst departing from the Design Code, the design of the internal streets is considered to provide a safe environment for all users which supports active travel and as such is considered acceptable.
- 9.102 Cycle Parking
- 9.103 The Design Code sets out that cycle parking should be secure and conveniently located in accordance with the NWCAAP cycle parking standards of 1 space per bedroom for dwellings of up to 3 bedrooms, 3 space per dwelling for 4-bed units, and some level of visitor parking provision.
- 9.104 For houses on S1 and S2, an external cycle store is proposed for each dwelling providing 3 spaces for 3-bed units, and 4 spaces for 4-bed units, for a total of 348 resident spaces.
- 9.105 For the apartments on S2 a range of cycle parking is provided for residents, with a cycle store for each block and additional shared stands within the car park. 418 resident cycle parking spaces are proposed, in excess of the 391 required. The submitted plans show 318 spaces to be provided as gas-assisted two-tier stands, 98 as Sheffield type stands, and 12 spaces for cargo bikes/ oversized cycles.
- 9.106 As well as dedicated resident cycle parking, 22 visitor cycle parking spaces are proposed, in addition to existing visitor cycle parking adjacent to the site. There is also potential for a cycle and scooter hire point at the bike workshop/ kiosk building on S1.
- 9.107 Cycle parking for housing is conveniently located within gardens. Cycle parking for apartments is generally located close to stair/lift cores, with cyclists able to access the Ridgeway directly or use the vehicular access onto Dobb Terrace. As most ground floor units do not have direct access to the podium, walking distances for residents are longer, with residents of ground floor units in Block C having to walk up to 145m to access their dedicated cycle stores, although this only affects a small number of units.
- 9.108 The overall level of cycle parking provision exceeds that required by the Design Code and NWCAAP and is supported. Cycle parking is also considered to be generally conveniently located, and the cycle stores for houses are considered acceptable. 75% of cycle parking proposed within S2 is in the form of gas-assisted two-tier stands. The cycle parking details submitted are considered sufficient to discharge condition 43 of the outline planning application in relation to the site.

#### Car Parking

- 9.109 Condition 40 of the outline planning permission requires that car parking is provided in accordance with the standards in the NWCAAP, which sets a maximum parking level of 1 space for dwellings up to 2 bedrooms, and up to 2 spaces for dwellings with 3 or more bedrooms. The standards also require visitor parking provision of 1 space for every 4 dwellings, and 5% of spaces to be accessible. The NWCAAP permits lower levels of parking provision for highly sustainable sites and where reduced car use can be controlled.
- 9.110 150 parking bays are proposed within the podium car park, including 8 dedicated accessible parking bays. There are 76 on-plot driveway parking spaces for houses, whilst there are also 7 off-plot parking spaces for residents within S1. Although not marked up as dedicated accessible bays, on-plot parking spaces are designed to be accessible.
- 9.111 As the site will be owned and managed by a single operator, houses without on-plot parking, and apartments will have the option of renting a parking space. Across the site, the level of resident parking provision will be 0.6 spaces per dwelling. For context, the parking ratio for Keyworker housing approved as part of Phase 1 of Eddington is approximately 0.2 spaces per dwelling.
- 9.112 There are also currently 18 visitor parking bays on Milne Avenue and 4 proposed on Dobb Terrace. There is active monitoring in place to prevent inappropriate parking within the site. There is a car club in operation at Eddington which has been delivered through the outline planning permission, and the developer also intends to operate a car club as part of its offer to prospective tenants. The site is highly accessible, with good active travel and public transport links, as well as a range of facilities on site. As the site is proposed to be managed by a single operator parking within the podium can be pooled, rather than tied to individual houses or flats so that the spaces will be used efficiently, with the operator able to use pricing and other controls to manage demand. Subject to a condition to secure a parking management strategy (Condition 13), the level of car parking provision is considered acceptable.
- 9.113 The use of a podium car park is considered acceptable and in accordance with the Design Code. The Design Code specifies that driveway parking should only be used for detached dwellings, with garages or other parking structures such as basements used elsewhere. Officers have worked with the applicants through the pre-application process to reduce the amount of driveway parking proposed, including removal of parking from units facing Milne Avenue.
- 9.114 The developer has also designed the parking spaces to be flexible so that if residents do not own a car they can easily convert parking bays into additional garden space. Combined with the site layout and proposed landscaping works, it is considered that parking will not be a dominant feature in the streetscene and will not encourage car use over sustainable modes of transport.

## Conclusion on transport, access, and parking

- 9.115 Overall it is considered the proposals are designed to support the use of sustainable modes of travel, with adequate car and cycle parking, and are consistent with the parameters of the outline planning permission, Local Plan Policy T1/2, and NWCAAP Policies NW11, NW17, and NW18.

## 9.116 Residential Amenity

### Neighbouring Residences

- 9.117 The Design Code specifies that a 20m buffer should be provided between the boundary of properties neighbouring the site and proposed buildings, to minimise any potential impact on neighbours.
- 9.118 Dwellings along the edge of the development are proposed to be 2-storey, and a 20m buffer to the boundary is proposed in compliance with the Design Code, which includes a restricted-access wet woodland corridor within the buffer zone will further limit any potential disturbance of neighbours. The distance to the nearest existing neighbours, with most neighbouring dwellings over 40m away from proposed dwellings.
- 9.119 The site is adjacent to dwellings within lots within Hill's Athena development at Eddington. Based on the proposed layout of the site, it is considered the proposed development will not have a significant impact on the amenity of current/future developments of this neighbouring development.
- 9.120 A 1.2m post-and-rail fence is proposed along the boundary with properties on Huntingdon Road to further secure and mark the boundary. The wet woodland corridor will be gated with access intended to only be for maintenance.
- 9.121 The distances between apartments and neighbouring dwellings to the east is in excess of 50m. Houses are either side on or continue the terrace for the neighbouring houses under construction on the M1/M2 (Athena) development, providing adequate separation.
- 9.122 It is not considered that the development will result in any significant loss of privacy or loss of light to any existing neighbouring dwellings.

### Privacy and amenity of future occupants

- 9.123 Distances between houses across the site vary, with back-to-back distances of 18m or more, and at least 22m where there are 3-storey dwellings proposed. These separation distances are considered adequate to ensure acceptable levels of privacy for residents. The extensive tree planting proposals will enhance privacy through much of the year.

- 9.124 Due to the large podium garden proposed, distances between internal facing apartments is in excess of 36m which is considered acceptable. The distance between houses on S2 and apartments in Block C is approximately 22m. This separation distance is considered acceptable given the apartments are proposed with a set-back fourth storey.
- 9.125 The design of the scheme, with constrained distances between houses and garden boundaries typically defined by 1.5m high timber screens or hedging is relatively open. This will to some extent limit the privacy of these spaces, in particular where gardens for houses on S2 are overlooked by apartments. This is however an intentional design choice to maximise the effect of proposed planting and to foster a sense of community amongst residents. On this basis, the relatively open nature of gardens is considered acceptable.

#### Space standards and private amenity space

- 9.126 All dwellings within the site have been designed to comply with the Nationally Described Space Standards, as set out in the table below:

House/ Flat type*	Gross Internal Area**	NDSS requirement	Private amenity space (not part of the NDSS requirement)***
House Type A (3b5p)	93sqm	93sqm	Private garden
House Type B (3b5p)	114.7sqm	93sqm	Private garden
House Type C (4b8p)	194.3sqm	124sqm	19sqm terrace and private garden
Apartment Type A (1b2p)	50.1sqm	50sqm	5.3sqm balcony
Apartment Type B (1b2p)	50.2sqm	50sqm	5.2sqm balcony
Apartment Type D (2b4p)	73.1sqm	70sqm	7sqm balcony
Apartment Type E (2b4p)	70.6sqm	70sqm	6.8sqm balcony
Apartment Type G (3b6p)	98.3sqm	95sqm	7sqm balcony
Apartment Type H (3b6p)	101.7sqm	95sqm	7sqm balcony

\*Non-standard flats are not listed above, however are all meet or exceed the NDSS requirements.

\*\*All units have built-in storage in excess of the NDSS requirements.

\*\*\* Terraces for ground floor and podium apartments typically range from between approximately 10-30sqm. Top floor apartments on Blocks C and D also benefit from private terraces.

- 9.127 As well as meeting or exceeding nationally described spaces standards, all dwellings benefit from private amenity space in the form of a balcony or terrace for apartments and gardens for houses, some of which also benefit from terraces. Balconies are of a sufficient size to accommodate table and chairs etc. and are considered acceptable. Gardens for houses are generally well-sized at typically 50sqm or more. There are small number of house which have more limited garden space, the smallest being approximately 27sqm, which is still considered acceptable as it provides sufficient space to be usable by residents.
- 9.128 Residents will also have access to communal facilities including the podium garden, as well as easy access to a range of open space within the wider site.
- 9.129 The outline planning permission requires that at least 50% of dwellings delivered across Eddington are built to Lifetime Homes standards. Whilst the Lifetime Homes standard has been withdrawn, all dwellings are proposed to be compliant with the standard, as well as complying with the Building Regulations Part M4(2) standard for accessible and adaptable dwellings.
- 9.130 Overall, the proposed development is considered to ensure existing and future residents will benefit from acceptable privacy and amenity in accordance with the outline planning permission, Local Plan Policies HQ/1 and H/12, and NWCAAP Policy NW2.

### **9.131 Construction Impacts and Environmental Health**

- 9.132 Construction Management
- 9.133 A site wide Construction Environmental Management Plan (CEMP) was agreed under condition 52 of the outline planning application to address the environmental impacts of the construction phase, including in relation to noise and dust. Amongst other things, this sets out approved construction working hours, dust suppression methods, and liaison with local residents.
- 9.134 Condition 53 requires submission of a site-specific construction method statement to demonstrate compliance with the site-wide CEMP. A construction method statement has not been submitted as part of this reserved matters application, and will need to be submitted and approved prior to commencement.

- 9.135 A number of residents have raised concerns relating to construction management, including in relation to working hours, noise suppression, and that there has been poor compliance with construction management standards on other parcels. As details such as construction working hours have already been agreed at the outline planning application, and reflect standard industry practice and standard conditions, it is not considered reasonable to impose stricter requirements in relation to this specific parcel. The combination of a 20m buffer to the boundary and proposed use of modular construction methods are likely to limit the potential for and duration of any disturbance as a consequence of construction activities.
- 9.136 Residents have also raised concerns about the existing earth mounds which are located to the north west of the site, close to the boundary with properties along Huntington Road. These existing earthworks are not part of the current reserved matters application. As the site is largely relatively level and no basement is proposed, it is not anticipated that this reserved matters application is likely to generate significant spoil, or require the importation of significant soil volumes. One of the elements required as part of any construction method statement is details of soil management (including storage or importation), and as such any soil movements to or from the site will require the prior approval of the Council.
- 9.137 On the basis of the above, subject to submission of a construction method statement as required by condition 53 of the outline planning permission, it is considered the development is not likely to have an unacceptable impact on local residents or the local environment during construction.

#### Pollution and contamination

- 9.138 The potential for contamination to be present has been considered through the outline planning application and no further site investigation or remediation work is required as part of this application.
- 9.139 The proposed surface water drainage system is designed to feed into the site-wide drainage network, minimising the risk of groundwater pollution. Pollution during the construction stage can be adequately managed through the submission of a Construction Method Statement as required by condition 53 of the outline planning permission.

#### Noise

- 9.140 A noise assessment was undertaken as part of the Environmental Statement which accompanied the outline planning application. This identified noise from the M11, A14, Huntingdon Road, and internal site roads has the potential to be a disturbance for residents, with the M11 being the primary source of noise.
- 9.141 The application is accompanied by a noise survey and acoustic design statement. This has identified that when windows are open, some units on the southern and western elevations will experience elevated noise levels,

primarily from the M11. With windows closed noise levels will be acceptable, assuming standard double glazing to windows. Noise levels are likely to reduce in the future as further parcels are built out, however all units will be fitted with mechanical ventilation, as well as mechanical cooling where required, in order to achieve acceptable ventilation and comfort levels. The noise attenuation measures proposed are considered acceptable, and sufficient to discharge condition 50 of the outline planning permission in relation to the site.

#### Air quality

- 9.142 Air quality has been considered at a site wide level through the outline planning permission. The primary sources of air pollution in the development are the district heating system, which is outside the scope of this application, and vehicle emissions. The outline planning application does not set any specific requirements in relation to Electric Vehicle (EV) charging to reduce emissions, however EV charging is proposed to all on-plot parking spaces, whilst 10% of spaces under the podium will have EV charging points. The is supported by Officers.

#### Conclusion on Construction and Environmental Health

- 9.143 The associated construction and environmental impacts of the development would be acceptable in accordance with the outline planning application, Local Plan policies CC/6, CC/7, SC/9, SC/10, SC/12 and SC/14, and NWCAAP Policy NW28.

#### **9.144 Other Matters**

##### Waste and recycling

- 9.145 Eddington uses an underground waste collection system for recycling and residual waste, and this is proposed to be used for the site, with bin points located within S1 as well as Milne Avenue and Dobb Terrace. Vehicle tracking has been undertaken to demonstrate that a refuse vehicle can safely navigate the refuse collection routes within the site. Since submission, the proposals have been updated following discussion with the Shared Waste team to ensure sufficient clearance around bin points, and review of vehicle tracking.
- 9.146 The Design Code states that the external distance from building entrances to bin points should be no more than 35m for at least 70% of dwellings, and should be no more than 50m for all dwellings.
- 9.147 70% of units have walking distances from entrances of 30m or less to bins, whilst 20% having walking distances in excess of 50m. Travel distances for some apartments are up to 88m from their main entrance lobby, however residents will be able to reduce this to 60m or less by using an alternative core.

- 9.148 The key reason for most units having walking distances in excess of the Design Code recommendation is that the site is constrained by the wider masterplan, with an assumption that no underground bin points will be installed along the Ridgeway. As such for the apartments the longer walking distance is a trade-off for the benefits of having entrances opening onto the Ridgeway. It is also important to note that bin points are located on or are in close proximity to walking routes into the local centre, so residents will be able combine depositing refuse in the bins with a journey to the local centre. On the basis of the above, walking distances to bins are considered acceptable.
- 9.149 In terms of green waste, houses are proposed to be provided with compost bins. The podium garden will be centrally maintained and as such it is not expected that residents will require green waste bins, however there are designated bulky waste areas underneath the podium which could accommodate green waste bins. If food waste collection is extended to the site in the future, there is space within gardens for houses to store individual food waste bins, and communal food waste bins for flats can be accommodated underneath the podium.
- 9.150 The provision of waste and recycling facilities proposed is considered acceptable in accordance with the outline planning permission, with the information submitted considered sufficient to discharge condition 55 of the outline planning permission in relation to this site.

#### Broadband

- 9.151 A site-wide broadband strategy was secured as part of condition 21 of the outline planning permission. Broadband is proposed to be provided to all units on occupation. Present Made intend to offer broadband as part of rental offer, meaning individual tenants will not need to secure their own connection individually.

#### Lighting

- 9.152 The application is accompanied by a Lighting Concept Report which details the proposed lighting strategy for the internal streets and the apartment blocks. Street Lighting for Milne Avenue has already been separately approved, and lighting for the permanent Ridgeway and other surrounding streets will be considered as part of future applications.
- 9.153 The proposed lighting strategy proposes higher levels of lighting to more trafficked parts of the site including the loop road and accesses to the apartment blocks and podium, with lower level lighting focusing on pathways and key features is proposed elsewhere. This approach is supported. The information submitted is considered sufficient to discharge condition 51 of the outline planning permission in relation to this site.

## Fire Strategy

- 9.154 Fire alarms and sprinklers are proposed for all flats and communal areas for the blocks on S2, and corridors will be smoke vented. The car park will be fire separated from the rest of the building and will be smoke vented. All houses will be fitted with fire alarms in accordance with Building Regulations Approved Document B.
- 9.155 Condition 65 of the outline planning application requires submission of a scheme for the provision of fire hydrants as part of any reserved matters application. Plans have been submitted showing the proposed locations of fire hydrants. This is considered acceptable sufficient to discharge outline condition 65 in relation to this site.

## Security and safety

- 9.156 The proposed development has been designed with secure design principles in mind. The apartment blocks are designed to provide good natural surveillance, with gaps between blocks designed to be suitably lit and overlooked. The podium garden is proposed to be open during the day and locked overnight, which is considered to provide a good balance between security and opening the development up to the wider community.
- 9.157 Houses on S1 are designed to have relatively open gardens, with low boundary treatments. The private amenity spaces, as well as communal spaces are however well overlooked. The active management of the site will also assist in ensuring it provides a safe environment for residents.

## **9.158 Third Party Representations**

- 9.159 The majority of issues raised by residents are addressed in the sections above.
- 9.160 Some residents have raised concern about the potential loss of rear access to their properties along Huntingdon Road. Any right of access is a civil matter and is outside the scope of this application, and the parameter plans do not require provision of any access route along the boundary. The proposals do not prejudice the delivery of any potential future access to the west from the Ridgeway.

## **9.161 Public Sector Equality Duty**

- 9.162 Under the Equality Act 2010, all public authorities, including Local Planning Authorities, must have due regard in exercising its functions for the Public Sector Equality Duty under s149 of that Act.
- 9.163 The development will contribute to the delivery of a range of types of housing to meet the needs of different groups of people across Eddington,

alongside a range of communal facilities which will appeal to other groups. The need for housing to meet the diverse needs of people with a disability, as well as people such as parents with pushchairs has also been considered in the design and assessment of the scheme.

#### **9.164 Planning Balance**

- 9.165 Planning decisions must be taken in accordance with the development plan unless there are material considerations that indicate otherwise (section 70(2) of the Town and Country Planning Act 1990 and section 38[6] of the Planning and Compulsory Purchase Act 2004).
- 9.166 The development is considered to be in general compliance with the outline planning permission and design code, although do diverge from the Design Code in a number of areas as discussed above. However, the proposed scale and massing, layout, and appearance of the site is considered acceptable, with a distinctive landscape-led character which will make a positive contribution to the wider Eddington development.
- 9.167 The development is designed to be highly sustainable, minimising energy use, supporting sustainable modes of transport, biodiversity and sustainable water management. The development will provide a mix of high quality and accessible housing, adding to the diversity of housing provision at Eddington and supporting the development of a new community, whilst also minimising any potential harmful impacts on existing residents.
- 9.168 Having taken into account the provisions of the outline planning permission, the development plan, NPPF and NPPG guidance, the views of statutory consultees and wider stakeholders, as well as all other material planning considerations, the proposed development is recommended for approval.

#### **9.169 Recommendation**

- 9.170 **(i) Approve reserved matters application reference 21/04036/REM** subject to:

The planning conditions and informatives as set out in Appendix 1 with authority delegated to officers to undertake appropriate minor amendments of those conditions and informatives prior to issue of the planning permission.

**(ii) Approve the part discharge of planning conditions:**

- **1 – Layout, Scale, Appearance, and Landscaping**
- **8 – Design Code Compliance Statement**
- **11 – Hard and Soft Landscaping**
- **12 – Arboricultural Survey**
- **20 - Distribution of Market & Keyworker Housing**
- **27 – Detailed Surface Water Drainage Strategy**
- **35 – Biodiversity Survey & Assessment**

- 43 – Cycle Parking Details
- 50 – Noise attenuation/ insulation
- 51 – Lighting Scheme
- 55 – Waste and Recycling Details
- 64 – Public Art
- 65 – Fire Hydrants

of outline planning permission S/2036/13/VC in so far as they relate to the reserved matters site.

## 10.0 Appendices

- 10.1 Appendix 1 – Conditions and Informatives
- Appendix 2 – Cambridgeshire Quality Panel Report

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## 21/04036/REM – Eddington S1/S2

### Conditions

#### Approved Drawings

1. The development hereby permitted shall be carried out in accordance with the approved plans as listed on this decision notice.

Reason: In the interests of good planning, for the avoidance of doubt and to facilitate any future application to the Local Planning Authority under Section 73 of the Town and Country Planning Act 1990.

#### Materials (houses)

2. No development of the houses shall take place above ground level until details of all the materials for the external surfaces of the houses to be constructed have been submitted to and approved in writing by the local planning authority.

Details to be submitted shall include bricks, cladding, roof tiles, and features such as windows, doors, balconies, soffits, porches/entrances, coping, roof verges, and any visible rainwater goods. The development shall be carried out in accordance with the approved details.

Reason: To ensure the external appearance of the development does not detract from the character and appearance of the area.in accordance with Policy HQ/1 of the South Cambridgeshire Local Plan 2018 and North West Cambridge Area Action Plan Policy NW2

#### Materials (apartments)

3. No development of the apartment buildings shall take place above ground level until details of all the materials for the external surfaces of the buildings to be constructed have been submitted to and approved in writing by the local planning authority.

Details to be submitted shall include bricks, cladding, roof tiles, and features such as windows, doors, balconies, soffits, porches/entrances, coping, roof verges, and any visible rainwater goods. The development shall be carried out in accordance with the approved details.

Reason: To ensure the external appearance of the development does not detract from the character and appearance of the area.in accordance with Policy HQ/1 of the South Cambridgeshire Local Plan 2018 and North West Cambridge Area Action Plan Policy NW2

### **Amenity buildings**

4. No development of the following structures, as specified in the Design & Access Statement dated January 2022, shall take place until details of their design and proposed operation are submitted to and approved in writing by the Local Planning Authority:
  - The Bicycle Workshop within S1
  - Pavilion within S2
  - Sunken games court within S2

The development shall be carried out in accordance with the approved details and maintained thereafter.

Reason: To ensure the external appearance of the development does not detract from the character and appearance of the area and in the interest of residential amenity in accordance with Policy HQ/1 of the South Cambridgeshire Local Plan 2018 and North West Cambridge Area Action Plan Policy NW2.

### **Landscape features (houses)**

5. Prior to occupation of any houses details of landscape features, other than in relation to the apartment podium and entrance courts, including flank wall treatments (as shown in the Design & Access Statement January 2022), external cycle stores, and street furniture such as benches and sculptures shall be submitted to and approved in writing by the local planning authority.

The development shall be carried out in accordance with the approved details and maintained thereafter.

Reason: To ensure the external appearance of the development does not detract from the character and appearance of the area.in accordance with Policy HQ/1 of the South Cambridgeshire Local Plan 2018 and North West Cambridge Area Action Plan Policy NW2

### **Landscape features (apartments)**

6. Prior to occupation of any part of the apartment buildings details of any street furniture within the podium and entrance courts such as benches and sculptures shall be submitted to and approved in writing by the local planning authority. The development shall be carried out in accordance with the approved details and maintained thereafter.

Reason: To ensure the external appearance of the development does not detract from the character and appearance of the area.in accordance with Policy HQ/1 of the South Cambridgeshire Local Plan 2018 and North West Cambridge Area Action Plan Policy NW2

### **Ecological and Landscape Management Plan**

7. No development shall commence until a Landscape and Ecological Management Plan (LEMP) has been submitted to, and approved in writing by, the local planning authority The LEMP shall include the following.
  - a) Description and evaluation of features to be managed.
  - b) Ecological trends and constraints on site that might influence management.
  - c) Aims and objectives of management.
  - d) Appropriate management options for achieving aims and objectives.
  - e) Prescriptions for management actions.
  - f) Prescription of a work schedule (including an annual work plan capable of being rolled forward over a five-year period).
  - g) Details of the body or organisation responsible for implementation of the plan.

h) Ongoing monitoring and remedial measures.

The LEMP shall also include details of the legal and funding mechanism(s) by which the long-term implementation of the plan will be secured by the developer with the management body(ies) responsible for its delivery. The plan shall also set out (where the results form monitoring show that conservation aims and objectives of the LEMP are not being met) contingencies and/or remedial action will be identified, agreed and implemented so that the development still delivers the fully functioning biodiversity objectives of the originally approved scheme.

The approved plan will be implemented in accordance with the approved details.

Reason: To ensure that before any development commences an appropriate landscape and ecological management plan has been agreed in accordance with Policies HQ/1 and NH/4 of the South Cambridgeshire Local Plan 2018.

### **EV Charging**

8. Prior to the provision of Electric Vehicle Charging Points for all on plot parking spaces as set out in section 6.15 of the submitted Design and Access Statement, Site Wide Strategies, Car Parking dated 19 July 2021, an implementation plan shall be first submitted to and approved in writing by the Local Planning Authority. The details to be provided within the implantation plan shall include the location of charging unit, capacity, charge rate, details of model, location of cabling, electric infrastructure drawings and a programme for delivery. (Note: The slow charge points shall provide a power transfer of between 2.4kW and 7.3kW. The chargers shall be either Mode 2 (3.6kW) or Mode 3 (7.2kW) with a Type 1 socket.)

The development shall be carried out in accordance with the approved measures and retained as such.

Reason: In the interests of reducing impacts of developments on local air quality and encouraging sustainable forms of transport in accordance with Policies SC/12 and TV/2 of the South Cambridgeshire Local Plan 2018 and the Greater Cambridge Sustainable Design and Construction SPD 2020.

### **Landscape Implementation**

9. All hard and soft landscape works shall be carried out and maintained in accordance with the approved details. The works shall be carried out prior to the occupation of any part of the development or in accordance with a programme agreed in writing with the Local Planning Authority.

If within a period of five years from the date of the planting, or replacement planting, any tree or plant is removed, uprooted or destroyed or dies, another tree or plant of the same species and size as that originally planted shall be planted at the same place as soon as is reasonably practicable.

Reason: To ensure the development is satisfactorily assimilated into the area and enhances biodiversity in accordance with Policies HQ/1 and NH/4 of the South Cambridgeshire Local Plan 2018.

### **Roof planting irrigation system**

10. Prior to occupation of the development, details of the irrigation system for roof gardens and green roofs should be submitted and approved in writing by the local planning authority.

Details should include water delivery system to planting beds, water source, automatic control system, times and amounts of water to planting beds, system maintenance details (to be included within the Management Plan).

Reason: In the interests of visual amenity and to ensure that suitable hard and soft landscape is provided as part of the development in accordance with South Cambridgeshire Local Plan 2018 Policies NH/2 and HQ/1.

### **Tree Protection**

11. The tree protection measures shall be installed in accordance with the approved Arboricultural Method Statement, Arboricultural Impact Plan and Tree Protection Works dated January 2022 before any works commence on site. The tree protection measures shall remain in place throughout the construction period and may only be removed following completion of all construction works.

Reason: To ensure the retention of existing trees in accordance with Policies HQ/1, & NH/4 of the South Cambridgeshire Local Plan 2018.

### **Underground bins**

12. The underground waste and recycling bins serving this development shall be provided as shown on the approved plans and brought into use prior to occupation of the dwellings they serve.

Reason: To ensure the provision of waste collection infrastructure on site and to protect the amenities of nearby residents, and in the interests of visual amenity in accordance with South Cambridgeshire Local Plan 2018 Policy HQ/1 and North West Cambridge Area Action Plan Policy NW2.

### **Parking Management Scheme**

13. Prior to occupation of the development, details shall be submitted and approved in writing by the local planning authority of parking management for the scheme. This will include how parking spaces will be allocated, details of parking controls for resident and visitor parking spaces within the site and details of any car club spaces. The development shall be carried out in accordance with the approved details.

To prevent inappropriate parking, protect visual and residential amenity and to promote sustainable travel in accordance with South Cambridgeshire Local Plan 2018 Policies HQ/1 & TI/3, and North West Cambridge Area Action Plan Policies NW2 & NW11

# Informatives

## **Pollution Control**

1. Surface water and groundwater bodies are highly vulnerable to pollution and the impact of construction activities. It is essential that the risk of pollution (particularly during the construction phase) is considered and mitigated appropriately. It is important to remember that flow within the watercourse is likely to vary by season and it could be dry at certain times throughout the year. Dry watercourses should not be overlooked as these watercourses may flow or even flood following heavy rainfall.

## **Surface Water Drainage:**

2. All surface water from roofs shall be piped direct to an approved surface water system using sealed downpipes. Open gullies should not be used.

Where infiltration drainage schemes, including soakaways, are proposed for the disposal of uncontaminated surface water, percolation tests should be undertaken, and soakaways designed and constructed in accordance with BRE Digest 365 (or CIRIA Report 156), and to the satisfaction of the Local Authority. The maximum acceptable depth for soakaways is 2 metres below existing ground level. Soakaways will not be permitted to be located in contaminated areas. If, after tests, it is found that soakaways do not work satisfactorily, alternative proposals must be submitted.

Only clean, uncontaminated surface water should be discharged to any soakaway, watercourse or surface water sewer.

Surface water from roads and impermeable vehicle parking areas shall be discharged via trapped gullies.

Prior to being discharged into any watercourse, surface water sewer or soakaway system, all surface water drainage from lorry parks and/or parking areas for fifty car park spaces or more and hardstandings should be passed through an oil interceptor designed compatible with the site being drained.

Roof water shall not pass through the interceptor.

Site operators should ensure that there is no possibility of contaminated water entering and polluting surface or underground waters.

**Foul Water Drainage:**

3. Foul water drainage (and trade effluent where appropriate) from the proposed development should be discharged to the public foul sewer, with the prior approval of AWS, unless it can be satisfactorily demonstrated that a connection is not reasonably available.

Anglian Water Services Ltd. should be consulted by the Local Planning Authority and be requested to demonstrate that the sewerage and sewage disposal systems serving the development have sufficient capacity to accommodate the additional flows, generated as a result of the development, without causing pollution or flooding. If there is not capacity in either of the sewers, the Agency must be reconsulted with alternative methods of disposal.

**Contaminated Land:**

4. If during development, contamination not previously identified is found to be present at the site then no further development (unless otherwise agreed in writing with the local planning authority) shall be carried out until the developer has submitted a remediation strategy to the local planning authority detailing how this unsuspected contamination shall be dealt with and obtained written approval from the local planning authority. The remediation strategy shall be implemented as approved.

**General Informatives:**

5. Notwithstanding the provision of the Town and Country Planning General Permitted Development Order 1995 (or any order revoking or re-enacting that Order), any oil storage tank shall be sited on an impervious base and surrounded by oil tight bunded walls with a capacity of 110% of the storage tank, to enclose all filling, drawing and overflow pipes. The installation must comply with Control of Pollution Regulations 2001, and Control of Pollution (Oil Storage) Regulations 2001.

Site operators should ensure that there is no possibility of contaminated water entering and polluting surface or underground waters.

### **Cranes**

6. Given the nature of the proposed development it is possible that a crane may be required during its construction. We would, therefore, draw the applicant's attention to the requirement within the British Standard Code of Practice for the safe use of Cranes, for crane operators to consult the aerodrome before erecting a crane in close proximity to an aerodrome. This is explained further in Advice Note 4, 'Cranes and Other Construction Issues' (available at <http://www.aoa.org.uk/wpcontent/uploads/2016/09/Advice-Note-4-Cranes-2016.pdf>)

### **Soil management plan**

7. The soil management plan/ strategy within the Construction Management Plan to be submitted under condition 53 of the outline planning permission shall specify that any excavated soil shall not be stored close to existing residences.

### **Discharge of outline planning conditions**

8. For the avoidance of doubt, details required under conditions 1, 8, 11, 12, 20, 27, 35, 43, 50, 51, 55, 64, & 65 of outline planning permission 13/1402/S73 are considered to have been approved as part of this consent.

Details will need to be submitted for approval in relation to conditions 23 (final certificate), 32, & 53 for Lot 4 as set out in the decision notice for the outline planning permission.

## Approved Drawings and Documents

### Drawings:

0632-JCA-ST-RF-DR-A-04100 – P03 - Existing Site Location Plan  
0632-JCA-ST-G0-DR-A-04101 - P03 - Proposed Site Plan - Ground Floor  
0632-JCA-ST-RF-DR-A-04102 - P03 - Proposed Site Plan – Roof  
0632-JCA-S1-G0-DR-A-00110 - P04 - S1 General Arrangement Ground Floor Part 1  
0632-JCA-S1-G0-DR-A-00111 - P04 -S1 General Arrangement Ground Floor Part 2  
0632-JCA-S1-RF-DR-A-00116 - P04 - S1 General Arrangement Roof Part 1  
0632-JCA-S1-RF-DR-A-00117 - P04 - S1 General Arrangement Roof Part 2  
0632-JCA-S1-XX-DR-A-00210- S1 General Arrangement Elevations 1/2  
0632-JCA-S1-XX-DR-A-00211- S1 General Arrangement Elevations 2/2  
0632-JCA-TA-ZZ-DR-A-70310 - P01 - House Type A  
0632-JCA-TB-ZZ-DR-A-70311 - P01 - House Type B  
0632-JCA-TC-ZZ-DR-A-70312 - P01 - House Type C

0632-JCA-S2-G0-DR-A-00120 - P05 - S2 General Arrangement Ground Floor  
0632-JCA-S2-01-DR-A-00121 - P04 - S2 General Arrangement Level 01  
0632-JCA-S2-02-DR-A-00122 - P04 - S2 General Arrangement Level 02  
0632-JCA-S2-03-DR-A-00123 - P04 - S2 General Arrangement Level 03  
0632-JCA-S2-04-DR-A-00124 - P04 - S2 General Arrangement Level 04  
0632-JCA-S2-RF-DR-A-00125 - P04 - S2 General Arrangement Roof  
0632-JCA-S2-XX-DR-A-00220 - P05 - S2 The Avenue General Arrangement Elevations  
0632-JCA-S2-XX-DR-A-00221 - P05 - S2 The Ridgeway General Arrangement Elevation  
0632-JCA-S2-XX-DR-A-00222 - P05 - S2 Courtyard General Arrangement Elevations  
0632-JCA-S2-XX-DR-A-00300 - P03 - General Arrangement Sections  
0632-JCA-S2-XX-DR-A-00301 - P03 - General Arrangement Sections  
0632-JCA-S2-ZZ-DR-A-70120 - P01 - S2 Apartment Layouts Type A, D and G  
0632-JCA-S2-ZZ-DR-A-70121 - P01 - S2 Apartment Layouts Type B, E and H  
0632-JCA-S2-ZZ-DR-A-70122 - P01 - S2 Apartment Layouts Non-Standard

Landscape Plans:

566-CTF-S1-GF-DR-L-1001-P05 – S1 Landscape Plan 1 of 3  
566-CTF-S1-GF-DR-L-1002-P05 – S1 Landscape Plan 2 of 3  
566-CTF-S1-GF-DR-L-1003-P03 – S1 Landscape Plan 3 of 3  
566-CTF-S1-GF-DR-L-2000-P03 - S1 Site Sections  
566-CTF-S1-GF-DR-L-2001-P03 - S1 Site Section C  
566-CTF-S1-GF-DR-L-2009-P03 - S1 Site Sections Street Typologies  
566-CTF-S1-GF-DR-L-2011-P01 – S1 Site Sections driveways)  
566-CTF-S1-GF-DR-L-5000-P02 – S1 Tree & Climber Planting Plan 1/3  
566-CTF-S1-GF-DR-L-5001-P03 – S1 Tree & Climber Planting Plan 2/3  
566-CTF-S1-GF-DR-L-5002-P03 – S1 Tree & Climber Planting Plan 3/3  
566-CTF-S1-GF-DR-L-5003--P04 – S1 Planting Plan 1/3  
566-CTF-S1-GF-DR-L-5004-P04 – S1 Planting Plan 2/3  
566-CTF-S1-GF-DR-L-5008-P03 – S1 Planting Plan 3/3  
566-CTF-S1-GF-DR-L-5100-P03 – S1 Constraints Plan 1/3  
566-CTF-S1-GF-DR-L-5101-P03 – S1 Constraints Plan 2/3  
566-CTF-S1-GF-DR-L-5102-P02 – S1 Constraints Plan 3/3  
566-CTF-S1-RF-DR-L-1010-P03 – S1 Roof Planting Plan 1/2  
566-CTF-S1-RF-DR-L-1011-P03 – S1 Roof Planting Plan 2/2

566-CTF-S2-GF-DR-L-1003-P07- S2 Landscape Plan GF 1/2  
566-CTF-S2-GF-DR-L-1004-P07- S2 Landscape Plan GF 2/2  
566-CTF-S2-01-DR-L-1005-P01 – S2 Landscape Plan Podium  
566-CTF-S2-01-DR-L-2021-P01 – S2 Podium Sections 2  
566-CTF-S2-GF-DR-L-5005-P01 – S2 Planting Plan GF 1/2  
566-CTF-S2-GF-DR-L-5006-P01 – S2 Planting Plan GF 2/2  
566-CTF-S2-01-DR-L-5007-P01 – S2 Planting Plan – Podium  
566-CTF-S2-RF-DR-L-1012-P01 – S2 Planting Plan GF 1/2  
566-CTF-S2-RF-DR-L-1013-P01 – S2 Roof Planting Plan 2/2

Drainage Plans:

0632-RBG-S1-00-DR-CV-X92220 - P02– Lot S1 Drainage Strategy General  
Arrangement Sheet 1

0632-RBG-S1-00-DR-CV-X92221 - P02– Lot S1 Drainage Strategy General Arrangement Sheet 2  
0632-RBG-S1-00-DR-CV-X92100 - P02– Lot S1 Proposed Drainage General Arrangement Plan Sheet 1  
0632-RBG-S1-00-DR-CV-X92101 - P02– Lot S1 Proposed Drainage General Arrangement Plan Sheet 2  
4525-RBG-ZZ-00-DR-CV-87001 – P03 – S1 & S2 Surface Water Exceedance Flow Route  
4525-RBG-S1-GF-SK-CV-000028 – P06 – Lot S1 Below Ground Combined Services General Arrangement  
4525-RBG-S2-GF-SK-CV-89001 – P01 – Lot S2 Below Ground Combined Services General Arrangement

Documents and reports:

Lot S1 and S2 Drainage Strategy July 2021 prepared by Robert Bird Group  
Foul Water Planning Addendum January 2022 prepared by Robert Bird Group  
Environmental Noise Survey and Acoustic Design Statement Report January 2022 prepared by Hann Tucker Associates  
Biodiversity Survey and Assessment V2, prepared by MD Ecology  
Sustainability and Energy Statement, prepared by Hurley Palmer Flatt  
Lighting Concept Report, prepared by Studio Fractal  
Arboricultural Method Statement January 2022 prepared by Lockhart Garratt  
4727/01/21-1360 - Tree Protection Plan v2



# Cambridgeshire Quality Panel

Eddington Lots S1 & S2

Thursday 28<sup>th</sup> January 2021

Virtual Meeting

The Cambridgeshire Quality Charter for Growth sets out the core principles for the level of quality to be expected in new development across Cambridgeshire. The [Cambridgeshire Quality Panel](#) provides independent, expert advice to developers and local planning authorities

against the four core principles of the Charter: connectivity, character, climate, and community.

### **Scheme Description**

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**Architect/Designer:** Jo Cowen Architects

**Applicant:** Present Made

**Planning status:** Pre Application for Reserve Matters Application

**Issue date:** 9<sup>th</sup> February 2021

### **Declarations of Interest**

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Panel members are required to declare any interests they may have in relation to the development before the Panel and any such interests are recorded here.

None.

### **Previous Panel Reviews**

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The Panel has reviewed a number of applications that relate to the Cambridge North West development, referred to as Eddington. This has included the Design Code, and a number of reserve matters.

### **Development Overview**

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Lots S1 and S2 form the northern edge of the Phase 1 development of Eddington, North West Cambridge scheme. It is proposed to submit a reserved matters application pursuant to the outline planning permission (LPA ref: S/1886/11 and variation LPA ref: S/2036/13/VC), for circa 111 houses and 249 apartments, alongside an ecological corridor along the northern boundary, a landscaped podium garden court, car and cycle parking and sustainable urban drainages systems. The proposals are for 100% market housing which will be owned and managed under a build-to-rent model.

Both Lots have frontages onto The Ridgeway (primary pedestrian/cycle route), The Avenue (secondary road) and Neighbourhood Park. Lot S1 shares a boundary with existing residential dwellings along Huntingdon Road.

### **Cambridgeshire Quality Panel views**

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The Panel has been issued with background reference information from the applicant and local planning authority ahead of the review session. This information is listed at Appendix A.

The advice and recommendations of the Panel reflect the issues associated with each of the four 'C's' in the Cambridgeshire Quality Charter and the main comments below include both those raised in the open session of the meeting and those from the closed session discussions.

Overall, the Panel was pleased to see the thoroughness of the preparatory design work and the early engagement of the landscape architect however the overall impression created by the drawings and the lack of detailed plans, sections and elevations raised concerns, possibly unjustifiably, that other aspects had not been fully considered.

#### **Community – *“places where people live out of choice and not necessity, creating healthy communities with a good quality of life”***

The Panel had concerns the layout will promote conflict between different users. It was noted the proposals included ambassadors on site, but the spaces would need to be very carefully managed. For the houses on S1, there were questions as to whether the liveable streets were trying to do too much. A number of landscape features, providing play spaces as depicted in the delightful images, whilst also providing vehicular access for residents' on-plot car parking and refuse collection. How would this work in detail?

The aspiration of the S2 Podium garden court is very welcome but the Panel could foresee conflict; for example noisy play and parties in the podium garden could create a nuisance to other residents.

The inclusion of the kitchen garden on the podium was welcome but the Panel was concerned about the impact of overshadowing.

The sunken podium games court has potential but was rather difficult to comprehend. Whilst a good amenity, there were concerns whether there would be enough light.

**Connectivity – “places that are well-connected enable easy access for all to jobs and services using sustainable modes”**

The Panel wanted to better understand traffic movement generally and how people would circulate within S1. More detailed plans of the Liveable Streets and the Tertiary Roads on S1 would have helped the Panel understand what the streets are catering for.

It was noted that swept paths for refuse vehicles had been considered as part of the design but the Panel was sceptical about the winding routes through the liveable streets in S1.

The proposals for SUDs is very welcome. There was however some caution as to the use of the grasscrete-like product as it only really works as overflow parking. It was noted the proposals were to use a structural soil base and Stockholm tree planting approach.

**Character – “Places with distinctive neighbourhoods and where people create ‘pride of place’**

The Panel felt there were lots of good ideas, but there was a need to filter/edit these to calm down the design. The developer needs to demonstrate how the landscape and public realm will work. The aspiration is very welcome but it has to be deliverable and maintainable.

There are some tight spaces in the development and some of the proposals will be costly to deliver. The Panel was concerned it will be difficult for the residents to enjoy the landscaped routes without a large management cost.

With a single entrance to the car park as part of S2, it gives the impression of a gated community.

The modular forms of the houses in S1 create difficulties turning the blocks around corners but the Panel thought the modules could be applied in S2. However, if the closed perimeter block typology of S2 was further broken down, this could provide

clearer entrances to apartments, reduce the length of the corridors and provide views in, out and through in different directions.

**Climate – “Places that anticipate climate change in ways that enhance the desirability of development and minimise environmental impact”**

The Panel liked the surface water treatment and SUDs plans which is likely to be cost effective as well as having a lower carbon footprint. The quantum of trees in S1 was welcome too.

The Panel were divided on the treatment of the buffer zone on the north boundary of S1. Whether this was a missed opportunity for the greater enjoyment of the residents, or shut off as proposed.

The Panel was delighted to see that orientation had been taken into account in the design of the elevations but were frustrated they were not able to appreciate the impact these studies had had on the architecture as a result of the lack of comparative elevations.

It was noted the orientation of roofs had been optimised for PV panels and battery storage is being considered as part of the houses in S1. The houses will be connected to the district heating system.

The Panel was concerned about overheating in the south and west facing apartments in S2, noting there were a lack of shading. Most of the apartments are single aspect with less opportunity for natural ventilation.

**Panel Conclusions and Recommendations**

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In summary, the main conclusions and recommendations of the Panel were:

- 1) The Panel would have welcomed plans, sections and elevations in order to better understand how the proposals would work.
- 2) The aspirational proposals need editing to calm the design.
- 3) The Panel were impressed with the SUDs proposals.
- 4) The landscape vision approach, tree planting and community gardens are welcome.
- 5) There is built in conflict in the community spaces that may require significant maintenance and management if not resolved.

- 6) The Liveable Streets in S1 need detail design to show how they would work.
- 7) Detailed traffic movement plans are needed.
- 8) Potential conflict in the S2 Podium court needs to be resolved.
- 9) Potential overheating in S2 apartments is a concern.
- 10) Can the continuous nature of the blocks in S2 be broken up?

## References

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## Next Steps

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The Panel would welcome the opportunity for ongoing engagement with the developer and design team as proposals for this site progress.

## Attendees

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Chair: Robin Nicholson

Panel Members: John Dales

Simon Carne

Kirk Archibald

Lindsey Wilkinson

Steve Platt

Panel Support: Judit Carballo and David Carford

Local Authority: Guy Wilson – Planner, Greater Cambridge Shared Planning

Chris Carter – Delivery Manager, Greater Cambridge Shared Planning

Annemarie de Boom – Urban Design, Greater Cambridge Shared Planning

Dinah Foley-Norman – Landscape Architecture, Greater Cambridge Shared Planning

Applicant Team: Alan Penfold, Family Director (Applicant – Present Made)

Chris Hollidge, Development Manager (Applicant – Present Made)

Joanne Cowen, CEO – Jo Cowen Architects (Architect)

Gareth Smith, Associate – Jo Cowen Architects (Architect)

Andrew Thornhill, Director – Churchman Thornhill Finch (Landscape Architect)

Guy Kaddish, Planning Partner – Bidwells (Planning Agent)

Rebecca Smith, Principal Planner – Bidwells (Planning Agent)

Gustavo Brunelli, Associate Director – Hurley Palmer Flatt (Sustainability)

Glynn Irvine - Robert Bird (Civil Engineering)

Observers: Louise Lord - Sustainable Communities and Wellbeing, South Cambridgeshire District Council

## **Appendix A – Background Information List and Plan**

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- Main presentation
- Local authority background note
- Developers cover note

Documents may be available on request, subject to restrictions/confidentiality.

Plans

S1



S2

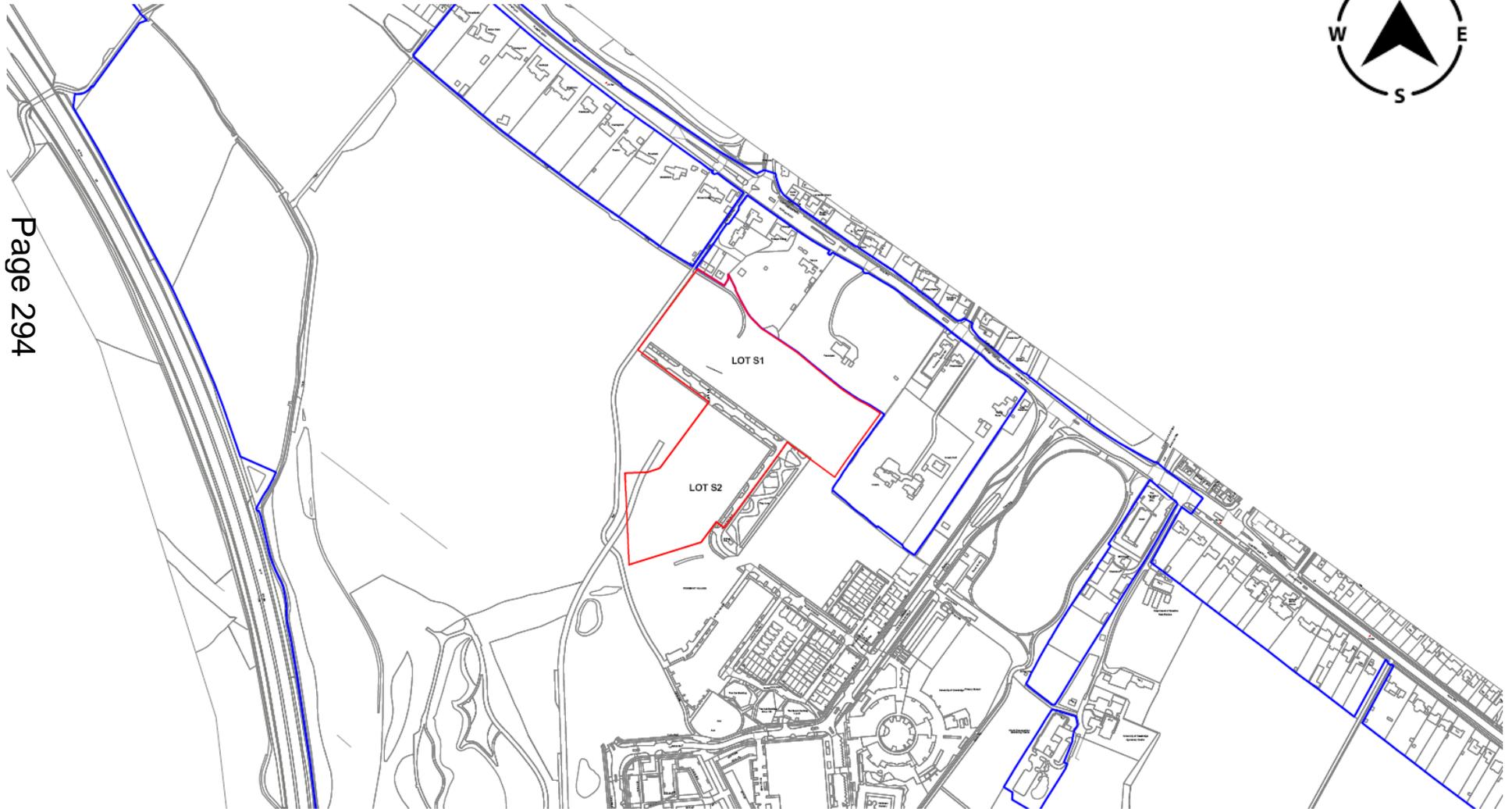


**Lots S1 and S2, North West  
Cambridge, Eddington  
21/04036/REM**

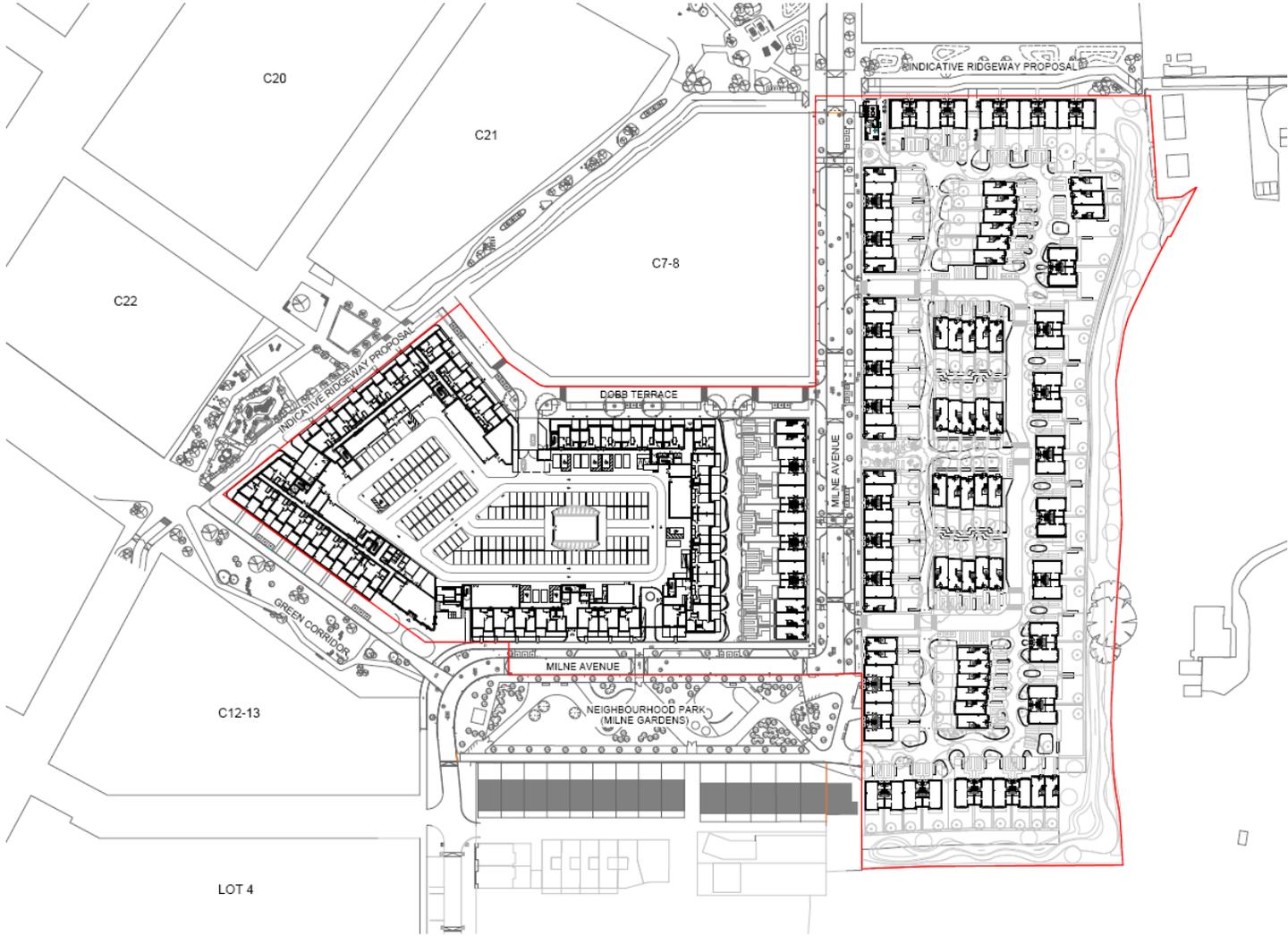
**Drawing Pack**

Joint Development Control Committee  
22 June 2022

# Location plan

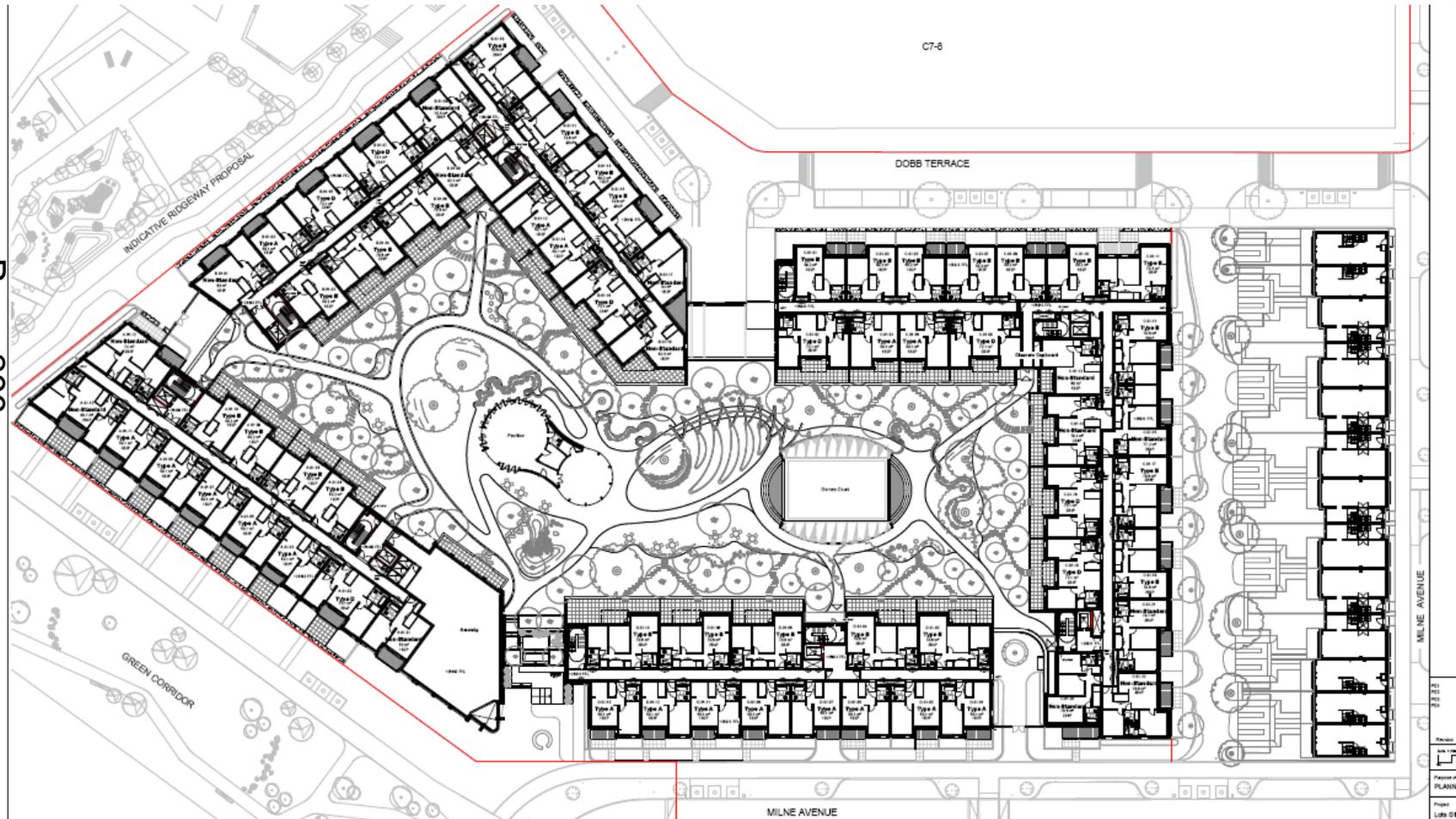


# Proposed site plan (ground floor)



# Proposed S2 Site Plan (first floor)

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# Proposed S1 Site Plan (ground floor)



# Proposed Apartment Building Elevations



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2



3

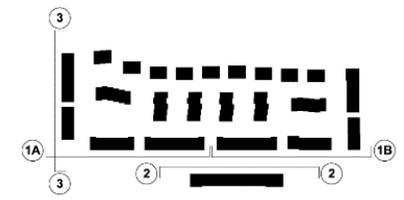
# Proposed Houses Elevations



1A S1 GENERAL ARRANGEMENT ELEVATION - THE AVENUE (PART 1)  
1:1200



1B S1 GENERAL ARRANGEMENT ELEVATION - THE AVENUE  
1:1200



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<b>Planning Committee Date</b>	22 June 2022
<b>Report to</b>	Joint Development Control Committee
<b>Lead Officer</b>	Joint Director of Planning and Economic Development
<b>Reference</b>	S/1355/17/FL
<b>Site</b>	Impington (Land Immediately West Of The Electricity Pylon And Foul Pump Station Histon Road Impington)
<b>Ward / Parish</b>	Histon and Impington
<b>Proposal</b>	Construction of a drainage pond (relocation of drainage pond permitted under reference S/0001/07/F) to support Darwin Green One site wide strategic drainage including revised access and landscaping details.
<b>Applicant</b>	Barratt Homes Eastern Counties & The North West Cambridge Consortium of Land Owners
<b>Presenting Officer</b>	Charlotte Burton, Principal Planning Officer, Strategic Sites Team
<b>Reason Reported to Committee</b>	The proposal is for strategic infrastructure for the Darwin Green 1 development
<b>Member Site Visit Date</b>	None
<b>Key Issues</b>	Principle of development, Green Belt, Drainage, Biodiversity, Landscape, Trees, Archaeology, Residential amenity
<b>Recommendation</b>	<b>APPROVE full planning permission</b> subject to the conditions listed with delegated authority

to officers to make minor amendments to the wording of conditions as required in the interests of good planning.

<b>Planning Committee Date</b>	22 June 2022
<b>Report to</b>	Joint Development Control Committee
<b>Lead Officer</b>	Joint Director of Planning and Economic Development
<b>Reference</b>	07/0003/NMA2
<b>Site</b>	Castle (Land Between Huntingdon Road And Histon Road Cambridge Cambridgeshire CB3 0LE)
<b>Ward / Parish</b>	Histon and Impington
<b>Proposal</b>	Non-material amendment to permission 07/0003/OUT to amend the location of the attenuation pond in the Flood Risk Assessment approved in condition34 to that proposed in application S/1355/17/FL.
<b>Applicant</b>	Barratt Homes Eastern Counties & The North West Cambridge Consortium of Land Owners
<b>Presenting Officer</b>	Charlotte Burton, Principal Planning Officer, Strategic Sites Team
<b>Reason Reported to Committee</b>	The proposal is for strategic infrastructure for the Darwin Green 1 development
<b>Member Site Visit Date</b>	None
<b>Key Issues</b>	Drainage
<b>Recommendation</b>	<b>APPROVE the non-material amendment</b>

<b>Planning Committee Date</b>	22 June 2022
<b>Report to</b>	Joint Development Control Committee
<b>Lead Officer</b>	Joint Director of Planning and Economic Development
<b>Reference</b>	S/0001/07/NMA1
<b>Site</b>	Impington (Land Immediately West Of The Electricity Pylon And Foul Pump Station Histon Road Impington)
<b>Ward / Parish</b>	Histon and Impington
<b>Proposal</b>	Non-material amendment to permission S/0001/07/F to amend the location of the attenuation pond in the Flood Risk Assessment approved in condition 6 so that it accords with the proposed location in application S/1355/17/FL
<b>Applicant</b>	Barratt Homes Eastern Counties & The North West Cambridge Consortium of Land Owners
<b>Presenting Officer</b>	Charlotte Burton, Principal Planning Officer, Strategic Sites Team
<b>Reason Reported to Committee</b>	The proposal is for strategic infrastructure for the Darwin Green 1 development
<b>Member Site Visit Date</b>	None
<b>Key Issues</b>	Drainage
<b>Recommendation</b>	<b>APPROVE the non-material amendment</b>

## 1.0 Executive Summary

- 1.1 The proposal is for the relocation of the balancing pond for the Darwin Green 1. The balancing pond was previously approved on land to the south of the primary road (under full planning permission S/0001/07/F granted in December 2013) on land within the Darwin Green 2/3 site allocation (South Cambridgeshire Local Plan 2018 policy SS/2). The proposal would relocate the balancing pond to the north of the primary road within the retained Green Belt and within the proposed country park to be delivered through the Darwin Green 2/3 site allocation.
- 1.2 The applications were presented to the JDCC on 17 November 2021 and deferred by the committee as further information was required. This was in relation to a more detailed justification for the need to relocate the balancing pond including setting out any advantages in terms of biodiversity, and more information was requested on the timing to secure a fully-functioning balancing pond to ensure there is no delay with the delivery of the remainder of the Darwin Green 1 parcels.
- 1.3 The applicant provided a response on 23 March 2022, including updated plans and reports. The need to relocate the balancing pond is to support the delivery of the Darwin Green 2/3 site allocation for residential-led development in accordance with South Cambridgeshire Local Plan 2018 policy SS/2. The site allocation is for 1,000 homes and requires the relocation of the previously approved balancing pond in order to achieve the number of homes within the allocation.
- 1.4 The current application does not prejudice proposals for the previously approved balancing pond which is within the Darwin Green 2/3 site allocation. In May 2022, a hybrid application (reference 22/02528/OUT) was submitted for Darwin Green 2/3 seeking outline permission for 1,000 residential dwellings, secondary and primary schools, community facilities, retail uses and open space, and full permission for the relocation of the drainage pond permitted under reference S/0001/07/F. The outline proposals were presented to the Joint Development Control Committee (JDCC) on 6 April 2022 at a pre-application developer briefing. The full proposals for the relocation of the drainage pond duplicate the details of the full application considered in this report (S/1355/17/FL).
- 1.5 The applicant has submitted an updated Ecology Report in response to the reasons for deferral. The drainage pond is identified as part of the ecological enhancements approved through the outline planning consent for Darwin Green 1 (07/0003/OUT). The additional biodiversity net gain metrics submitted by the applicant demonstrate that the current proposals would achieve more habitat units than the approved pond. This is primarily due to the ecologically sympathetic design of the new attenuation basin, which includes two permanent waterbodies in contrast to the 'dry' design of the consented basin. The ecological enhancements would be secured via planning conditions.

- 1.6 An updated Badger Survey has also been submitted since the committee deferral, concluding that nearby badger setts are unlikely to extend into the site. Mitigation measures during construction can be secured via a planning condition. An updated Arboricultural Implications Assessment has also been submitted to reflect the revised outfall location and showing no protected trees would be affected by the proposal. The proposed tree protection measures would be secured via planning conditions.
- 1.7 The recommendation is to support the proposal to relocate the balancing pond, which forms an important part of the strategic infrastructure for Darwin Green 1. The relocation is also necessary to allow for development on the Darwin Green 2/3 site allocation. The Lead Local Flood Authority (LLFA) and the Council's Drainage Engineer support the proposal in terms of the strategic drainage scheme for Darwin Green 1. The proposal is acceptable in terms of Green Belt, biodiversity, landscape, trees, archaeology and residential amenity, subject to the recommended conditions.
- 1.8 The approved balancing pond location was referenced in the Flood Risk Assessment approved under the Darwin Green 1 outline consent (condition 35 of consent 07/0003/OUT) and under condition 6 of the full planning permission S/0001/07/F. These conditions require submission of a detailed surface water drainage scheme in accordance with the approved Flood Risk Assessment. In order to regularise these conditions, two non-material amendment applications have been submitted to amend the approved Flood Risk Assessment to show the revised location of the balancing pond. These are assessed in this report and are to be determined by the committee alongside full planning application.
- 1.9 Officers recommend that the JDCC:

**APPROVE** the full planning application S/1355/17/FL, subject to conditions listed with delegated authority to officers to make minor amendments to the wording of conditions as required in the interests of good planning;

**APPROVE** the non-material amendment application 07/0003/NMA2; and

**APPROVE** the non-material amendment application S/0001/07/NMA1.

## **2.0 Site Description and Context**

- 2.1 The site is located to the north of the Darwin Green 1 primary road from Histon Road. The red line application site boundary includes part of the primary road approved under full planning permission S/0001/07/F and has been completed to base-course level.
- 2.2 The Darwin Green 1 site is allocated within the Cambridge City Local Plan 2018 under policy 20 for a residential-led new neighbourhood. The proposed site for the relocated balancing pond is outside the red line

boundary of the Darwin Green 1 site allocation and outline consent. The site falls within the administrative boundary of South Cambridgeshire District Council.

- 2.3 Adjacent to the north of the Darwin Green 1 site is the site allocation Darwin Green 2/3 within the South Cambridgeshire Local Plan 2018 under policy SS/2 for a further housing-led extension. However, most of the application site (except the access) is within the retained Green Belt and outside the Darwin Green 2/3 site allocation, albeit the site allocation requires a country park within the retained Green Belt to come forward alongside development.
- 2.4 The site is currently arable fields with trees and hedges on the perimeter. There are no protected trees within the site, although land to the north and to the west of the site is subject to a Tree Preservation Order. The site is not located within a Conservation Area and is within Flood Zone 1.
- 2.5 The site is to the south of the awarded watercourse, which provides the surface water outfall to the Darwin Green 1 development.

### **3.0 The Proposal**

- 3.1 The proposal is for the relocation of the balancing pond forming part of the strategic drainage network for the Darwin Green 1 development. The works comprise the construction of a drainage pond and landscaping details, including temporary access from the Darwin Green 1 primary road,
- 3.2 The full application is accompanied by the following supporting information:
- Site plan and sections
  - Covering letter
  - Planning Statement
  - Planting plan
  - Surface Water Statement re Relocated Attenuation Pond updated July 2021
  - Geophysical Survey Report dated October 2013
  - Arboricultural Appraisal and Implications Assessment December 2016
  - Ecological Assessment of Infrastructure Application Attenuation Pond November 2016
- 3.3 During the course of the application, the red line boundary was amended to include access from the public highway (Histon Road) in order to meet validation requirements, and a full public consultation was undertaken. This access has already been implemented under the extant consent S/0001/07/F. For the avoidance of doubt, the access shown on the proposed plans would not be consented through the current application.

- 3.4 At the same time, the proposed site plan was updated to amend the location of the outfall pipe from the pond into the Award Drain, so that it discharges further downstream than the plans first submitted. This was reflected in the updated Surface Water Statement dated July 2021.
- 3.5 The application was presented to JDCC on 17 November 2021 and deferred by the committee as further information was required. This was in relation to a more detailed justification for the need to relocate the balancing pond including setting out any advantages in terms of biodiversity, and the timing of the delivery of the balancing pond to ensure no delay with the delivery of the remainder of the Darwin Green 1 parcels.
- 3.6 In response to the JDCC reasons for deferring the application, further updated plans and reports were submitted on 23 March 2022. This included:
- updated site plans and sections
  - covering letter
  - updated landscaping and planting plans
  - illustrative plans showing context with Darwin Green 2/3 proposals
  - Ecology Report reference v 2
  - Arboricultural Implications Assessment dated 14.03.2022
  - Tree Protection Plan dated 11/03/2022
- 3.7 A further updated Ecology Report v 4 was received on 27 April and biodiversity net gain metrics on 10 May.

#### 4.0 Relevant Site History

- 4.1 The relevant planning history is as follows:

Reference	Description	Outcome
07/0003/OUT	Mixed use development comprising up to 1593 dwellings, primary school, community facilities, retail units (use classes A1, A2, A3, A4 and A5) and associated infrastructure including vehicular, pedestrian and cycleway accesses, open space and drainage works.	Approved December 2013 subject to conditions and S106 Agreement
S/0001/07/F	Construction of a drainage pond (relocation of drainage pond permitted under reference S/0001/07/F) to support Darwin Green One site wide strategic drainage including revised access and landscaping details	Approved December 2013 subject to conditions and S106 Agreement
S/0989/16/NM	Non-material amendment to planning application S/0001/07/F	Approved on 18 May 2016

22/02528/OUT	Hybrid planning application comprising: Outline planning permission (all matters reserved except for means of access) for up to 1,000 residential dwellings, secondary school, primary school, community facilities, retail uses, open space and landscaped areas, associated engineering, demolition and infrastructure works; and Full planning permission for relocation of drainage pond permitted under reference S/0001/07/F	Current application - Validated on 23 May 2022
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4.2 The relevant history for the wider Darwin Green 1 site includes:

14/0086/REM	Reserved matters of 07/003/OUT for access roads, pedestrian and cycle paths, public open space, services across the site and one allotment site.	Approved on 19 Jun 2014
14/1410/REM	Construction of public square with hard surfaced pedestrian and cycle areas, access road, disabled and service bay parking, soft landscaping, drainage and utilities pursuant to outline approval 07/0003/OUT	Approved on 23 Dec 2014
15/1670/REM	Reserved matters for 114 residential units and local centre, including library, community rooms, health centre and retail units pursuant to outline consent 07/0003/OUT.	Approved on 23 May 2016
C/5000/15/CC (County Council)	Erection of 2-Form Entry Primary School and Children's Centre.	Approved on 17 Feb 2016
16/0208/REM	Reserved matters application for first housing phase (known as BDW1) including 173 dwellings with associated internal roads, car parking, landscaping, amenity and public open space.	Approved on 27 May 2016
16/0672/NMA	Non-material amendment on application 14/0086/REM to relocate the Toucan Crossing on the apex of the bend to enable improved visibility and to give priority to pedestrians rather	Approved on 31 May 2016

	than cyclists using the Orbital cycleway.	
18/0355/FUL	Application for the temporary use of the ground floor of Block B, Plot 70, BDW1 (first residential phase) as a Community Room.	Awaiting decision
19/1056/REM	Reserved Matters application for second housing phase (known as BDW2) including 328 dwellings with associated internal roads, car parking, landscaping, amenity and public open space. The Reserved Matters include access, appearance, landscaping, layout and scale and related partial discharge of conditions 8, 10, 14, 18, 22, 25, 26, 27, 29, 35, 40, 49, 52, 58, 62, 63, 66 and 69 pursuant to outline approval 07/0003/OUT.	Refused on 22 Dec 2020
21/03619/REM	Reserved matters application for fifth and sixth housing phases and Allotment 3 (collectively known as BDW5 and 6) including 411 dwellings and allotments with associated internal roads, car parking, landscaping, amenity and public open space. The reserved matters include access, appearance, landscaping, layout and scale related partial discharge of conditions 6, 8, 10, 14, 15, 17, 18, 22, 25, 26, 27, 28, 29, 35, 40, 49, 52, 58, 62, 63, 66 and 69 pursuant to outline approval 07/0003/OUT.	Approved December 2021
21/04431/REM	Reserved Matters application for second housing phase (known as BDW2) including 323 dwellings with associated internal roads, car parking, landscaping, amenity and public open space. The Reserved Matters include access, appearance, landscaping, layout and scale and related partial discharge of conditions 8, 10, 14, 17, 18, 26, 28, 35, 40, 49, 52, 58, 63, 66	Pending consideration

	and 69 pursuant to outline approval 07/0003/OUT.	
21/05434/REM	Reserved Matters application for third housing phase (known as BDW3) including 210 dwellings with associated internal roads, car parking, landscaping, amenity and public open space. The Reserved Matters include access, appearance, landscaping, layout and scale and related partial discharge of conditions 8, 10, 14, 17, 18, 22, 25, 26, 28, 35, 40, 49, 58, 62, 66, and 69 pursuant to outline approval 07/0003/OUT.	Pending consideration
21/05433/REM	Reserved Matters application for the fourth housing phase (known as BDW4) including 351 dwellings, with associated internal roads, car parking, landscaping, amenity and public open space. The Reserved Matters include access, appearance, landscaping, layout and scale and related partial discharge of conditions 8, 10, 14, 17, 18, 25, 26, 28, 35, 40, 49, 58, 62, 66 and 69 pursuant to outline approval 07/0003/OUT.	Pending consideration

## 5.0 Policy

### 5.1 National

National Planning Policy Framework 2021

National Planning Practice Guidance

### 5.2 South Cambridgeshire Local Plan 2018

S/3 – Presumption in Favour of Sustainable Development

S/4 – Cambridge Green Belt

S/6 – The Development Strategy to 2031

CC/6 – Construction Methods

CC/8 – Sustainable Drainage Systems

CC/9 – Managing Flood Risk

HQ/1 – Design Principles

NH/2 – Protecting and Enhancing Landscape Character  
NH/3 – Protecting Agricultural Land  
NH/4 – Biodiversity  
NH/8 – Mitigating the Impact of Development in & adjoining the Green Belt  
NH/14 – Heritage Assets  
SS/2 Land Between Huntingdon Road and Histon Road

### 5.3 **Supplementary Planning Documents**

Biodiversity SPD – Adopted February 2022  
Sustainable Design and Construction SPD – Adopted January 2020  
Cambridgeshire Flood and Water SPD – Adopted November 2016

### 6.0 **Consultations**

#### **Cambridgeshire County Council's Archaeologist Officer**

6.1 No objection. Requested a programme of archaeological investigation.

#### **Sustainable Drainage Engineer (South Cambridgeshire District Council)**

Comments 29 June 2017

6.2 No objection. Recommend conditions requiring the submission of information concerning the maintenance and management of the surface water drainage scheme.

Updated comments 01 November 2021

6.3 No objection. The submitted information demonstrates that the attenuation basin for the Darwin Green 1 site can be relocated while still performing the function as agreed in the original planning permission. Recommend conditions requiring the submission of a maintenance and management plan, and for details the inlet and outlet headwalls and the outfall to the awarded watercourse.

#### **Lead Local Flood Authority**

Initial comments 16 June 2017

6.4 No objection. Recommend conditions requiring further information on the detailed surface water drainage scheme for the site and maintenance of the surface water drainage system.

Updated comments 02 November 2021

6.5 No objection. Surface water will be attenuated within this basin before outfalling to the adjacent watercourse at the agreed 78.2 l/s for all storms

up to and including the 100 year storm including consideration for climate change. Recommend conditions for compliance with the approved surface water drainage statement, submission of a maintenance plan, and details of surface water drainage measures during construction. Recommend informative relating to ordinary watercourses

**Ecology officer (Greater Cambridge Shared Planning)**

Initial comments 15 June 2017 and updated 26 February 2021

- 6.6 No objection. Recommends conditions requiring an updated ecology survey focussing on badger setts within 50m of the works and a Biodiversity Management Plan is submitted. Recommend a more diverse range of grassland seed mix and native marginal, aquatic and oxygenating plants should be selected.

Comments on updates 12 April 2022

- 6.7 The proposed relocated pond does not deliver a biodiversity net gain in isolation; however the Darwin Green development is likely to deliver over 20% biodiversity net gain across the development. Therefore, this proposal provides an increase in biodiversity net gain for the development in general. Recommend conditions for submission of a Construction Ecological Management Plan (CEcMP) and a Landscape and Ecological Management Plan (LEMP)

Comments on updates 1 June 2022

- 6.8 The biodiversity net gain calculations now show that the scheme can deliver a net gain on site. The principle of biodiversity net gain has been proved. As landscape plans often change, conditions are still recommended requiring final calculations to be submitted.

**Environment Agency**

- 6.9 No comment to make.

**Landscape Team (Greater Cambridge Shared Planning)**

Initial comments 20 June 2017

- 6.10 The proposals are generally acceptable, however some minor alterations required to the profile of the ponds and to the species list.

Comments on updates 27 May 2022

- 6.11 Satisfied with the amendment. The application is supported.

**Cambridge City Council Streets and Open Spaces Team**

Initial comment 22 August 2017

- 6.12 Request further information on the setting of the pond within the surrounding context, the visual amenity of the area and public open space. Request details on the access to the space around the site for maintenance and amenity purposes. Support landscape team's comments on the proposed species. Request clarity about the proposals for the original pond location. Recommend conditions for submission of a maintenance and management plan for the drainage scheme, details of the control structures and headwalls, and details of boundary treatments. Recommend additional conditions for temporary and permanent maintenance access.

**Tree Officer (Greater Cambridge Shared Planning)**

Comment 25 April 2018

- 6.13 No objection. Note the statutory tree protection adjacent to the site on the north and west sides. The hedgerows surrounding the site are likely to quality as 'important hedgerows' under the Hedgerows Regulations 1997 and should be kept intact and undamaged wherever possible. The length of hedge to be removed for access is regrettable. The Arboricultural Report is sufficient. Recommend a condition to approve the Arboricultural Report.
- 6.14 No comments received on consultation on additional information following committee deferral.

**Environmental Health Team (South Cambridgeshire District Council)**

Comments 02 November 2021

- 6.15 Support subject to conditions for standards construction hours, delivery hours, construction environmental management plan.

**7.0 Third Party Representations**

**Histon and Impington Parish Council – Conditions recommended**

Initial comment:

- 7.1 No recommendation.

Updated comment 17 August 2021:

- 7.2 No recommendation. Request conditions to secure the following requirements:
- to ensure that the balance pond is constructed to the approved design which is clearly demonstrable to constrain run off to the existing green field run off rate

- that a management and maintenance plan is submitted and approved before construction is commenced, and
- that the management and maintenance plan is implemented throughout the lifetime of operation of the balance pond
- the parish council also requests annual updates of the status of the pond as part of the management plan.

### **Girton Parish Council**

7.3 No comments received.

### **Orchard Park Community Council**

7.4 No comments received.

## **8.0 Assessment**

8.1 From the consultation responses and representations received and from the inspection of the site and the surroundings, the main issues are considered:

- Principle of development
- Green Belt
- Drainage
- Biodiversity
- Landscape
- Trees
- Archaeology
- Residential amenity
- Other matters

### **Principle of Development**

8.2 The balancing pond is a critical part of the strategic infrastructure for the Darwin Green 1 development, which is a strategic housing allocation for up to 1,593 homes within the Cambridge Local Plan 2018 and contributes towards housing delivery targets across the Greater Cambridge area. The Phasing Plan (approved under discharge of condition 4 on the Darwin Green 1 outline consent 07/0003/OUT) requires construction of the balancing pond (in the approved location) in Phase 2 in order to attenuate the discharge rate as the development progresses. Therefore, construction of the balancing pond is necessary for the continued delivery of housing.

8.3 While there is an approved location for the balancing pond which could be constructed, this location is no longer appropriate. The balancing pond previously approved was consented in December 2013 (S/0001/07/F). The area to the south of the primary road is within the Darwin Green 2/3 strategic housing allocation under Local Plan policy SS/2. This allocation

is for residential-led development of up to 1,000 homes. As outline plans for Darwin Green 2/3 have progressed, in order to achieve the number of new homes set out in the Council's site allocation policy, the Darwin Green 1 balancing pond must be relocated.

- 8.4 The proposed location of the balancing pond within the Green Belt is compatible with the use of this part of the retained Green Belt by the Darwin Green 2/3 site allocation policy SS/2. While Darwin Green 2/3 does not have outline consent, the site allocation policy SS/2 is a material consideration. The site allocation requires the delivery of a country park within the retained Green Belt. The applicant is the same developer for Darwin Green 2/3 and has provided illustrative plans showing how the proposed balancing pond would be compatible with - and would complement - the proposed country park. This is supported. For these reasons, the principle of development is acceptable in accordance with South Cambridgeshire Local Plan 2018 policy SS/2.
- 8.5 The current application does not propose an alternative use for the previously approved balancing pond site, which would be considered separately or as part of the proposals for the Darwin Green 2/3 site allocation. The applicant presented their outline proposals for Darwin Green 2/3 to the JDCC at a pre-application developer briefing on 6 April 2022. The outline application for Darwin 2/3 was validated at the end of May. It is part of a hybrid application (22/02528/OUT) which also includes the proposals to relocate the balancing pond duplicating what is proposed under this full application (S/1355/17/FL). A decision on the current application would not prejudice future decisions on the proposed alternative uses for the previously approved balancing pond site.
- 8.6 Finally, a Deed of Variation to the Section 106 Agreement pursuant to the Darwin Green 1 outline consent and previously approved balancing pond was completed on 21 May 2021. This effectively replaces references to the previously approved balancing pond with the current proposals, and therefore there would be no conflict with the outline consent.

### **Green Belt**

- 8.7 The National Planning Policy Framework (NPPF) 2021 paragraphs 149 and 150 list the forms of development which are not inappropriate in the Green Belt, provided that these works preserve the openness of the Green Belt and do not conflict with the purposes of including land within the Green Belt. This list includes 'engineering operations' (paragraph 150 part b). The proposed balancing pond would fall within this category and would not be inappropriate development, provided it does not have an unacceptable impact on the Green Belt.
- 8.8 The proposed balancing pond would be on land which is currently open fields, but which is closely related to a relatively built-up area within the vicinity of Histon Road near to the junctions within the new Darwin Green

1 primary access and with King's Hedges Road, and to the major junction with the A14, which have a relatively urban character. The balancing pond would be an engineered feature, however would be softened within landscaping and would eventually form part of the wider landscaped area of the Darwin Green 2/3 country park.

- 8.9 The location of the proposed balancing pond would ensure that the Green Belt retains its function of safeguarding the countryside from encroachment and would provide a buffer restricting the sprawl of the built-up area of Cambridge. As such, the transition from urban to rural landscape remains. The balancing pond would provide a softer urban edge to the built development of Darwin Green. It is designed and located so that it does not have an adverse effect on the rural character and openness of the Green Belt, nor the purposes of land included within the Green Belt.
- 8.10 For these reasons, the proposal would not be inappropriate development in the Green Belt in accordance with the NPPF and in accordance with policies S/4 and NH/8 of the South Cambridgeshire Local Plan 2018.

### **Drainage**

- 8.11 The strategic drainage scheme for Darwin Green 1 was approved through the outline consent 07/0003/OUT which included the balancing pond south of the primary road approved through the full planning consent S/0001/07/F. The current proposal would relocate the balancing pond north of the primary road. The applicant has submitted a drainage statement demonstrating that the relocated balancing pond would maintain the discharge rate into the outfall and the flood protection as required in the Darwin Green 1 outline consent.
- 8.12 The relocated balancing pond would outfall into the same Award Drain as the approved drainage strategy. During the course of the application, a revised site plan was submitted which included a minor amendment to the move the location of the outfall into the Award Drain further downstream. The Council's drainage engineer and the LLFA support the proposals, as the submitted information demonstrates that the balancing pond can be relocated while still performing the function as agreed in the outline consent. Compliance with these details is secured by **condition 13**. The Council's drainage engineer recommends a condition for details of the flow control structures, the inlet and outlet headwalls, and the outfall to be submitted, which is supported (**condition 14**).
- 8.13 The balancing pond will be transferred to the City Council under the terms of the Section 106 Agreement for the Darwin Green 1 outline consent. The Deed of Variation to the Section 106 Agreement completed in May 2021 updates the estimated maintenance payments due to be paid to the City Council to reflect the current proposals. The proposed plans show an

access track around the perimeter of the pond for maintenance, however the drainage engineer and LLFA recommend a condition for a full maintenance and management plan to be submitted, which is supported (**condition 15**).

8.14 The LLFA has also recommended a condition for the submission of a scheme for the management of additional surface water run-off from the site during construction. This is supported and **condition 12** is recommended.

8.15 For these reasons, subject to the recommended conditions, the proposal would not vary significantly from the approved Darwin Green 1 drainage strategy and would be in accordance with policies CC/8 and CC/9 of the South Cambridgeshire Local Plan 2018.

### **Ecology**

8.16 The applicant submitted an updated Ecology Report on 23 March 2022. The report was based on a Phase 1 habitat survey and badger survey of the entire Darwin Green 2/3 area which was carried out in July 2021 and protected species surveys carried out in the period 2012 – 2021. The habitat survey found the site consists predominately of arable fields, with an area of neglected arable land colonised by tall ruderal species to the east, a species-rich hedge along the western boundary, and a dry ditch to the north. To the north of the site is a block of semi-natural broad-leaved woodland.

8.17 The badger survey (carried out in 2021) found a number of badger setts in relative proximity to the site, however none were within the site boundary. The nearest setts were within the woodland located to the immediate north of the site, although these are physically separated from the site by a dry ditch along the southern edge of the woodland such that tunnels are unlikely to extend below the site. The Ecology Report concludes that the proposed balancing pond would not directly impact any badger setts and therefore there is no reason that the existing setts could not be retained and protected from disturbance during construction. It recommends measures including the appointment of the Ecological Clerk of Works to oversee construction, a walkover survey to check for any new badger setts prior to commencement, the use of construction methods to avoid indirect damage to badger setts, and a watching brief for badger during construction.

8.18 The habitat survey indicated the potential presence of ground- or near-ground-nesting birds within the tall ruderal vegetation at the site. The Ecology Report recommended site clearance should occur outside of the recognised bird nesting period. The habitat survey found the site was of limited value to foraging bats, and minimal foraging activity

was noted in these areas during bat surveys carried out in 2017/18 and 2021.

- 8.19 The Ecology Officer has recommended a condition to secure the submission of a Construction Ecological Management Plan (CEcMP) including measures to avoid or reduce impacts during construction and an ECoW. This is supported and **condition 6** is recommended.
- 8.20 The NPPF and recently adopted Biodiversity SPD require development to achieve biodiversity net gain (BNG) of 20%. The proposed balancing pond should not be viewed in isolation from the overall Darwin Green 1 development in terms of biodiversity enhancement. Condition 39 of the outline consent secures the delivery of an Ecological Management Plan (EMP) to 'improve the net biodiversity of the site'. The approved EMP identifies biodiversity enhancements including the drainage strategy based on sustainable design principles. Therefore the drainage pond is an important part of delivering biodiversity enhancements for Darwin Green 1.
- 8.21 The current application was submitted in 2017 when there was no policy requirements for proposals to demonstrate a measurable BNG. Nonetheless, in response to the reasons for deferral, the applicant has brought the proposal up to date and has submitted a BNG assessment using the Department for Environment, Food and Rural Affairs (DEFRA) metric 3.0 calculation tool. This compares the relative biodiversity value of the pre-development habitats (baseline July 2021) with the proposed post-development habitats. It compares the BNG calculation for the proposals for the proposed pond location with the approved pond. The initial report and calculations were based on a general categorisation as 'Urban – Sustainable Urban Drainage Feature' and not based on a detailed planting scheme. This was an inadequate level of detail to assess and compare the biodiversity values and a revised BNG assessment was requested by officers.
- 8.22 A more detailed assessment based on the proposed detailed planting scheme was provided in a further updated Ecology Report and BNG assessment submitted in May. This showed that both the approved and proposed pond schemes would deliver a net gain in excess of 80 per cent. The approved pond results in an overall net gain of plus 3.06 habitat units. The proposed pond results in an overall net gain of plus 3.56 habitat units. The report goes on to explain that the approved pond would achieve a slightly higher BNG in percentage terms, however this is due to the slightly lower overall value of the baseline habitat present, and the proposed pond would deliver more biodiversity enhancement in habitat unit terms. This is primarily due to the ecologically sympathetic design of the proposed attenuation basin, which includes two permanent waterbodies in contrast to the 'dry' design of the consented basin. The implementation of these biodiversity enhancements would be secured through a Landscape Ecological Mitigation Plan (**condition 7**).

- 8.23 The Ecology Officer supports the biodiversity enhancements and has rerecommended a condition for the submission of a Landscape and Ecology Management Plan (LEMP). This is supported and **condition 7** is recommended.
- 8.24 **Condition 17** is recommended to control the installation of artificial lighting (except for construction) in order to manage and mitigate any potential impact on biodiversity, in part.
- 8.25 For these reasons, subject to the recommended conditions, the proposal would protect and enhance biodiversity on the site and is in accordance with policy NH/4 of the South Cambridgeshire Local Plan 2018.

### **Landscape**

- 8.26 The proposal includes soft landscaping to naturalise the balancing pond comprising oxygenating and floating plants, marginal planting, wetland buffer planting and wetland seeding, as well as rough grassed areas and tree planting on the surrounding areas. A temporary track from the Darwin Green 1 primary road would provide maintenance access until permanent access is provided in the Darwin Green 2/3 development.
- 8.27 Since the committee deferral, revised landscaping plans have been submitted which bring the drawings in-line with the amendments that were previously made to the location of outfall to the Award Drain. The Ecology Officer supports the proposals from a biodiversity perspective. The Landscape Officer who commented on the original plans noted some minor comments about the species list and profile of the pond. The Landscape Officer is satisfied with the amendments made following deferral at November JDCC and is supportive of the application. The implementation of the landscaping scheme and ongoing management will be secured by the condition for the Landscape and Ecology Management Plan (LEMP) (**condition 7**) and replacement planting (**condition 16**).
- 8.28 For these reasons, subject to the recommended conditions, the proposal would provide an enhanced visual amenity and is in accordance with policies HQ/1 and NH/2 of the South Cambridgeshire Local Plan 2018.
- 8.29 Since the committee deferral, the applicant has provided landscape plans showing – for illustrative purposes - the proposals in the context of the current Darwin Green 2/3 outline scheme. This will be considered under application reference 22/02528/OUT and therefore is not material to the current proposal. However, the site allocation for Darwin Green 2/3 under policy SS/2 of the South Cambridgeshire Local Plan 2018 is a material consideration. The policy includes a new country park in the retained Green Belt. The illustrative landscape plans show that the current

proposal would be entirely in-keeping with the policy intention, and the proposal would complement – rather than conflict with – the future development of Darwin Green 2/3. This is supported.

- 8.30 The proposals for the area of the approved balancing pond south of the primary road is not material to the current application and will be considered under application reference 22/02528/OUT for the Darwin Green 2/3 scheme.

### **Trees**

- 8.31 The application site abuts an area tree preservation order (C/11/17/055/01) to the north and west which contribute to the buffer to the A14. The applicant submitted an Arboricultural Appraisal and Implications Assessment dated December 2016. During the course of the application, the proposed were amended and an updated Arboricultural Implications Assessment, Implications Assessment and Tree Protection Plan were submitted in March 2022 following the committee deferral.
- 8.32 The updated assessment concludes that the proposal would not result in the loss of any trees. There would need to be some localised cutting-back for the proposed outfall to the Award Drain on the western side. The proposal would have no long-term impact on trees within the TPO. The excavation required within the root-protection area of the existing hedge on the western side would in part replicate the ditch excavations that have taken place and are unlikely to lead to any plant loss. Some pruning will be required to facilitate construction. Recommended tree protection measures include the erection of barriers, an Arboricultural Clerk of Works to oversee works near to the 'lapsed hedges', and a high standard of site management.
- 8.33 The Tree Officer supported the initial tree assessment based on the previous outfall location, however has not commented on the updated assessment. Nonetheless, the conclusions and recommendations within the report are supported. A condition is recommended to secure the implementation of the recommendations in the Arboricultural Implications Assessment and the Tree Protection Plan (**condition 8**).
- 8.34 For these reasons, subject to the recommended conditions, the proposal would have an acceptable impact on existing trees and is in accordance with policies HQ/1 and NH/2 of the South Cambridgeshire Local Plan 2018.

### **Archaeology**

- 8.35 The applicant has submitted a Geophysical Survey Report dated October 2013. There is some archaeological potential on the site, so the developer will be required to commission a written scheme of archaeological

investigation, as recommended by the County archaeologists. A condition is recommended to ensure the site is subject to a programme of archaeological investigation (**condition 5**).

- 8.36 For these reasons, subject to the recommended condition, the proposal would protect potential heritage assets and would be in accordance with policies HQ/1 and NH/14 of the South Cambridgeshire Local Plan 2018.

### **Residential amenity**

- 8.37 Due to the distance of the proposed development from existing and future residential dwellings (including the nearest residential phase of Darwin Green 1 known as BDW5/6) the operational phase of the proposal would not result in adverse harm to residential amenity, subject to a condition to control the installation of artificial lighting (except for construction) (**condition 17**).

- 8.38 Standard conditions are recommended to mitigate the impact of the construction phase on residential amenity, including control construction and collection/delivery hours (**conditions 9 and 10**), submission of a construction environmental management plan (CEMP) (**condition 11**), submission of a land contamination assessment (**condition 3**), and pollution control of the water environment (**condition 4**).

- 8.39 For these reasons, subject to the recommended conditions, the proposal would not have a significant adverse impact on residential amenity and the proposal is in accordance with policies HQ/1 and CC/6 of the South Cambridgeshire Local Plan 2018.

### **Other matters**

- 8.40 The comments from Histon and Impington Parish Council have been considered. The LLFA and drainage engineer are satisfied that the outfall rate is the same as agreed at the outline stage for Darwin Green 1. A condition for a management and maintenance plan is recommended including securing compliance with the approved plan (**condition 15**). The Parish Council's request for annual updates on the status of the pond as part of the management plan is recommended to be included as an informative (2).

### **Planning Balance**

- 8.41 The proposal forms an important part of the strategic infrastructure for Darwin Green 1 and thereby supports housing delivery on this development. The need to relocate the balancing pond is in accordance with the site allocation for Darwin Green 2/3 and therefore also supports housing delivery within the Greater Cambridge Housing trajectory area.

The proposal would not be inappropriate development in the Green Belt and would be compatible with the emerging outline proposals for Darwin Green 2/3. The principle of development is supported.

- 8.42 Since the application was deferred by the committee, the applicant has provided additional information including an updated Ecology Report and BNG metrics. The proposal would achieve more habitat units than the approved pond, and therefore would be a betterment on the approved scheme. This would improve on the biodiversity enhancements to be delivered for Darwin Green 1. Updated ecology surveys demonstrate the proposal would have an acceptable impact on existing habitats and priority species subject to the proposed conditions. The proposal is therefore acceptable in accordance with the Biodiversity SPD (2022), the NPPF (2021) and Local Plan 2018 policy NH/4.
- 8.43 The updated information demonstrates the proposal would have an acceptable impact on trees and hedges and tree protection measures would be secured via the proposed conditions. The proposal is therefore acceptable in accordance with the Local Plan 2018 policies HQ/1 and NH/2.
- 8.44 In terms of drainage, the application has demonstrated that the balancing pond for the Darwin Green 1 can be relocated while still performing the function agreed in the outline consent and is supported by the Council's sustainable drainage engineer and the LLFA, subject to conditions to secure drainage details and mitigation during the construction and operational phases, relevant Local Plan 2018 policies CC/8 and CC/9.
- 8.45 Other potential impacts on archaeology, risks to ground contamination and pollution control in the water environment, artificial lighting and residential amenity during construction can be mitigated through the recommended conditions in accordance with the relevant development plan policies.
- 8.46 For these reasons, having regard to applicable national and local planning policies, and having taken all relevant material considerations into account, the proposal is recommended for approval.

### **Recommendation**

**S/1355/17/FL**

- 8.47 **APPROVE** the application subject to the conditions listed below with delegated authority to officers to make minor amendments to the wording of conditions as required in the interests of good planning.

**07/0003/NMA2**

8.48 **APPROVE** the non-material amendment.

**S/0001/07/NMA1**

8.49 **APPROVE** the non-material amendment.

## **9.0 Planning Conditions**

**S/1355/17/FL**

### **Conditions**

#### **Standard time**

1. The development hereby permitted shall be begun before the expiration of three years from the date of this permission.

Reason: In accordance with the requirements of Section 91 of the Town and Country Planning Act 1990 (as amended by Section 51 of the Planning and Compulsory Purchase Act 2004).

#### **Approved drawings**

2. The development hereby permitted shall be carried out in accordance with the approved plans as listed on this decision notice.

Reason: In the interests of good planning, for the avoidance of doubt and to facilitate any future application to the Local Planning Authority under Section 73 of the Town and Country Planning Act 1990.

#### **Contaminated land**

3. No development shall commence (including, for the avoidance of doubt, preparatory works) until a contaminated land assessment and associated remedial strategy, together with a timetable of works, has been submitted to and approved in writing by the local planning authority. The contaminated land assessment and associated remedial strategy shall adhere to the following points:

- a) The contaminated land assessment shall include a desk study to be submitted to the local planning authority for approval. The desk study shall

detail the history of the site uses including any use of radioactive materials and propose a site investigation strategy based on the relevant information discovered by the desk study. No investigations shall occur on site prior to approval of the investigation strategy by the local planning authority.

b) The site investigation, including relevant soil, soil gas, radioactivity, surface and groundwater sampling, shall be carried out by a suitable qualified and accredited consultant/contractor in accordance with a quality assured sampling and analysis methodology.

c) A site investigation report detailing all investigative works and sampling on site, together with the results of the analysis, risk assessment to any receptors and a proposed remediation strategy shall be submitted to the local planning authority for approval. The approval in writing of the local planning authority to such remedial works as are required shall be obtained prior to any remediation commencing on site. The works shall be of such a nature as to render harmless the identified contamination given the proposed end use of the site and surrounding environment including any controlled waters.

d) Approved remediation works shall be carried out in full on site under a quality assurance scheme to demonstrate compliance with the proposed methodology and best practice guidance.

e) If, during the works, contamination is encountered which has not previously been identified then the additional contamination shall be fully assessed and an appropriate remediation scheme agreed in writing with the local planning authority.

f) Upon completion of the works, a closure report shall be submitted to and approved by the local planning authority. The closure report shall include details of the proposed remediation works and quality assurance certificates to show that the works have been carried out in accordance with the approved methodology. Details of any post-remedial sampling and analysis to show the site has reached the required clean-up criteria shall be included in the closure report together with the necessary documentation detailing what waste materials have been removed from site.

Reason: In order to ensure that any contamination of the site is identified and remediation measures are appropriately undertaken to secure full mitigation in the interests of environmental and public safety (South Cambridgeshire Local Plan 2018 policy SC/11).

## **Pollution control**

4. No development shall commence (including, for the avoidance of doubt, preparatory works) until a scheme for the provision and implementation of pollution control of the water environment has been submitted to and

approved in writing with the local planning authority. Development shall be carried out only in accordance with the approved details thereafter.

Reason: To prevent the increased risk of pollution to the water environment. (South Cambridgeshire Local Plan 2018 policy CC/7)

### **Archaeology**

5. No development shall commence until the applicant, or their agents or successors in title, has implemented a programme of archaeological work which has been secured in accordance with a written scheme of investigation (WSI) which has been submitted to and approved by the local planning authority in writing. For land that is included within the WSI, no demolition/development shall take place other than under the provisions of the agreed WSI, which shall include:

- a) the statement of significance and research objectives;
- b) The programme and methodology of site investigation and recording and the nomination of a competent person(s) or organisation to undertake the agreed works;
- c) The timetable for the field investigation as part of the development programme;
- d) The programme and timetable for the analysis, publication & dissemination, and deposition of resulting material.

Reason: To ensure that before any demolition and or development commences an appropriate archaeological investigation of the site has been implemented before development commences in accordance with policy NH/14 of the South Cambridgeshire Local Plan 2018.

### **Construction Ecological Management Plan (CEcMP)**

6. No development shall commence (including, for the avoidance of doubt, demolition, ground works and vegetation clearance) until a Construction Ecological Management Plan (CEcMP) has been submitted to and approved in writing by the local planning authority. The CEcMP shall include, but not be limited to:
  - a) Risk assessment of potentially damaging construction activities;
  - b) Identification of “biodiversity protection zones”;
  - c) Practical measures (both physical measures and sensitive working practices) to avoid or reduce impacts during construction (may be provided as a set of method statements);
  - d) The location and timings of sensitive works to avoid harm to biodiversity features;

- e) The times during which construction when specialist ecologists need to be present on site to oversee works;
- f) Responsible persons and lines of communication;
- g) The role and responsibilities on site of an ecological clerk of works (ECoW) or similarly competent person; and
- h) Use of protective fences, exclusion barriers and warning signs if applicable.

Development shall only be carried out in accordance with the approved CEcMP thereafter.

Reason: To minimise harm to existing priority habitats during construction in accordance with the NPPF, the NERC Act 2006 and policy NH/4 of the South Cambridgeshire District Council Local Plan

### **Landscape and Ecological Management Plan (LEMP)**

7. No development shall commence (including, for the avoidance of doubt, demolition, ground works and vegetation clearance) until a Landscape and Ecological Management Plan (LEMP) has been submitted to and approved in writing by the local planning authority. The LEMP shall include, but not be limited to:
  - a) Description and evaluation of features to be managed.
  - b) Ecological trends and constraints on site that might influence management.
  - c) Aims and objectives of management, including how biodiversity net gain will be achieved.
  - d) Appropriate management options for achieving aims and objectives.
  - e) Prescriptions for management actions.
  - f) Prescription of a work schedule (including an annual work plan capable of being rolled forward over a five-year period).
  - g) Details of the body or organisation responsible for implementation of the plan.
  - h) Ongoing monitoring and remedial measures.
  - i) Where the results from monitoring show that conservation aims and objectives of the LEMP are not being met, how contingencies and/or remedial action will be identified, agreed and implemented so that the development still delivers the fully functioning biodiversity objectives of the originally approved scheme.

Development shall only be carried out only in accordance with the approved LEMP thereafter.

Reason: To protect existing priority habitats and to enhance the site for biodiversity in accordance with the NPPF, the NERC Act 2006 and policy NH/4 of the South Cambridgeshire District Council Local Plan.

### **Tree works**

8. No development (including, for the avoidance of doubt, preparatory works and vegetation clearance) shall commence until tree protection measures, protective tree barriers and any other physical protection measures have been put in place in accordance with the Arboricultural Implications Assessment report prepared by Andrew Belson Arboricultural Consultant dated 14/03/2022 and the Tree Protection Plan drawing reference '3457.DG1.Pond.Barratt.TPP' dated 11/03/2022. These protection measures shall be retained intact for the full duration of the development until all equipment, materials and surplus materials have been removed from the site. Nothing shall be stored or placed in any fenced area in accordance with this condition and the ground levels within those areas shall not be altered, nor shall any excavations be made. Works affecting trees and hedges shall only be carried out in accordance with the Arboricultural Implications Assessment report and the Arboricultural Implications Plan drawing reference '3457.DG1.Pond.Barratt.AIP' dated 11/03/2022.

Reason: To ensure the development protects trees in accordance with South Cambridgeshire Local Plan 2018 policies HQ/1 and NH/2.

### **Construction working hours**

9. No construction or demolition work shall be carried out and no plant or power operated machinery operated other than between the following hours: 0800 hours and 1800 hours on Monday to Friday, 0800 hours and 1300 hours on Saturday and at no time on Sundays, Bank or Public Holidays, unless otherwise previously agreed in writing with the Local Planning Authority.

Reason: To protect the amenity of the nearby residential uses in accordance with South Cambridgeshire Local Plan 2018 policies HQ/1 and CC/6.

### **Construction collection and delivery hours**

10. There should be no collections from or deliveries to the site during the demolition and construction stages outside the hours of 0800 hours and 1800 hours on Monday to Friday, 0800 hours to 1300 hours on Saturday

and at no time on Sundays, Bank or Public Holidays unless otherwise previously agreed in writing with the Local Planning Authority.

Reason: To protect the amenity of the nearby residential uses in accordance with South Cambridgeshire Local Plan 2018 policies HQ/1 and CC/6.

### **Construction Environmental Management Plan (CEMP)**

11. No development shall commence until a site-wide Construction Environmental Management Plan (CEMP) has been submitted to and approved in writing by the Local Planning Authority. The CEMP shall include, but not be limited to:
- a) Construction traffic routes to and from the site, details of their signing, monitoring and enforcement measures, along with location of parking for contractors and construction workers;
  - b) Location of contractors compound and method of moving materials, plant and equipment around the site;
  - c) Details of the excavated material including the re-use or disposal of excavated materials, and the location and duration of any temporary storage areas;
  - d) Details of any construction external lighting; and
  - e) Prior notice and agreement procedures for works outside approved limits and hours for construction working hours, and delivery and collection hours.

Development shall only be carried out only in accordance with the approved details thereafter.

Reason: To ensure the environmental impact of the construction of the development is adequately mitigated and in the interests of the amenity of nearby residents/occupiers in accordance with policies HQ/1 and CC/6 of the South Cambridgeshire Local Plan 2018.

### **Surface water drainage during construction**

12. No development (including, for the avoidance of doubt, preparatory works) shall commence until details of measures for the management of additional surface water run-off from the site during the construction works have been submitted to and approved in writing by the Local Planning Authority. The applicant may be required to provide collection, balancing and/or settlement systems for these flows. The approved measures and systems shall be operational before any construction works commence.

Reason: To ensure surface water is managed appropriately during the construction phase of the development, so as not to increase the flood risk to adjacent land/properties or occupied properties within the development itself; recognising that initial works to prepare the site could bring about unacceptable impacts in accordance with policies CC/6, CC/8 and CC/9 of the South Cambridgeshire Local Plan 2018.

### **Surface water drainage**

13. The development hereby approved shall only be carried out in full accordance with the approved Surface Water Statement re Relocated Attenuation Pond report prepared by Woods Hardwick dated July 2021.

Reason: To prevent an increased risk of flooding and protect water quality in accordance with policies CC/6, CC/8 and CC/9 of the South Cambridgeshire Local Plan 2018.

### **Drainage details**

14. No development shall commence until details of the flow control structures, details of the inlet and outlet headwalls and details of the outfall to the awarded watercourse have been submitted to and approved in writing by the Local Planning Authority. Development shall only be carried out only in accordance with the approved details thereafter.

Reason: To ensure that the proposed development can be adequately drained and maintained in accordance with policies CC/8 and CC/9 of the South Cambridgeshire Local Plan 2018.

### **Drainage maintenance scheme**

15. Prior to commencement of operation of the development hereby permitted, details for the long-term maintenance arrangements for the surface water drainage system shall be submitted to and approved in writing by the Local Planning Authority. The management and maintenance plan shall identify: runoff sub-catchments; SuDS components; control structures; flow routes; and outfalls. The plan shall include details of land ownership; maintenance responsibilities; the identification of individual assets, services and access requirements; details of routine and periodic maintenance activities. The maintenance plan shall be carried out in full thereafter.

Reason: To ensure the satisfactory maintenance of drainage systems in accordance with the requirements of paragraphs 163 and 165 of the

National Planning Policy Framework and policies CC/8 and CC/9 of the South Cambridgeshire Local Plan 2018.

### **Replacement planting**

16. If within a period of five years from the date of the planting, or replacement planting, any tree, hedge or plant is removed, uprooted or destroyed or dies, another tree, hedge or plant of the same species and size as that originally planted shall be planted at the same place as soon as is reasonably practicable.

Reason: To ensure the development is satisfactorily assimilated into the area and enhances biodiversity in accordance with policies HQ/1 and NH/4 of the South Cambridgeshire Local Plan 2018.

### **Artificial lighting**

17. No artificial lighting (except for construction) shall be installed unless and until details have been submitted to and approved in writing by the Local Planning Authority. This must include details of the height, type, position and angle of glare of any lighting including isolux contours. Development shall be carried out and maintained only in accordance with the approved details thereafter.

Reason: To minimise the effects of light pollution on the surrounding area and biodiversity in accordance with policies NH/4, HQ/1 and CC/6 of the South Cambridgeshire Local Plan 2018.

### **Informatives**

#### **Archaeology**

1. Partial discharge of the condition can be applied for once the fieldwork at part c) of the condition has been completed to enable the commencement of development. Part d) of the condition shall not be discharged until all elements have been fulfilled in accordance with the programme set out in the WSI.

#### **Maintenance**

2. Histon and Impington Parish Council request annual updates on the status of the pond as part of the management and maintenance plan to be submitted for approval.

## **Ordinary Watercourse Consent**

3. Constructions or alterations within an ordinary watercourse (temporary or permanent) require consent from the Lead Local Flood Authority under the Land Drainage Act 1991. Ordinary Watercourses include every river, drain, stream, ditch, dyke, sewer (other than public sewer) and passage through which water flows that do not form part of Main Rivers (Main Rivers are regulated by the Environment Agency). The applicant should refer to Cambridgeshire County Council's Culvert Policy for further guidance: <https://www.cambridgeshire.gov.uk/business/planning-and-development/water-minerals-and-waste/watercourse-management/> Please note the Council does not regulate ordinary watercourses in Internal Drainage Board areas.

## **Pollution control**

4. Surface water and groundwater bodies are highly vulnerable to pollution and the impact of construction activities. It is essential that the risk of pollution (particularly during the construction phase) is considered and mitigated appropriately. It is important to remember that flow within the watercourse is likely to vary by season and it could be dry at certain times throughout the year. Dry watercourses should not be overlooked as these watercourses may flow or even flood following heavy rainfall.

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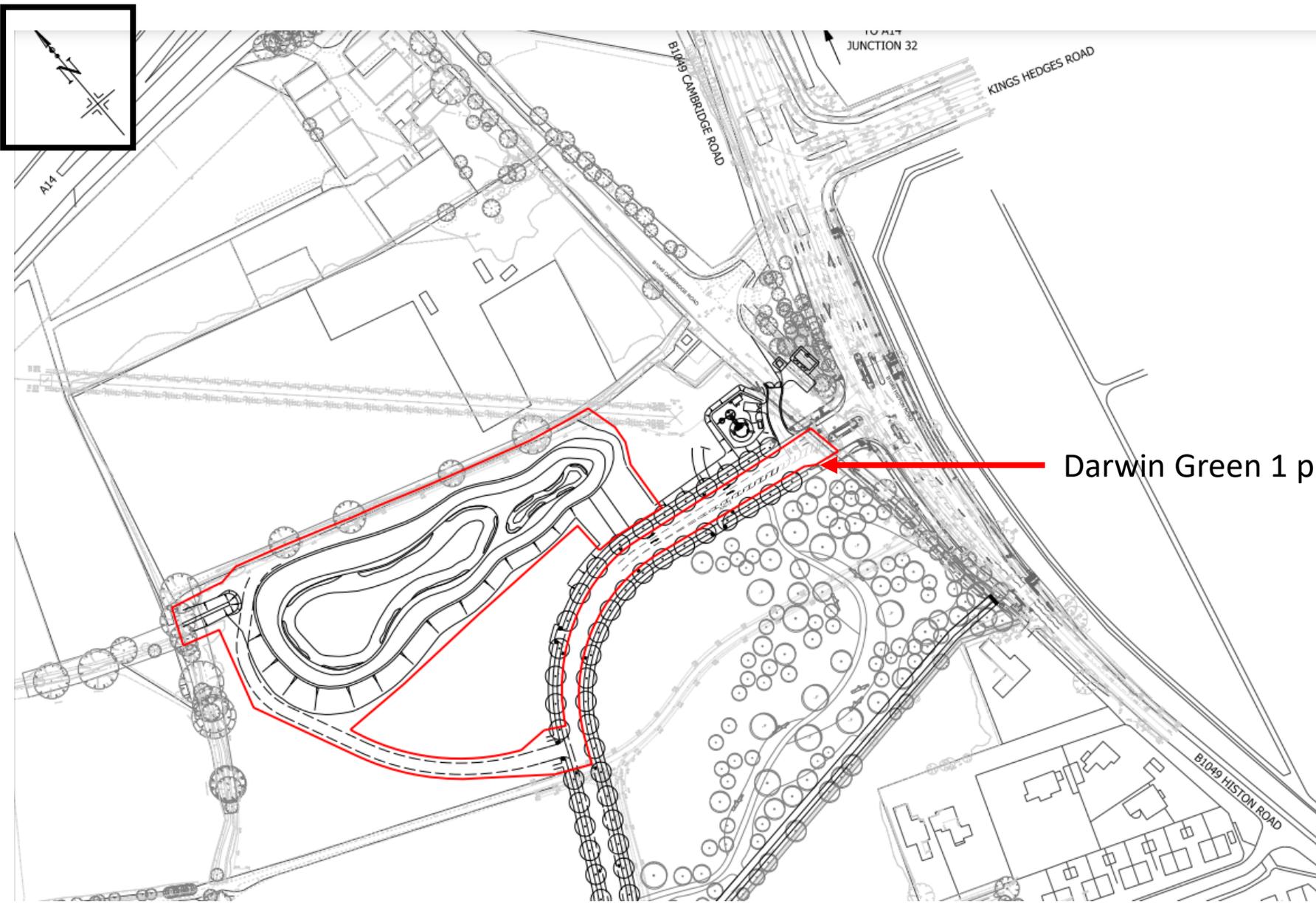
# **Darwin Green One – relocated balancing pond**

**S/1355/17/FL , 07/0003/NMA2 , S/0001/07/NMA1**

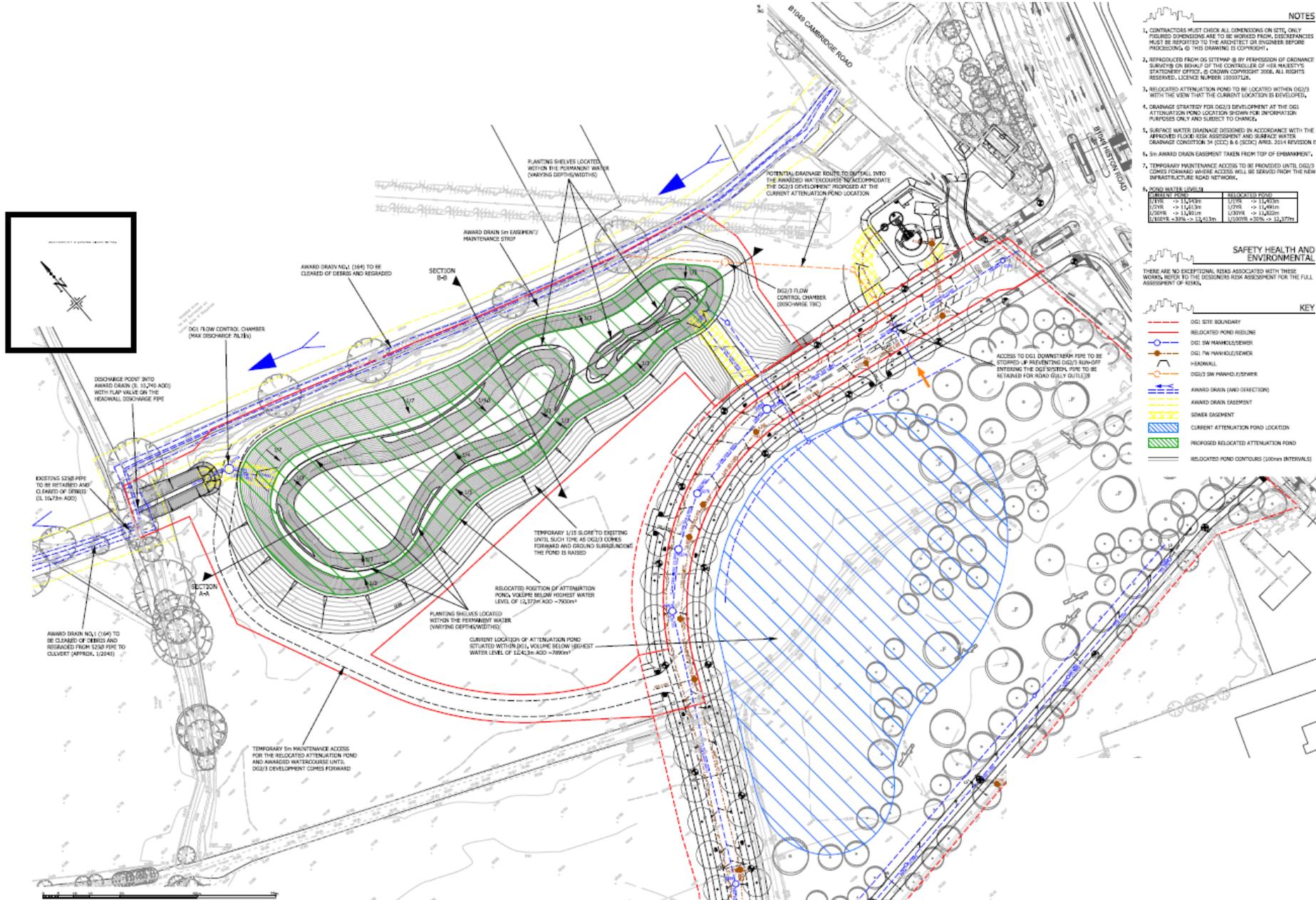
**Drawing Pack**

Joint Development Control Committee  
22 June 2022

# Location plan



# Proposed site plan



**NOTES**

1. CONTRACTORS MUST CHECK ALL DIMENSIONS ON SITE. ONLY TOLERED DIMENSIONS ARE TO BE WORKED FROM. DISCREPANCIES MUST BE REPORTED TO THE ARCHITECT OR ENGINEER BEFORE PROCEEDING. © THIS DRAWING IS COPYRIGHT.
2. REPRODUCED FROM OS SETMAP © BY PERMISSION OF ORDNANCE SURVEY ON BEHALF OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE. © CROWN COPYRIGHT 2006. ALL RIGHTS RESERVED. LICENCE NUMBER 20007126.
3. RELOCATED ATTENUATION POND TO BE LOCATED WITHIN DGI'S WITH THE VIEW THAT THE CURRENT LOCATION IS DEVELOPTD.
4. DRAINAGE STRATEGY FOR DGI'S DEVELOPMENT AT THE DGI ATTENUATION POND LOCATION SHOWN FOR INFORMATION PURPOSES ONLY AND SUBJECT TO CHANGE.
5. SURFACE WATER DRAINAGE DISIGNED IN ACCORDANCE WITH THE APPROVED FLOOD RISK ASSESSMENT AND SURFACE WATER DRAINAGE CONDITION 34 (2012) & 6 (2002) PART 2014 REVISION D.
6. SW AWARD DRAIN EASEMENT TAKEN FROM TOP OF EMBANKMENT.
7. TEMPORARY MAINTENANCE ACCESS TO BE PROVIDED UNTIL DGI'S COMES FORWARD WHERE ACCESS WILL BE SERVED FROM THE NEW INFRASTRUCTURE ROAD NETWORK.
8. POND WATER LEVELS

CURRENT POND		RELOCATED POND	
1/25% → 11.47m	1/25% → 11.49m	1/25% → 11.49m	1/25% → 11.49m
1/10% → 11.63m	1/10% → 11.63m	1/10% → 11.63m	1/10% → 11.63m
1/5% → 11.80m	1/5% → 11.80m	1/5% → 11.80m	1/5% → 11.80m
1/2% → 12.43m	1/2% → 12.43m	1/2% → 12.43m	1/2% → 12.43m

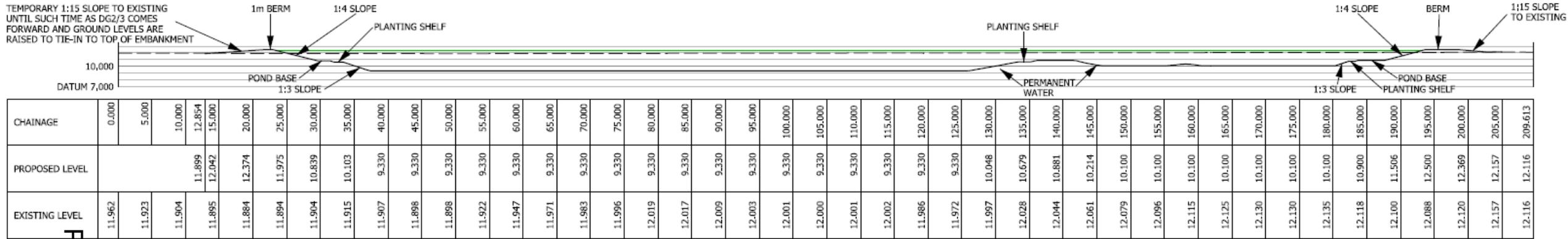
**SAFETY HEALTH AND ENVIRONMENTAL**

THESE ARE NO EXCEPTIONAL RISKS ASSOCIATED WITH THESE WORKS. REFER TO THE DESIGNER RISK ASSESSMENT FOR THE FULL ASSESSMENT OF RISKS.

**KEY**

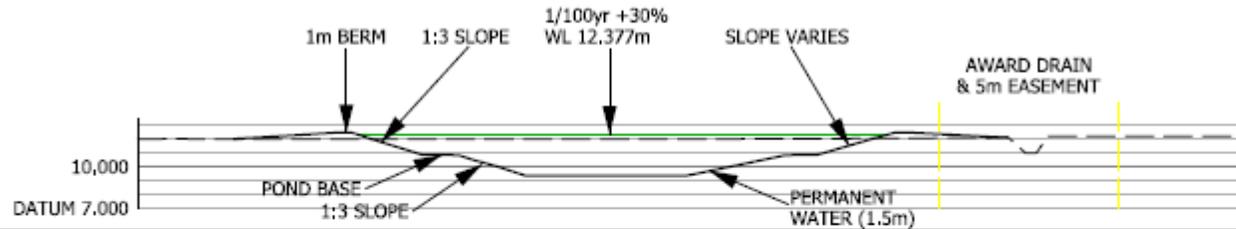
- DGI SITE BOUNDARY
- RELOCATED POND RESLINE
- DGI SW MAIN/LEADER/SEWER
- DGI TW MAIN/LEADER/SEWER
- HEADWALL
- DGI'S SW MAIN/LEADER/SEWER
- AWARD DRAIN (AND DIRECTION)
- AWARD DRAIN EASEMENT
- SEWER EASEMENT
- CURRENT ATTENUATION POND LOCATION
- PROPOSED RELOCATED ATTENUATION POND
- RELOCATED POND CONTOURS (10MIN INTERVALS)

# Proposed section



SECTION A - A (SCALE 1:500 @ A2)

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CHAINAGE	0.000	5.000	6.953	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000	55.000	60.000	63.076	65.000	70.000	75.000	80.000
PROPOSED LEVEL			12.021	12.215	12.500	11.069	10.162	9.330	9.330	9.405	10.389	11.394	12.500	12.309	12.165				
EXISTING LEVEL	12.013	12.024	12.017	12.009	12.005	12.000	12.000	12.001	12.010	12.022	12.049	12.083	12.117	11.005	12.212	12.211	12.212		

SECTION B - B (SCALE 1:500 @ A2)