CONSTRUCTION AND ECOLOGICAL MANAGEMENT PLAN

March 2026 - Rev A

DEVELOPMENT AT NORMANDY WAY, HINCKLEY LEICESTERSHIRE

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3 Loading and unloading of Plant & Vehicles

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1. INTRODUCTION

The information provided within this document includes the principles of how the development will be managed from an environmental perspective during construction.

These principles will then be expanded and detailed within the Construction Phase Health & Safety Plan and development environmental plans.

General Considerations

All contractors will be inducted and made aware of the requirements of the Construction and Ecological Management Plan (CEMP) and will be monitored by the site management teams to ensure compliance.

It is accepted that construction of this nature within a residential environment will cause some disruption to those living and working in close proximity and it is Barratt and David Wilson Homes North Midlands responsibility to ensure any disruption is kept to an absolute practical working minimum.

Construction works and delivery of materials shall not be carried out generally outside the following times:

Monday to Friday - 0730-1800hrs
Saturdays - 0800-1300hrs
Sunday and Bank Holidays: No work where noise is audible at the site boundary

There may be a requirement to do some night working or working all hours of the weekend if or when closures are required.

The site will be accessed by the construction of a new dual lane 3 arm roundabout on Normandy Way with footways and cycleways to service the new housing development with associated street lighting furniture.

The construction of the roundabout will be facilitated by a temporary S184 access.

2. VEHICLE PARKING – OPERATIVES AND VISITORS

Parking will be made available on the construction site for operatives and site visitors.

The location of the parking is detailed on the Site Execution Plan (reference Appendix A). This will also be detailed within a site-specific Traffic Management Plan, but the principles to be followed will be as follows:

- Parking to be retained within the confines of the development site.
- Parking will be within a defined area and close to the main site offices and facilities.
- Hardcore areas will be provided for parking. The hardcore will be well compacted and laid on a geotextile membrane laid on sub soil.
- No parking will be allowed along Normandy Way itself or on surrounding residential roads.

3. LOADING AND UNLOADING OF PLANT & MATERIALS

Deliveries of materials and plant will be unloaded and loaded within the confines of the construction site.

Most loads delivered to and from site will be covered.

Delivery of materials shall not be carried out outside the following times 0730-1800hrs Monday to Friday, 0800-1300hrs on Saturdays, however, there may be a requirement to do some night working or working all hours of the weekend if/when closures are required.

Avoid deliveries between 08:00-09:30 and 15:00-16:30 to prevent clashes with school drop-off & pick-up times, due to close proximity of the Dorothy Goodman School and traffic from the Community Hospital on Ashby Road.

Any vehicles that must wait for off-loading will be parked on roads within the confines of the development site, in specified lay down areas.

All the above will be included within the site-specific Traffic Management Plan as part of the developments Construction Phase Health & Safety Plan.

All contractors and suppliers will be issued with an information sheet clearly stating acceptable delivery times and traffic management routes as part of our internal order issue protocols.

No construction traffic will access the site via Ashby Road; appropriate signage will be erected. Please refer to the Site Execution Plan for the site access that is appended to this Construction Management Plan.

The main access to the site which has Outline Planning Permission, is located on Normandy Way, this will via the construction of the S278 roundabout. Please see roundabout proposal on Appendix C.

The construction of the roundabout will be facilitated by a S184 Temporary Access, which will be to the east of the roundabout. This will only be required for the construction of the roundabout, which is approx. 17 weeks.

Following completion of the roundabout construction, the temporary access will be made good and constructed as per the approved S278 design. Please see Temporary Access proposal on Appendix B.

4. SITE COMPOUND LOCATIONS

Site compounds will be securely fenced with, as a minimum, 2.00 m high hoarding and will be situated within the confines of the development away from the site entrance to prevent the possibility of delivery traffic queuing onto the highway and away from sensitive receptors such as adjacent homes.

The compound locations for both Barratt Homes and David Wilson Homes North Midlands are clearly defined within the development Site Execution Plan and may be subject to relocation within the development should the execution plan require such a change.

5. STORAGE OF PLANT AND MATERIALS

Materials are to be stored within the secure site compound/storage areas which shall be located away from sensitive receptors.

Valuable materials and equipment and materials sensitive to the weather will be kept within locked steel containers or within the newly constructed buildings. Palleted materials will be kept within designated areas and covered as appropriate. Plant will be locked and stored within designated areas outside working hours.

6. WHEEL WASHING FACILITIES

During the infrastructure construction phases, there is the potential for delivery vehicles, visitors to site and construction vehicles to track mud onto adjacent roads. This will be managed through regular road sweeping.

Excess surface water, which could contribute to mud build up, will be minimized through making drainage live at the earliest availability, using trapped gullies. Additionally, all external works are designed to prevent surface water discharge onto the highway through on plot drainage.

Construction activities will be phased to minimize vehicle movements off completed highway surfaces, which will reduce the potential for mud and dust to be created. Internal highways will be regularly swept by our own mechanical attachment to our forklift trucks. All vehicles will be checked for mud prior to leaving the site, with signage to remind visitors to do so.

7. CONTROL OF DUST AND DIRT

The following measures are to be imposed upon all contractors undertaking works on the development and these will form part of the contract documentation with Barratt and David Wilson Homes North Midlands:

1. Hard surfaces (stone) to be provided for haul routes – roads to be constructed to base course level.

2. Temporary haul routes are to have a hardcore surface as a minimum and are to be damped down in dry and windy conditions.

3. During prolonged periods of dry weather haul road/tarmac surfaces shall be made wet using a towed water bowser.

4. No water to be discharged from the site on to the public highway.

5. Road sweepers are to be utilised on adjacent trunk roads and within the development when necessary. Any sweeper arisings will be deposited by the waste carrier away from site at a licensed tip.

6. Stockpiles of loose materials are to be retained on site for the minimum period of time.

7. Topsoil piles are to be sealed to stabilise the surface.

8. Hardcore used for haul roads and site compounds to be stockpiled for re- use.

9. Burning of waste on site is not permitted.

10. A speed limit of 10mph is to be imposed on all vehicles within the development site during the construction period.

11. Debris netting will be installed on selected areas of heras fencing where dust/dirt is likely to impact local residents/infrastructure.

12. Sheeting/Terram is to be placed on selected stockpiles of material where dust/dirt is likely to impact local residents/infrastructure.

8. SITE WASTE MANAGEMENT PLAN and WASTE AUDIT

In accordance with the Barratt and David Wilson Homes North Midlands Site Waste Management process, a site waste management plan will be developed for the construction phase.

Barratt and David Wilson Homes North Midlands typically recycle 98% of all waste generated from our developments, a statistic we are continually looking to improve upon.

The objectives of the site waste management plan are;

- Retain as much as possible of the excavated material on site or within the development area.
- Control the removal of waste that has to be removed primarily using recycling and where this cannot be achieved, disposed of responsibly to a licensed tip.

In order to mitigate the amount of waste generated, Barratt and David Wilson Homes North Midlands will require their contractors to do the following;

- Identify the waste types that are likely to be produced and aim to reduce the amount of waste as much as possible, through identifying routes to re-use or recycle materials.
- Control access to storage areas to minimize risk of theft or damage.
- Store any materials away from sensitive locations in fenced off areas.
- Label all waste storage and skips, detailing the type of waste.
- Employ a just-in-time policy to deliver materials in order to reduce the storage time and therefore waste on site.
- Encourage using recycled materials and recycling of any materials used on site rather than disposing of them (including timber, aggregates, soil, tarmac, bricks, masonry, concrete and glass), e.g. hardcore used for haul roads and site compounds to be stockpiled and re-used for following contracts.

On all Barratt and David Wilson Homes North Midlands sites, waste is split into the below various streams;

- Wood
- Timber
- Light Weight Compactable
- Plasterboard
- Metal
- Mixed Waste

9. ECOLOGY WORKS

Zebra Ecology carried out an Ecological Impact Assessment Report (March 2024) for the development. This report was informed and an extension of the Ecological Appraisal report from July 2023.

As part of the report, there were no constraints identified due to protected species other than precautionary procedures to prevent injury or harm to any potential foraging badgers, of which there is evidence around the edges of site. There has since been a survey carried out, more details on this below.

In order to facilitate the Temporary Access, the existing verge and vegetation will be required to be removed. We have proposed for these works to be completed outside of bird nesting season.

Below are findings from the report, included in Appendix D.

Badgers

The site was assessed in February 2026 for evidence of badger activity within the site boundary and within a 30m buffer of the site boundary where there may be badger access. 4 No. setts were identified outside the site boundary; however, their respective 30m disturbance buffers extend into the site and are therefore applicable for further monitoring.

Currently, ecology specialists will monitor for badger activity over 21-day period from 04.03.26 to 25.03.26. If no activity is witnessed, the setts will be closed.

If any badger activity is recorded, a license from Natural England will be required to legitmise any works that have the potential to disturb badgers such as earthworks or construction within 30m of the sett.

Great Crested Newts

No great crested newts were recorded within any of the ponds during any survey visits.

Breeding Birds

2 No. surveys were completed during the 2024 breeding bird survey season. The breeding bird surveys were conducted in June and July 2023, as per the latest Bird Survey Guidelines.

In total, 117 registrations for 23 species of bird have been recorded during the survey visits. The breeding bird assemblage utilising the site was typical of the on-site habitats, mainly comprising common and widespread bird species.

The survey notes that the habitat across the site represents a low level of importance for breeding opportunity for common and widespread bird species identified during the survey efforts.

All vegetation clearance will be carried out outside bird nesting season, and an ecologist will be present if any issue occurs in bird nesting season.

Bat Activity

Occasional bat activity was recorded during the walked transect surveys of at least five species. Most of the activity recorded was from common pipistrelle bat breed.

Any trees that noted bat activity are proposed to be retained.

Riparian Mammals

No riparian mammals (i.e. water vole, otter) or evidence of these protected species have been recorded on-site.

10. ENVIRONMENTAL PROTECTION

Spillage prevention measures must be put into place during all site works such as spill kits, Gulliblok to be used on all gullies on site. There will also need to be a site pollution action plan put in place so that significant spillage occurs and there are clear directions for what action must be taken.

Prior to any discharge into the existing sewer, as per the approved storm water drainage design, the outlet headwall, flow restrictor and pond along with silt trap must be in place, we will also use coir (or similar approved) at the outfall headwall to further prevent any silts or suspended solids from entering any watercourse.

In addition to the measures outlined above – silt discharge is prevented at source through the utilisation of the Gulliblock product. Additionally, the surface waters will discharge via Hydrobrake manholes in the 4 No lagoons before discharging into the existing system – allowing for further separation of any sediment.

Post-construction and during occupation the designed systems will be in place to prevent a detrimental environmental impact. All foul water will be discharged into in its entirety to the adoptable systems that surround the site. As aforementioned, the storm system will be discharged into the attenuation basins west of the site. The permanent design of the attenuation basins allows for particulates and sediments to be captured by the landscaped basin, prior to discharge into the brook which improves the water quality. A resident-funded management company will be employed to maintain the attenuation basins, which will ensure that the effectiveness of this system is upheld continuously.

Water Quality and Surface Water Run-Off

The site is located wholly within flood zone 1, which is land defined as having a low probability of flooding from rivers or seas. The nearest EA Flood Extents are located approximately 1.6km north of the site, attributed to the River Tweed. An Unnamed Ordinary Watercourse (UOW) flows adjacent to the western boundary of the site, and outfalls to the River Tweed

approximately 2.0km downstream of the site.

The unnamed ordinary watercourse is on the western boundary of the development with all the lagoons out-falling to this watercourse.

The site is not at risk from coastal/tidal inundation.

Measures during Construction

The site's surface water run-off will be controlled with regular site visits focusing on SW management. This SW management will be monitored on a 4-weekly basis by the Barratt and David Wilson Homes North Midlands Technical Team.

The SW will be constantly reviewed by the Technical Team as construction progresses to ensure the principles of the SW management are adhered to throughout the construction phase of the development.

Soil Management Plan

Barratt and David Wilson Homes North Midlands and our contractors will implement the soils management strategy for the development and review its control and effectiveness on a monthly basis and revise as necessary. This is to ensure the control of spoil movements both on and off site are carried out at an appropriate time to ensure the control of dust, surface water flows and mud on roads is minimised.

In order to prevent surface water run-off from exposed sub soils and the mobilization of silts Barratt and David Wilson Homes North Midlands and their contractors will ensure:

- Works are undertaken in accordance with a spoil management plan and a surface water management plan.
- The earthworks phasing highlighted within the plan are located away from sensitive surface water receptors.
- Stock piled spoil arising are to be located within a standoff zone of at least 5m from site boundaries and stockpiles sealed or sheeted if required to prevent dust.
- All surface water channels or inlets will be gulley bagged/ bunged depending on the proximity of the stripped topsoil. If required, silt fencing should be erected at the base of any stockpile to control run-off or geotextile membrane can be used to cover stockpiles (aiming to limit soil erosion from rainfall).

Noise Mitigation

Noise mitigation measures may be required for certain operations which will take place during development process, these may include but are not limited to the following.

- Movement of machinery
- Excavation of soils in rock.
- Breaking of surface materials by mechanical breakers.
- Demolition.
- Crushing of stone and concrete materials.
- Tree and hedge trimming works.
- Unloading and loading of lorries

It is accepted that construction of this nature will cause an elevation of noise above the average baseline dBA. Therefore, the development site will work to the max decibel level at the site boundaries of 75dBA. In the event of any excessive noise operations Barratt and David Wilson Homes North Midlands are to ensure control measures are in place, providing the correct level of attenuation to 75 dB for the duration of the permitted working hours referenced within **Section 1 – Introduction.**

Nuisance from noise emitting operations will be controlled by the following methods.

- Noise operations will be risk assessed to ensure the task is necessary and if an alternative method or equipment can be used to mitigate noise.
- Modern machinery will be utilised.
- The use of noise attenuating barriers will be used for specific operations in localised areas which may create excessive noise. For example, rock breaking beyond the 75dBA limit.
- Noise bunds will be built if required to protect sensitive receptors such as existing residential properties if this is deemed required.

A Noise Impact report was produced by BWB Consulting in January 2026 and noted no issues with noise levels within the development except for the area where the Muga is proposed. Please see report which is included within Appendix E.

All best practicable means will be used to minimize, as far as reasonably practicable, the levels of noise, dust and vibration to which neighboring residential premises will be exposed. Where possible, best practice mitigation measures will be carried out at all times, although it may not be possible to fully comply during emergency situations and during occasions where adverse weather conditions such as prolonged periods of dry or windy conditions occur.

11. PILING

For plots that will have a piling design solution, see requirements below:

In assessing the impact of any piling operations, the contractor will comply with the recommendations set out in the relevant current British Standard BS5228 Part 4 “Code of practice for noise and vibration control applicable to piling operations”.

Where practicable pile driving shall be by jacking. The use of conventional impact hammers should, wherever possible, be avoided. Any pile driving is to be carried out by plant equipped with a recognised noise reducing system.

12. TRAINING

As part of Barratt and David Wilson Homes North Midlands SHE procedures, the following will be employed to ensure environmental objectives are met throughout the duration of the project:

- Site specific induction for all operatives before commencement works on the development.
- SHE briefing to all personnel throughout the duration of the project to suit.
- Our own internal SHE audit team will inspect the site and assess against our specific development plans.
- Engagement meeting will take place with work force on a quarterly basis and recorded.
- All site management have been trained in Environmental Awareness.
- Barratt and David Wilson Homes North Midlands hold a current ISO14001 Certificate.

APPENDICES

Appendix A: Site Infrastructure Execution Plan
Appendix B: Site Access S184 Layout
Appendix C: Site Access S278 Layout
Appendix D: Ecology Appraisal
Appendix E: Noise Report

APPENDIX A

BARRATT HOMES

Proposed HV Route

Area of remediation

Existing BT poles
Potential for disconnection with existing cable serving farm to connect to proposed onsite cables

Existing BT apparatus

Westfield Farm (North Farm)

David Wilson Development

Sunnyside Farm (East Farm)

Unnamed ordinary watercourse

Existing 33kV OH HV Cables

Existing OH LV Cable

Proposed LV Route
Potential for disconnection with existing LV serving farm to connect to proposed onsite LV

Existing BT Boxes

S184 Temp Access

S278 Street Lighting Feeder Pillar POC
(400m east, on Ashby Rd junction)
Requested Eon to find closer connection point

Electric POC 1
(300m west, on Clover Field)

Vodafone asset

Water POC
Existing 8 inch pvc water main

Gas POC

FW (POC) F116

200mm FW Rising Main

Electric POC 2

LEGEND

- Compound
- Brick Compound
- Contractors Car Park
- BDW Build Route
- Assumed DWH Build Route
- Hedge Clearance for S278 Works
- 70 No. Gas plots connection
- Build to shell
- Temporary Close Board Fence
- Phase 1 - S278
- Phase 2 - S278
- Phase 1 - S38 R+S
- Phase 2 - S38 R+S

Site Access Works to commence 07.04.2026
Total S278 works expected to take approx. 16 week. Completion expected 27.07.2026

- Ph 1 S278 and Ph 1 S38 works with S184 temp access to commence w/c 06.04.2026
- Ph 1 S278 works expected to take approx. 10 weeks. Completion expected w/c 15.06.2026
- Ph 1 S38 works expected to take approx. 6 weeks. Completion expected w/c 11.05.2026
- Ph 2 S278 works expected to take approx. 6 weeks. Commencement w/c 22.06.2026
  Completion expected w/c 27.07.2026
- Ph 2 S38 works expected to take approx. 16 weeks. Commencement w/c 18.05.2026
  Completion expected w/c 07.09.2026

Services to commence w/c 14.09.2026
Services to complete w/c 05.10.2026 (Live)

WORKS REQUIRED PRIOR S278 ROUNDABOUT CONSTRUCTION
- Hedge clearance (expected end of Feb 2026)
- Temp Access S184 Approval
- Vodafone, BT, Virgin, Water Diversion (Currently investigating if all diversions required)
- FW outfall connection in Nelson Drive
- NGED to reinforce cable, up to Electric POC's (Currently expected in March)
- GTC offsite works complete to 2 No. Electric POC's
- GTC offsite works complete to Gas POC
- GTC offsite works complete Water POC
- Street lighting POC, location TBC

Foundation Start November 2026
BDW F10 January 2027

Rev.	Description	Initial	Date

EXECUTION PLAN — Hinckley North, Phase 2

Drwg No.	HA656/27	Rev	-
Scale	1:500 @ A0	Date	22.01.26
Drawn by	HL	Checked by	TECH

NORTH MIDLANDS
Design & Technical Department
2 Horizon Place - Nottingham Business Park
NOTTINGHAM NG8 6PY

APPENDIX B

BARRATT HOMES

TEMPORARY SITE ACCCESS

SECTION 184 HIGHWAYS ACT

SPECIFICATION

KERBING 125X250 SPLAY KERB 125MM KERB FACE
SURFACE 50MM THICKNESS HRA 35/14
BINDER 60MM AC20 BITUMINOUS
BASE 190 AC32 BITUMINOUS
SUB BASE 150MM MOT TYPE 1
CAPPING 450MM 6F2

ALL AS LCC HDG MAJOR INDUSTRIAL ROAD SPECIFICATION

EXISTING CABLES TO BE SLEWED AND LOWERED AS NECESSARY AND PROVIDED WITH CONCRETE PROTECTION

Ridge And Furrow

VERIFY EXISTENCE OF LAB=ND DRAIN OR HIGHWAY DRAIN
ALLOW FOR CONCRETE PROTECTION.
IF NO PIPE PRESENT PRIDE 300MM DIA TEMPORARY CROSSING OF ACCCESS

CL 110.42
<<1:40
<1:40
7.3
<<1:40
GATE
R12
HIGHWAY BOUNDARY
9X120M VISI
EXISITING LAMP COLUMN RETAINED
EXISTING DIAG 1040 LADDER HATCH MARKINGS RETAINED
HP
4.10
CL 110.90
<<1:20 CROSSFALL EXISTING
EXISITING LAMP COLUMN RETAINED
EXISTING DIAG 1040 LADDER HATCH MARKINGS RETAINED
DIAG 1004
DIAG 1038
DIAG 1039
25
15
10
Sign
NORMANDY WAY
EXISTING DIAG 1040 LADDER HATCH MARKINGS REMOVED AND REPLACED WITH SEQUENCE AS INDICATED
Wall Ht 1.8m
Hedge Ht 1.6m
P/W Ht 1.3m
P/R ht 1.4m
Dense Vegetation
Grass
CTV
CBX
Gy
Sp
TC6 110.272
TC5 112.369
TCL 124.02
TCL 119.76
E:112.65
R:115.14

110.000

VERIFY EXISTENCE OF LAB=ND DRAIN OR HIGHWAY DRAIN
ALLOW FOR CONCRETE PROTECTION.
IF NO PIPE PRESENT PRIDE 300MM DIA TEMPORARY CROSSING OF ACCCESS

RD 184 HORIZ 1/500 VERT 1:100

EXISTING GROUND LEVEL	110.902			110.475			110.306				
LEFT HAND CHANNEL	110.719		110.629		110.554	110.495		110.327			
CENTRE LINE	110.902		110.777		110.652		110.527		110.416		
RIGHT HAND CHANNEL	111.084		110.925		110.750	110.618		110.510			
ALIGNMENT LEVEL	110.902			110.652			110.416				
HORIZONTAL ALIGNMENT											
VERTICAL ALIGNMENT				G= -2.500%							
				1: -40.0							
CROSSFALLS		RH=+5.00%					RH=+2.50%				
		LH=-5.00%					LH=-2.50%				
CHAINAGE	0.000			10.000			19.340				

SDC dwg no. E970-184-01

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WARNING TO PURCHASERS. Property Misdescriptions Act 1991

Images and site layout are intended for illustrative purposes only and should be treated as general guidance only.

Site layout including parking arrangements, [social/ affordable housing, community buildings, play areas and public open spaces] may change to reflect changes in the planning permission for the development. Please speak to your solicitor to whom full details of any planning consents including layout plans will be available.

Site layouts and landscaping are not intended to form part of any contract or warranty unless specifically incorporated in writing into the contract.

Rev	Description	Initial	Date	Rev	Description	Initial	Date	Rev	Description	Initial	Date

SECTION-184_SITE_ACCESS_GA HINCKLEY_PHASE_2

Drwg No. H0997-400-01	Rev A		
Scale 1:250		Date 17-2-26	
Drawn by SWD		Checked by JW	

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Design & Technical Department
2 Horizon Place - Nottingham Business Park
NOTTINGHAM NG8 6PY

APPENDIX C

BARRATT HOMES

KEY

S278 Cut Line

S278 Cut Line

6.75M WIDE SITE ACCESS WITH CYCLEWAYS

CENTRAL LANDSCAPING AREA DEFINED BY CIRCULATORY VISIBILITY

ROAD SIDE DITCH INTERCEPTED AND DIVERTED AROUND ISLAND

ROAD SIDE DITCH INTERCEPTED AND DIVERTED AROUND ISLAND

CONNECT NEW HIGHWAY DRAINAGE SYSTEM INTO DEVELOPMENT DRAINAGE

FOOTPATH LINK

HIGHWAY BOUNDARY FROM RECORDS

HIGHWAY BOUNDARY FRO

NORMANDY WAY

NORMANDY WAY

Managed Drive

Managed Drive

Mews

Mews

Ridge And Furrow

Ridge And Furrow

Ridge And Furrow

Ridge And Furrow

Ridge And Furrow

LAP

120m SSD

120m SSD

2.4x59m (x6)

45m (x4) (x6)

DIAG515

DIAG606

DIAG515

DIAG510

PROVISIONAL STREET LIGHTING LAYOUT SUBJECT TO DETAILED DESIGN

LAND TO BE DEDICATED AS HIGHWAY

ROUNDABOUT CHEVRON ASSEMBLIES

AG7014 VARIANT

PROPOSED 50M ICD ROUNDABOUT
TO CD 116 v 2.1.0
ACCESS TO RESIDENTIAL DEVELOPMENT
A47 NORMANDY WAY HINCKLEY

SDC DRAWING REFERENCE E970-278-060

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A	General updates to LCC tech audit V1	SWD	15-12-25
B	General updates to LCC tech audit V2	SWD	30-1-26

S278_LAND_DEDICATION

HINCKLEY_PHASE_2

BARRATT HOMES

Drwg No.	H0997/410/01	Rev.	B
Scale	1/250	Date	06.10.25
Drawn by	JW	Checked by	SWD

NORTH MIDLANDS
Design & Technical Department
2 Horizon Place - Nottingham Business Park
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APPENDIX D

BARRATT HOMES

INTERIM ECOLOGICAL IMPACT ASSESSMENT (EcIA) SUMMARY REPORT

LAND NORTH OF A47 NORMANDY WAY AND WEST OF A447 ASHBY ROAD, HINCKLEY

ON BEHALF OF

RICHBOROUGH

REFERENCE: ZEL_477
DATE: March 2024

30 St Georges Square | Worcester |
WR1 1HX
01905 947558

Zebra Ecology Limited is registered in England and Wales.
Registered Number 13084460. Registered Office: 30 St Georges Square, Worcester, WR1 1HX
VAT Registration Number 384 3366 75.

Report Data	
Report Title	Ecological Impact Assessment (EcIA) Summary
Report Reference	ZEL_477
Client	Richborough
Site	Land north of A47 Normandy Way and west of A447 Ashby Road, Hinckley
Surveyor	E. Seaton BSc (Hons) MCIEEM

Rev	Report	Author	Date Issued
V1	Interim Ecological Impact Assessment (EcIA) Summary Report	E. Seaton BSc (Hons) MCIEEM	23 January 2024
V2	Interim Ecological Impact Assessment (EcIA) Summary Report	E. Seaton BSc (Hons) MCIEEM	04 March 2024

Disclosure:

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This report should not be copied or relied upon by any third party without the express prior written agreement of Zebra Ecology Ltd and the commissioning client/s.

The evidence gathered, and the opinions provided, have been prepared in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) Code of Professional Conduct.

Where any appraisal is based upon information provided by third parties, it is assumed that this information is relevant, correct and complete; there has been no independent verification of information obtained from third parties unless otherwise stated. Where field investigations have beencarried out these have been appropriate to the agreed scope of works and carried out to a level of detail required to achieve the stated objectives.

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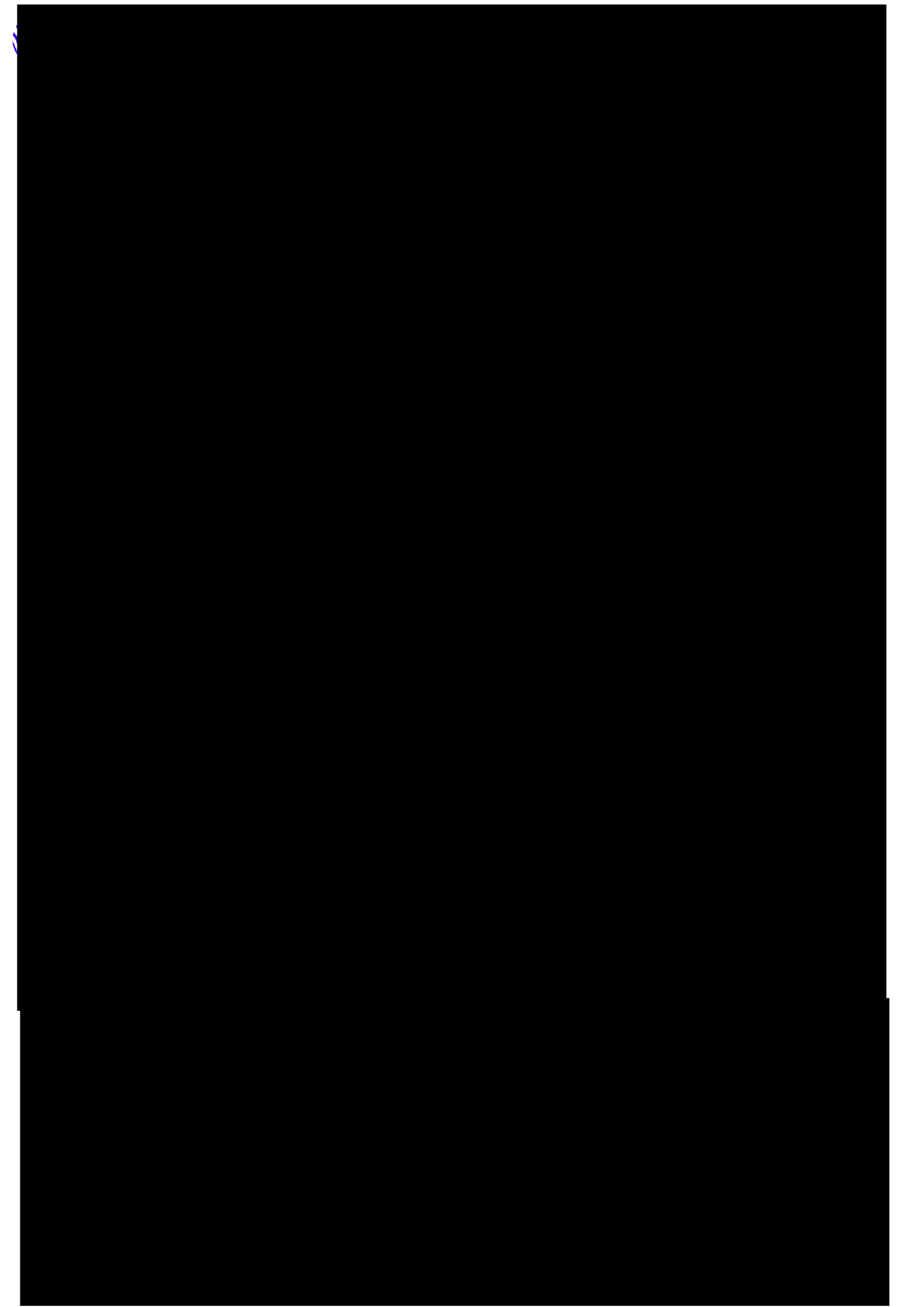
1.0 INTRODUCTION 5

2.0 METHODOLOGY 7

3.0 RESULTS 10

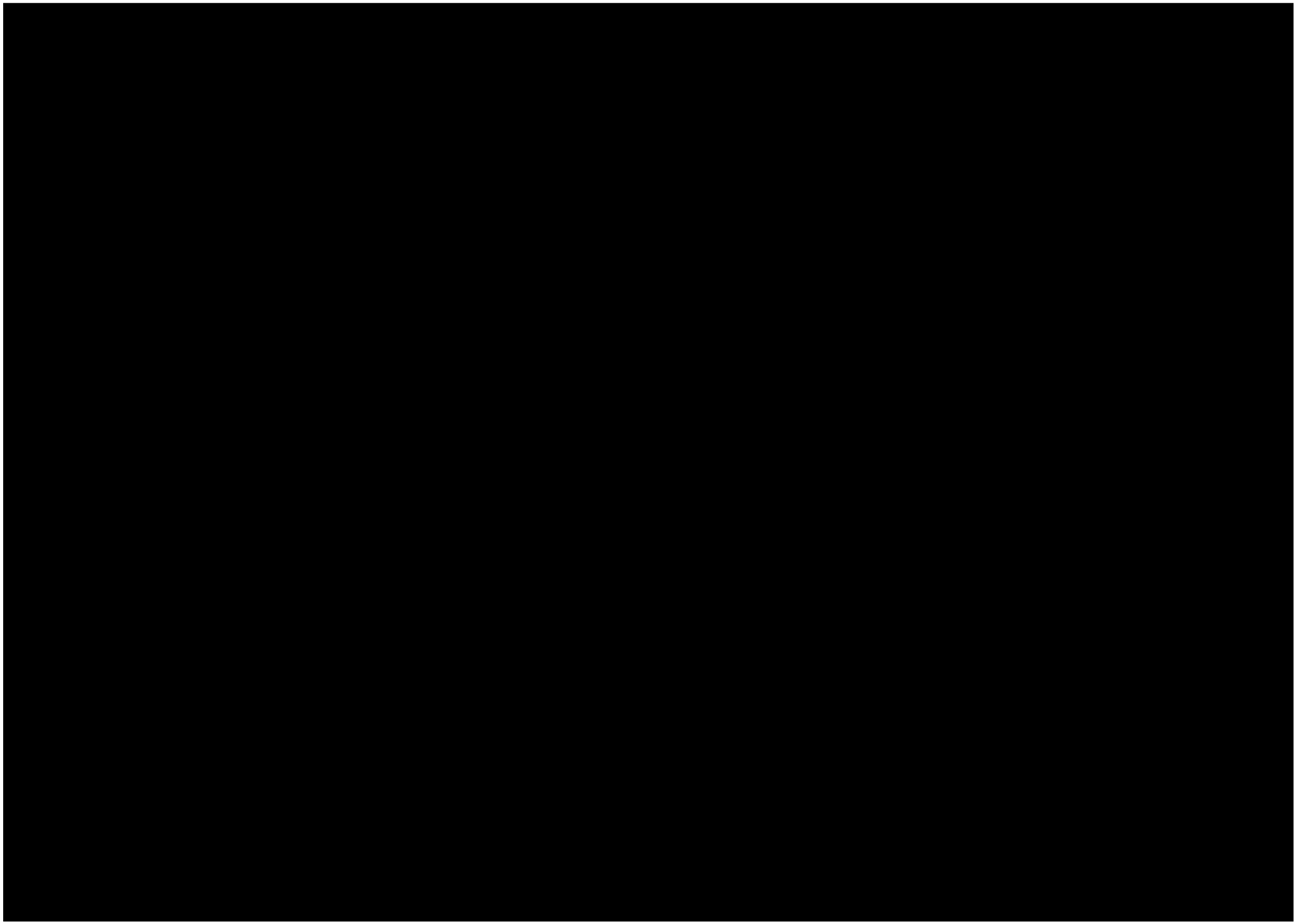
4.0 REFERENCES 11

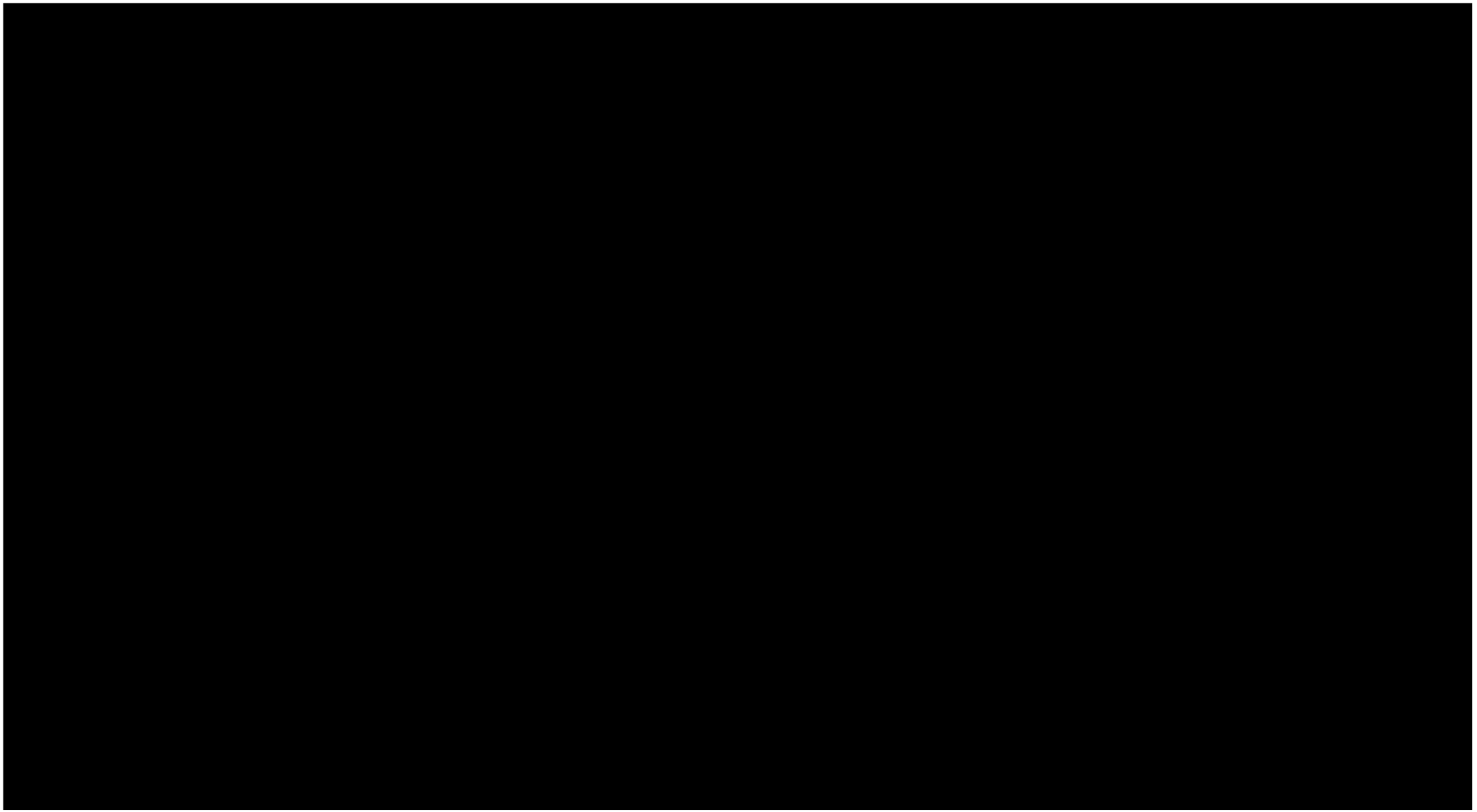
APPENDIX A: Plans
APPENDIX B: Legislation and Planning Policy
APPENDIX C: Qualifications and Experience

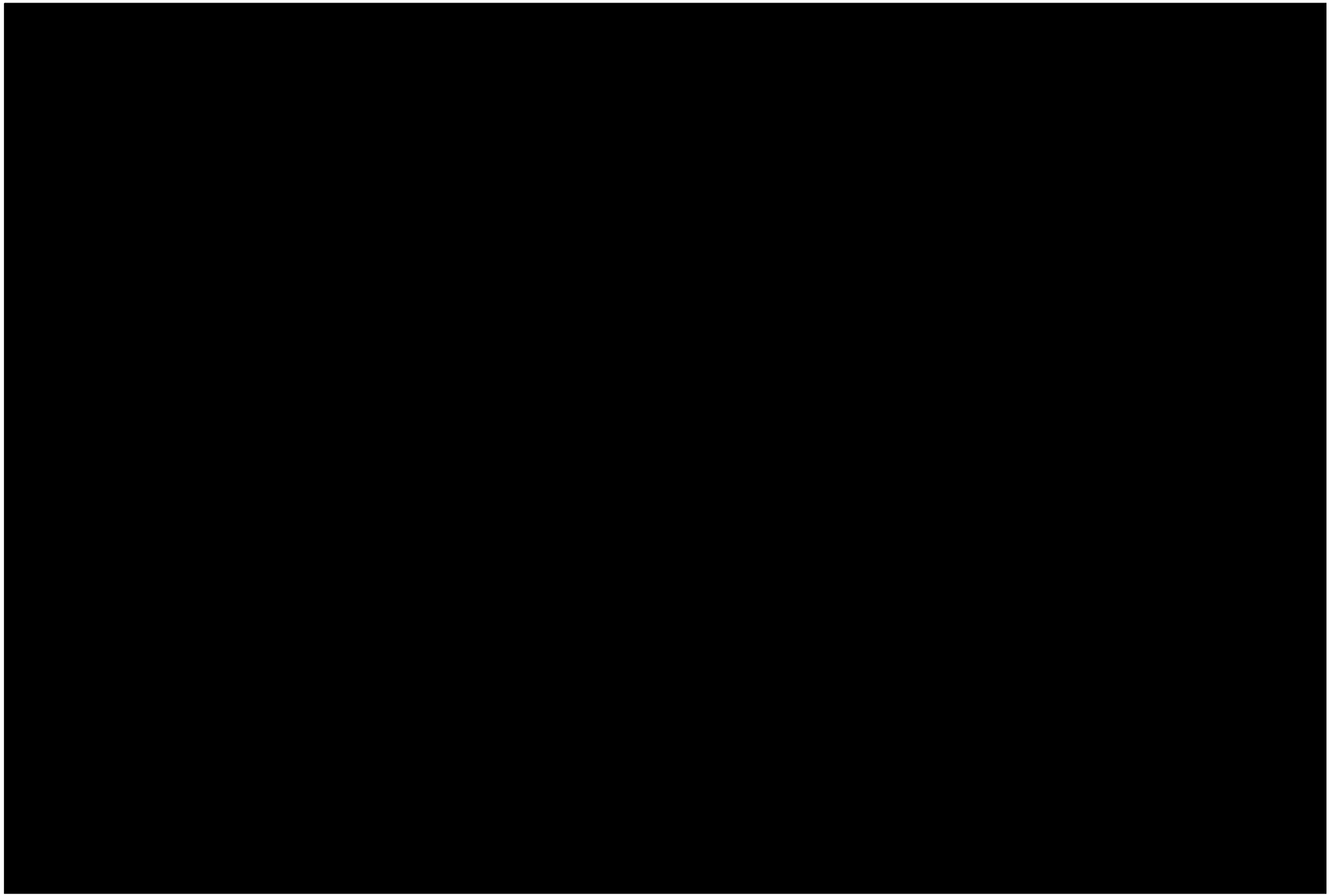


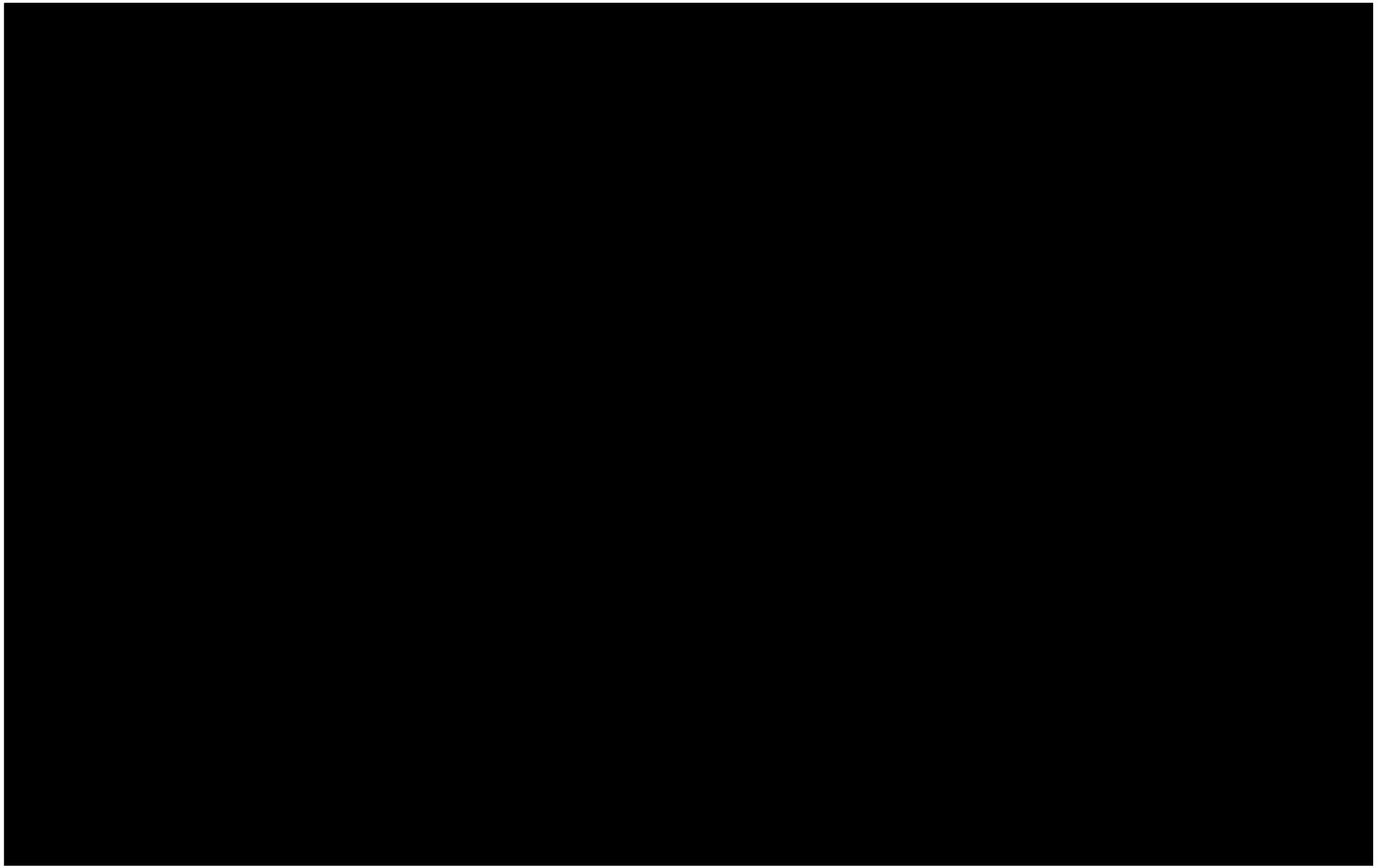
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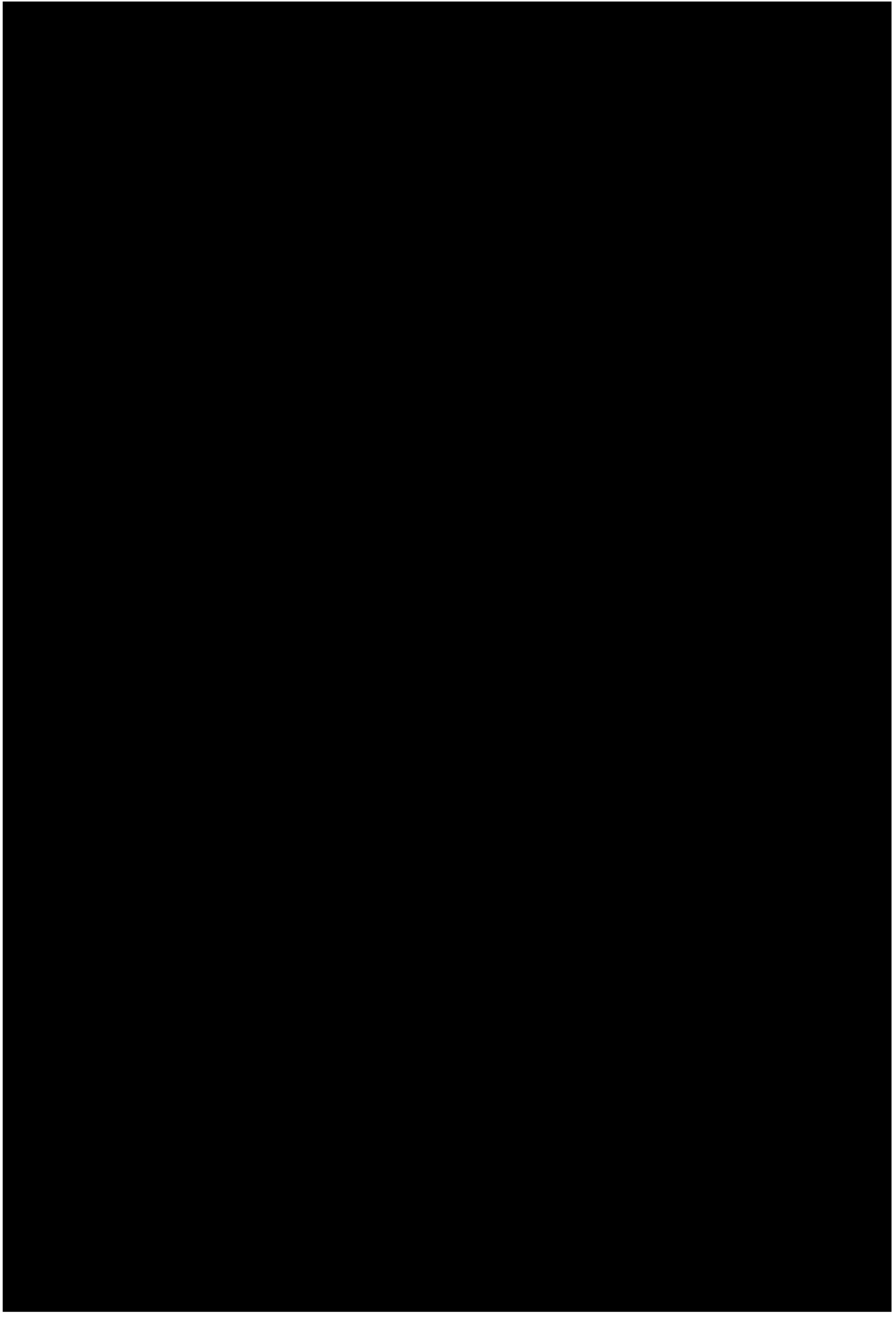
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January 2024



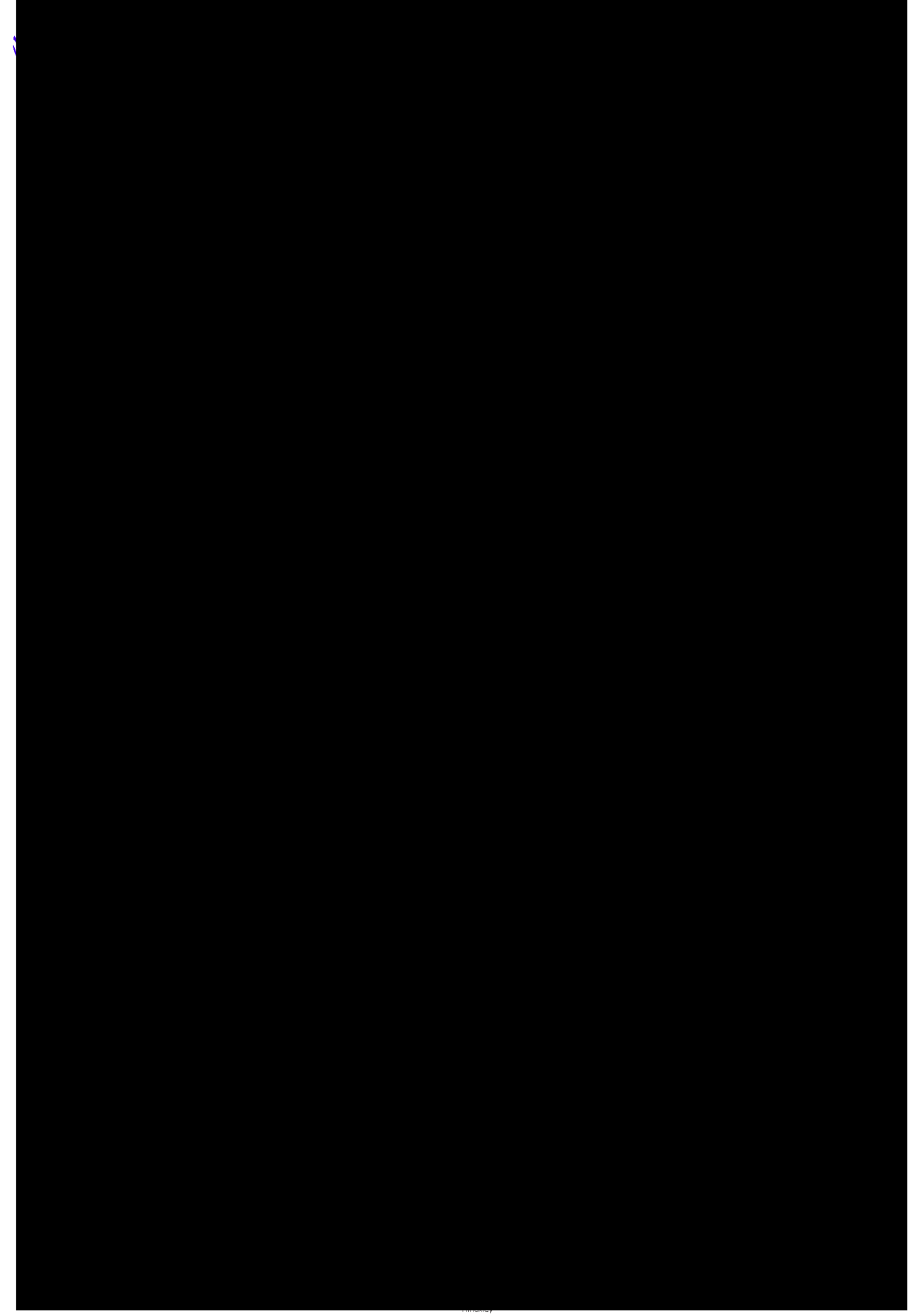


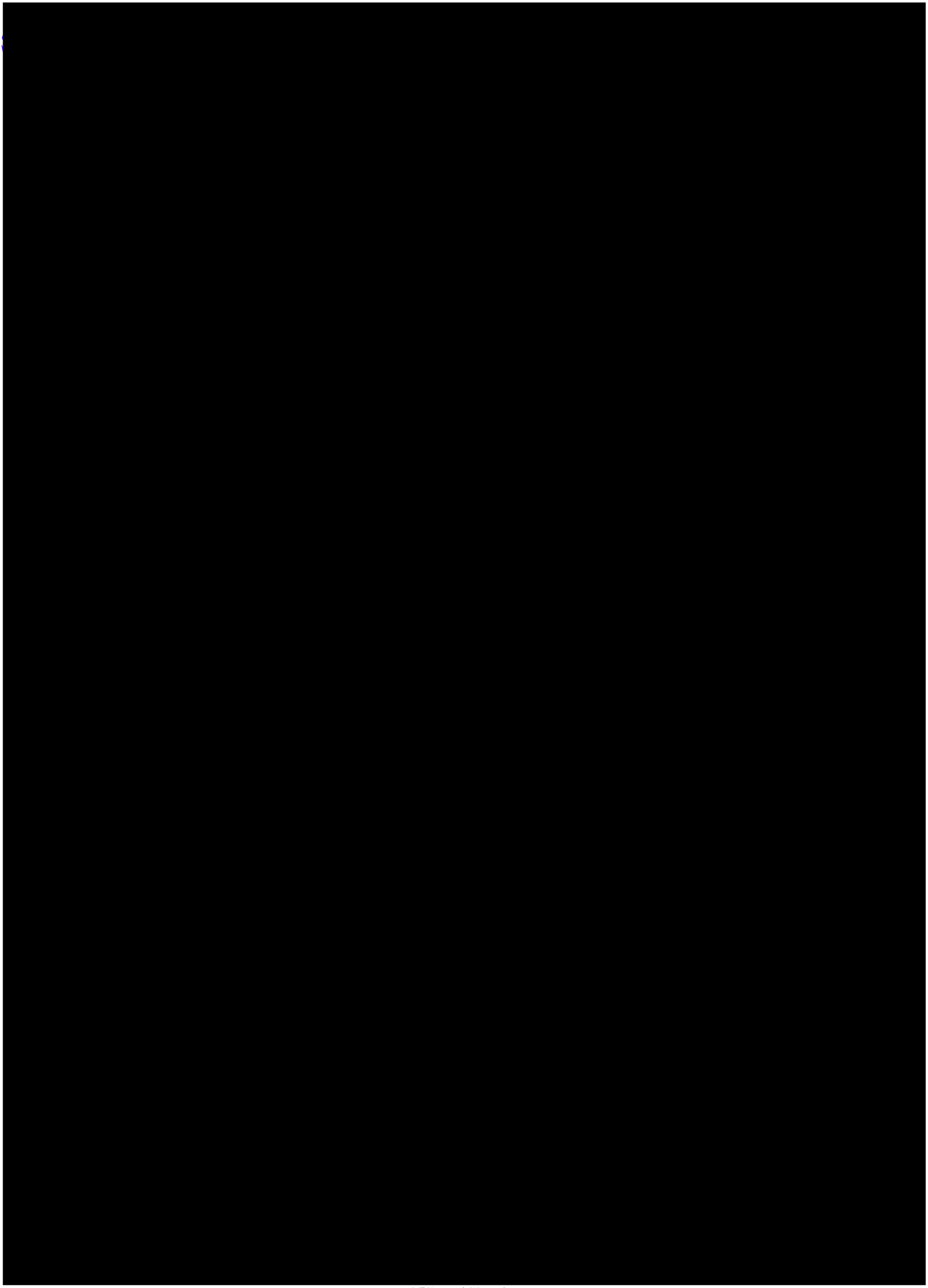






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A47 Normandy Way and west
of A447 Ashby Road
Hinckley
January 2024

FPCR | environment & design

[redacted]

Our ref: 13713 / KD / JJM

Haroon Lulat
Barratt & David Wilson Homes
[redacted]

20th February 2026

Dear Haroon

RE: Land North of Normandy Way, Hinckley – Badger Pre-Commencement Survey

The following letter has been prepared by FPCR Environmental and Design Ltd. (FPCR) on behalf of Barratt & David Wilson Homes and provides the results of an update badger survey at land north of Normandy Way, Hinckley (central OS grid reference: SP 42576 95913), hereafter referred to as the 'Site'.

Due to the sensitive nature of this species, effects arising from disclosure of badger activity evidence and sett locations, this document is strictly confidential. It must not be distributed, published, or otherwise released into the public domain.

This letter has been prepared to satisfy condition 27 of the reserved matters (Hinckley & Bosworth Borough Council reference: 25/01143/REM) which specifies:

"No development shall take place (including ground works or vegetation clearance) until an updated badger survey has been submitted to and approved in writing by the Local Planning Authority. This survey is to be carried out within 6 months of the likely commencement of works on site. It is to include details on mitigation measures for badgers if necessary (such as badger gates). All works are to proceed strictly in accordance with the approved document."

Relevant Legislation

Badgers are protected under the Protection of Badgers Act 1992[1]. This act is based on the need to protect badgers from baiting and deliberate harm or injury. The act makes it an offence to:

- Wilfully kill, injure, take possess or cruelly ill-treat a badger, or attempt to do so; and

[redacted]

- To intentionally or recklessly interfere with a sett. Sett interference includes disturbing badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access routes.

A sett is defined as: "Any structure or place that displays signs indicating current use by a badger".

Work that disturbs badgers whilst occupying a sett is illegal without a licence; badgers may be disturbed by work near the sett even if there is no direct interference or damage to the sett. Generally the types of activity requiring a licence include:

- Using heavy machinery (generally tracked vehicles) within 30m of any entrance to an active sett;
- Using lighter machinery (generally wheeled vehicles), particularly for any digging operation, within 20m;
- Light work such as scrub clearance or hand digging within 10m.

Licences only allow works to be carried out between July and November inclusive.

Methodology

In order to satisfy condition 27 of the above reserved matters, an update badger survey of the whole Site, plus a 30m radius to the Site (where accessible) was undertaken on the 10th of February 2026 by suitably experienced ecologists from FPCR.

The survey aimed to identify any significant changes in the presence or absence of badger setts, latrines, runs, or other signs of commuting and/or foraging activity in comparison to previous survey results. The assessment was undertaken in accordance with standard badger survey methodologies and best practice guidance[2].

Results

The update badger survey undertaken on the 10th of February 2026 identified evidence of badger activity and active setts within the Site or surrounding 30m radius.

The survey recorded:

Sett	Number of Holes	Entrance	Activity Classification	Reasoning
S1 – Outlier	Disused – 1 Paritally used - 1		Partially Active	Entrance cleared of debris. No evidence of freshly excavated spoil by the sett nor surrounding area. A defined run leading to and from the entrance is present. No recent footprints, guard hairs, latrines, or bedding material recorded within the vicinity however,

2 2 Harris, S., Cresswell, P. & Jefferies, D. 1989. *Surveying Badgers*. Occasional publication of the Mammal Society No.9

Sett	Number of Holes	Entrance	Activity Classification	Reasoning
				several snuffle holes were recorded along hedgerows.
S2 – Outlier	Disused – 2 Paritally used - 1		Partially Active	Entrance cleared of debris. No evidence of freshly excavated spoil by the sett nor surrounding area. A defined run leading to and from the entrance is present. No recent footprints, guard hairs, latrines, or bedding material recorded within the vicinity however, several snuffle holes were recorded along hedgerows.
S3 – Outlier	Disused – 2		Inactive	Entrance filled with debris and overgrown, with no evidence of freshly excavated spoil by the sett nor surrounding area. No clearly defined or well-used run leading to or from the entrance. No recent footprints, guard hairs, latrines, or bedding material recorded within the vicinity. The entrance edges appeared weathered. Within close proximity rabbit footprints were recorded leading to rabbit warrens.
S4 – Outlier	Disused – 1		Inactive	Entrance filled with debris and leaf litter, with no evidence of freshly excavated spoil by the sett nor surrounding area. No clearly defined or well-used run leading to or from the entrance. No recent footprints, guard hairs, latrines, or bedding material recorded within the vicinity. The entrance edges appeared weathered, with cobwebs present across the opening, indicating lack of recent mammal activity.

Sett	Number of Holes	Entrance	Activity Classification	Reasoning
S5 – Outlier	Disused – 2		Inactive	Entrance filled with debris and leaf litter, with no evidence of freshly excavated spoil by the sett nor surrounding area. The area within proximity was clear and likely may be used by foraging mammals but no clearly defined or well-used run leading to or from the entrance. No recent footprints, guard hairs, latrines, or bedding material recorded within the vicinity. The entrance edges appeared weathered.
S6 – Outlier	Disused – 2		Inactive	Entrance filled with debris and leaf litter, with no evidence of freshly excavated spoil by the sett nor surrounding area. The area within proximity was clear and likely may be used by foraging mammals but no clearly defined or well-used run leading to or from the entrance. No recent footprints, guard hairs, latrines, or bedding material recorded within the vicinity. The entrance edges appeared weathered.
S7 – Outlier	Disused – 1 Paritally used - 1		Partially Active	Entrance cleared of debris. No evidence of freshly excavated spoil by the sett nor surrounding area. A defined run leading to and from the entrance is present. No recent footprints, guard hairs, latrines, or bedding material recorded within the vicinity.
S8 – Outlier	Disused – 4		Inactive	Entrance filled with debris and leaf litter, with no evidence of freshly excavated spoil by the sett nor surrounding area. No clearly defined or well-used run leading to or from the entrance. No recent footprints, guard hairs, latrines, or bedding material recorded within the vicinity. The entrance edges appeared weathered, with

Sett	Number of Holes	Entrance	Activity Classification	Reasoning
				cobwebs present across the opening, indicating lack of recent mammal activity.
S9 – Outlier	Paritally used - 1		Partially Active	Entrance somewhat cleared of debris. No evidence of freshly excavated spoil by the sett nor surrounding area. A defined run leading to and from the entrance is present. No recent footprints, guard hairs, latrines, or bedding material recorded within the vicinity. Within close proximity rabbit footprints were recorded leading to rabbit warrens.
S10 – Outlier	Disused – 1		Inactive	Entrance covered in vegetation, with no evidence of freshly excavated spoil by the sett nor surrounding area. No clearly defined or well-used run leading to or from the entrance. No recent footprints, guard hairs, latrines, or bedding material recorded within the vicinity. The entrance edges appeared weathered. Within close proximity rabbit footprints were recorded leading to rabbit warrens.
S11 – Outlier	Disused – 1		Inactive	Entrance covered in vegetation, with no evidence of freshly excavated spoil by the sett nor surrounding area. No clearly defined or well-used run leading to or from the entrance. No recent footprints, guard hairs, latrines, or bedding material recorded within the vicinity. The entrance edges appeared weathered. Within close proximity rabbit footprints were recorded leading to rabbit warrens.

Discussion / Conclusion

Badger activity was recorded throughout the Site during the updated badger survey. Evidence comprised active setts and numerous snuffle holes, predominantly associated with boundary habitats. These habitats are functioning as established foraging and commuting corridors for badgers and other terrestrial mammals.

Active badger setts were confirmed and present a constraint to the proposed development. Setts S1, S2, S7, and S9 are classified as active.

The current planning layout (drawing reference: HA656/101Ce, Rev: E) for development indicates proposed residential development within close proximity to these setts. In accordance with the Protection of Badgers Act 1992, works undertaken within 30m of an active sett that have the potential to cause disturbance would be likely to require a licence from Natural England.

All identified setts will be subject to direct or indirect impacts under the current development proposals. At this stage it is recommended that setts S1, S2, S7, and S9 are subject to monitoring. If monitoring confirms activity and disturbance cannot be avoided closure under licence will be required. It should be noted that landowner permission will be required to facilitate monitoring of Setts S1 and S2, as these are located outside the Site boundary.

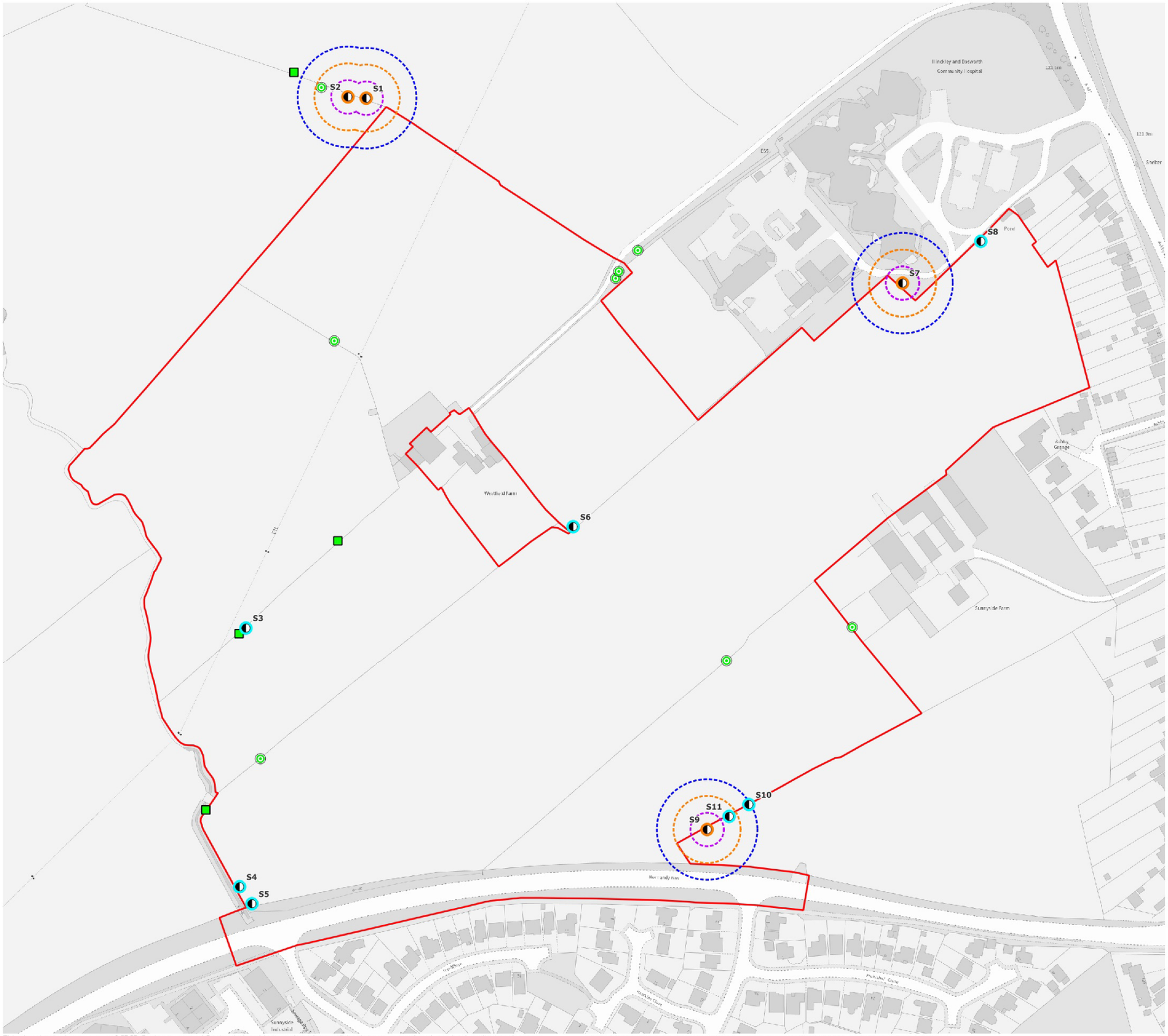
Sett monitoring would typically comprise a minimum of 21 consecutive days of camera surveillance to establish current levels of activity and to inform and support licence application.

All works should follow precautionary measures to avoid harming or killing badgers these are detailed within the Construction and Environmental Management Plan.

We trust the information above provided satisfies the condition requirements of the Local Authority, but if you have any further queries, please do not hesitate to contact me.

Yours sincerely

[redacted]



N

0 50 100 m

Site Boundary

Badger Sett (with reference)

Outlier Sett - Partially Active

Outlier Sett - Disused

10m Sett Buffer

20m Sett Buffer

30m Sett Buffer

Field Signs

Notable Non-Badger Sign

Snuffle hole

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drawn date: 20/02/26

drwn/chkd: KD / JJM

client: **BDW North Midlands**

project: **Hinckley North - Phase 2**

title: **BADGER SURVEY RESULTS PLAN**

scale: 1:2,250 @ A3

number: **FIGURE 1**

rev: -

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APPENDIX E

A CAF GROUP COMPANY

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Noise Impact Assessment

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March 2026

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P02	05/03/2026	Issue	Ian Wallbank BSc (Hons) MIOA James Storey BSc (Hons) AMIOA	Luke Pickering BSc (Hons) MIOA	Sam Ellwood BSc (Hons) MIOA

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EXECUTIVE SUMMARY

This noise impact assessment has been prepared by BWB Consulting (BWB) on behalf of Barratt Homes (the Client) in support of a reserved matters application for a proposed residential development comprising 406 dwellings (The Site).

A baseline noise survey was undertaken to inform the outline application in January 2022 and has been used for the basis of the subsequent assessment. A detailed noise assessment has been undertaken in accordance with current standards and guidance; and a condition enforced by Hinckley and Bosworth Borough Council.

Predictive noise modelling has demonstrated that all private garden areas are expected to achieve the upper guideline level of 55 dB $L_{Aeq,16h}$ in accordance with BS 8233. Therefore, mitigation will not be required to reduce noise levels in outdoor living areas of any dwelling.

The assessment shows that with appropriate noise mitigation measures including the provision of appropriate glazing and ventilation strategies, noise break-in from road and farm noise can be adequately controlled in accordance with BS 8233 guidance.

Noise from the unmitigated MUGA is expected to exceed AGP guidance noise levels at the nearest receptors. Mitigation has been recommended in the form of a suitable glazing and ventilation strategy for affected dwellings.

An assessment of overheating has found that some dwellings are expected to exceed the criteria given in Approved Document O. For these dwellings, the simplified method cannot be applied due to the influence of external noise. Consequently, dynamic thermal modelling, following the procedures of CIBSE TM59, is required to assess the risk of overheating under realistic occupancy and environmental conditions.

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APPENDICES

APPENDIX A: Glossary of Acoustic Terms
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1. INTRODUCTION

Instruction

1.1 BWB Consulting (BWB) was instructed by Barratt Homes (the Client) to undertake a Noise Impact Assessment in support of a reserved matters application for a proposed residential development comprising 406 dwellings (The Site).

1.2 This assessment has been undertaken based on the results of a baseline noise survey on the Site. The results of the survey have been assessed in accordance with current standards and guidance.

1.3 The purpose of this Technical Note is to address the following Planning Condition relating to noise:

"Any forthcoming Reserved Matters application shall include a scheme for protecting the proposed dwellings from noise from the adjacent road network and the adjacent farms has been submitted and approved by the Local Planning Authority. All works which form part of the scheme shall be completed before any of the permitted dwellings are first occupied"

1.4 Where appropriate, consideration has been given to noise mitigation measures to reduce noise levels at noise sensitive receptors.

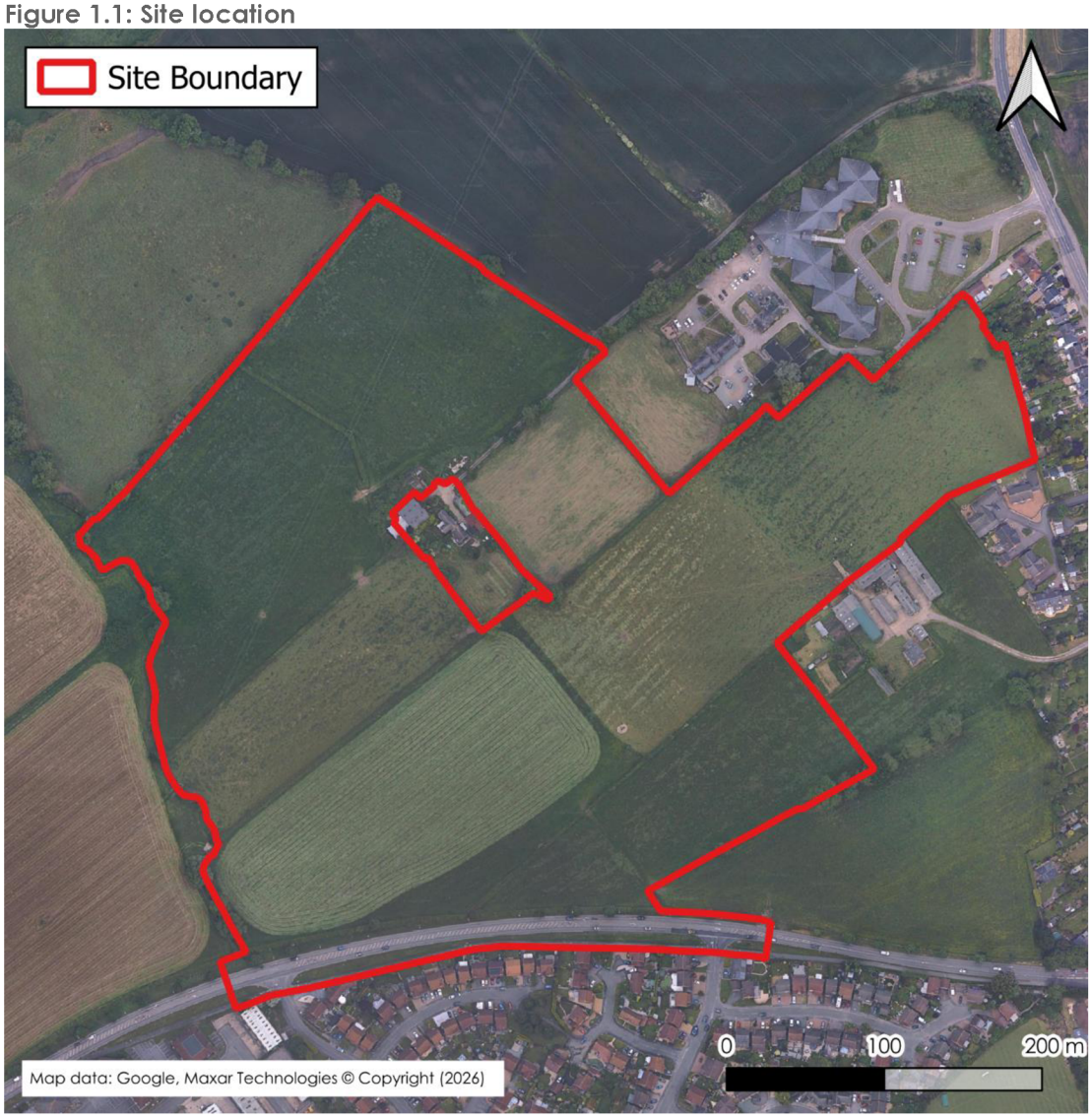
1.5 This report is necessarily technical in nature, so to assist the reader, a glossary of acoustic terminology can be found in **Appendix A**.

Site Setting

1.6 The Site currently comprises several existing structures amongst open farmland. The Site is bound by Normandy Way to the south with existing commercial and residential premises situated beyond. To the west the Site is bordered by Phase 1 of the development with Stoke Road beyond. To the north-west lies an existing farm with an existing residential building. To the north, the Site is bordered by open farmland with Hinckley and Bosworth Community Hospital to the north-east. To the east, the Site is bordered by residential dwellings off Ashby Road.

1.7 The location of the Site is shown in **Figure 1.1**.

Figure 1.1: Site location



Proposed Development

1.8 The proposed development comprises 406 dwellings with a MUGA close to the east boundary of the Site. The proposed site layout is shown below in **Figure 1.2.**

Figure 1.2: Site Layout Plan



2. STANDARDS AND GUIDANCE

National Planning Policy Framework (NPPF)

2.1 Published in December 2024, this document sets out the Government's planning policies for England. It makes the following reference to noise in the section entitled Conserving and enhancing the natural environment:

> "*187. 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 soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin* management plans."

2.2 It also makes the following references to noise in the Section entitled Ground conditions and pollution:

> "*198. 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 impact resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life[72];*
>
> *b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.*
>
> *[72] See Explanatory Note to the Noise Policy Statement for England (Department for Environment, Food & Rural Affairs, 2010).*"

BS 8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings

2.3 This standard provides guidance for the control of noise in and around buildings. The guidance provided within the document is applicable to the design of new buildings, or refurbished buildings undergoing a change of use, but does not provide guidance on assessing the effects of changes in the external noise levels to occupants of an existing building.

2.4 The guidance provided includes appropriate internal and external noise level criteria which are applicable to dwellings and office for steady external noise sources. It is stated that it is desirable that the internal ambient noise level does not exceed the following criteria set out in **Table 2.1** below:

Table 2.1: Summary of internal ambient noise levels to be achieved in habitable rooms

Activity	Location	Internal noise level criteria ($L_{Aeq,T}$, dB)	
		Daytime (07:00 - 23:00hrs)	**Night-time (23:00 - 07:00hrs)**
Resting	Living room	35	-
Dining	Dining room/area	40	-
Sleeping (daytime resting)	Bedroom	35	30

2.5 Whilst BS 8233:2014 recognises that a guideline value may be set in terms of Sound Exposure Level (SEL) or L_{AFmax} for the assessment of regular individual noise events that can cause sleep disturbance during the night-time, a specific criterion is not stipulated. Accordingly, reference has been made in this assessment to the World Health Organisation (WHO) 1999: Guidelines for Community Noise.

2.6 With respect to external amenity space such as gardens and patios it is stated that it is desirable that the noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments. It is then confirmed that higher external noise criteria may be appropriate under certain circumstances such as within city centres urban areas, and locations adjoining the strategic transportation network, where it may be necessary to compromise between elevated noise levels and other factors such as convenience of living, and efficient use of land resource.

World Health Organisation (WHO) 1999: Guidelines for Community Noise

2.7 The World Health Organisation (WHO) guidance: 1999: Guidelines for community noise includes guidance for individual maximum noise events during the night-time. This document draws upon guidance from Vallet and Vernay, which states:

> "*For good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45 dB L_{AFmax} more than 10-15 times per night*"

Sport England Design Guidance Note – Artificial Grass Pitch (AGP) Acoustics – Planning Implications, 2015

2.8 The above guidance document expands on the general technical advice already available from Sport England. It provides details of acoustic implications associated with such facilities and follows on from an acoustic research programme involving detailed analysis of relevant noise guidance documents and site testing in a range of locations.

2.9 It proposes appropriate noise criteria and assessment methods and outlines practical measures that can be applied to reduce noise in particularly sensitive areas.

2.10 It refers to the World Health Organisation (WHO) document Guidelines for Community Noise (1999) which provides guidance for outdoor living areas that states that to avoid 'moderate annoyance' during the daytime and evening the noise level should not exceed 50dB $L_{Aeq,T}$. WHO guidelines for residential development are typically calculated over a 16-hour daytime period. For an artificial grass pitch, a 16-hour assessment period may not truly reflect the noise impact as it considers times of use and non-use. It is suggested an appropriate assessment period is for one hour, $L_{Aeq,1h}$ as this is typically the period for a community sports session on an AGP.

2.11 The document identifies that, from measurement data, a typical free-field noise level of 58dB $L_{Aeq,1h}$ at a distance of 10 metres (m) from the side-line halfway marking has been determined as representative for noise from an AGP. The document goes on to state that, when a site is in an open location, noise levels of 50dB $L_{Aeq,1h}$ can be achieved at a distance of 40m at 1.5m above local ground height.

Approved Document O (Overheating Mitigation)

2.12 This document provides guidance on how to comply with Part O of the building regulations. The aim of Part O of the building regulations is to protect the health and welfare of occupants of the building by reducing the occurrence of high indoor temperatures. Approved Document O (ADO) provides guidance on how to comply with Part O of the building regulations and applies to new residential development only.

2.13 Paragraphs 3.2 and 3.3 of ADO refer to noise within bedrooms at night. It is considered that the intention is to manage the impact from sound generated from all non-natural sources. Sources such as road, rail and air traffic, sources of an industrial or commercial nature, and sounds arising from entertainment venues are all within scope.

2.14 Paragraph 2.10 of ADO lists the means for removing excess heat as:

- *"Opening Windows*
- *Ventilation louvres in external walls*
- *A mechanical ventilation system*
- *A mechanical cooling system"*

2.15 Paragraph 3.2 of AD-O states:

"In locations where external noise may be an issue (for example, where the local planning authority considered external noise to be an issue at the planning stage), the overheating mitigation strategy should take into account of the likelihood that windows will be closed during sleeping hours (11pm to 7am)."

2.16 Paragraph 3.3 of AD-O states:

"Windows are likely to be closed during sleeping hours if noise within bedrooms exceeds the following limits.

(a) 40 dB $L_{Aeq,T}$ averaged over 8 hours (between 11pm and 7am).

(b) 55 dB L_{AFmax} more than 10 times a night (between 11pm and 7am)."

2.17 The document goes on to state that ventilators and windows should be open as required based on the overheating mitigation strategy. Where there is a natural ventilation strategy using open windows, the extent to which windows will need to be opened will depend on the physical arrangement, environmental conditions, and the number of room occupants, as determined in the CIBSE TM59 dynamic thermal modelling.

2.18 The Association of Noise Consultants (ANC) issued a guide in November 2024 entitled "Approved Document O Noise Guide".

2.19 Table 1 of this guidance document is replicated in **Table 2.4** and defines the noise levels at moderate and high-risk locations when considering the simplified assessment method.

Table 2.4: Noise Levels Using the Simplified Method

Parameter	High Risk Location	Moderate Risk Location
$L_{Aeq, 8h}$ averaged over 8 hours (between 11pm and 7am)	45 dB	50 dB
L_{AFmax} more than 10 times a night (between 11pm and 7am)	60 dB	65 dB

2.20 For clarity, the above table suggests that the sound insulation performance of the external building fabric when a window is open wide enough to comply with the guidance in ADO, is only in the region of 5 dB for high risk locations (where the opening is larger), and 10 dB for moderate risk locations (where the required window opening is smaller).

2.21 Where the simplified method cannot be used, dynamic thermal modelling is required following the procedures of CIBSE TM59. The equivalent area of the open windows required to mitigate overheating determined through thermal modelling can then be used to determine internal noise levels and compare against the ADO acoustic criteria.

Consultation with Hinckley and Bosworth Borough Council

2.22 In January 2022, consultation was undertaken with Mr. Simon Smith, Senior Environmental Health Officer at Hinckley and Bosworth Borough Council via email. A response was received from Mr. Smith on 21st January 2022, agreeing to the methodology.

2.23 Following the baseline noise survey, further consultation was undertaken with Mr Smith, where it was also agreed that noise associated with the existing commercial premises to the south need not to be considered within the assessment as road traffic was dominant during periods of observation.

2.24 As part of the consultation, Mr Smith noted that should the existing farm remain as an operating premises, consideration should be given to the impact of noise associated with farm operations within the assessment.

2.25 Mr Smith provided further correspondence on 18th October 2023 in which he advised that he had been out to the Site to investigate whether plant noise from Hinckley and Bosworth Community Hospital to the north-east would pose a noise constraint. Mr Smith confirmed that having visited the Site, he was satisfied that noise from plant associated with the hospital need not be considered.

3. BASELINE NOISE SURVEY

3.1 A baseline noise survey was undertaken to inform the outline application in January 2022. The results of which have been utilised to determine noise levels incident on the Site due to road traffic on Normandy Way to the south. The measurement location adopted during the survey is identified in **Figure 3.1**.

Figure 3.1: Baseline Noise Survey Location



Survey Methodology

Noise Measurement Location 1 (ML1)

3.2 Noise measurements were undertaken at ML1 over a 24-hour period commencing at 15:00 on Thursday 27th January 2022. The microphone at ML1 was established at 1.8 m above local ground level and at 15 m from nearside kerb edge of Normandy Way to the south. The noise climate at ML1 was dominated by road traffic on Normandy Way.

Measurement Equipment

3.3 The baseline noise survey was undertaken using the Class 1 specification noise measurement equipment detailed in **Table 3.1**. Equipment was calibrated using a portable calibrator immediately before and after the measurements with no significant drift in calibration observed. The sound level meter, pre-amplifier and microphone were calibrated to UKAS standards at an accredited laboratory within the 24 months prior to the measurements. The portable calibrator was calibrated within the 12 months preceding the date of the survey.

Table 3.1: Noise Measurement Equipment

Position	Equipment	Make & Model	Serial Number
ML1	Sound Level Meter	SVAN 971	60745
	Microphone	ACO 7052E	64535
	Preamp	SV18	66815
	Calibrator	B&K DB0311	449050

Meteorological Conditions

The weather throughout the survey remained conducive to environmental noise measurement, it being dry with winds <5ms^{-1}.

Measurement Results

3.4 A summary of measured sound pressure levels at ML1 is presented in **Table 3.2 and**

3.5 **Table** 3.3 below. Further details of the survey data are presented in **Appendix B.**

Table 3.2: Summary of Measured Sound Pressure Level at ML1

Period	Start Time	Period (T)	dB $L_{Aeq,T}$	dB $L_{A90,T}$[2]	dB L_{AFmax}[3]
Daytime	27/01/2022 15:00	16-hours	62[1]	56	-
Night-Time	27/01/2022 23:00	8-hours	56	37	74

[1] logarithmic average $L_{Aeq,15mins}$ noise level between 15:00 – 23:00 on 27/01/22 and between 07:00 – 15:00 on 28/01/22
[2] arithmetic average $L_{A90,15mins}$ during measurement period
[3] 10th highest L_{AFmax} noise levels during measurement period

Table 3.3: Summary of Octave Band Measured Sound Pressure Levels at ML1

Period	Sound Pressure Level (dB) per Octave Band (Hz)							
	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Daytime	70	64	60	53	59	56	46	39
Night-Time	63	57	53	45	52	50	40	30

4. ASSESSMENT

4.1 This assessment considers noise from roads, farm and the proposed MUGA on proposed sensitive receptors.

Noise Model

4.2 A detailed noise model has been generated in order to calculate the impact of road traffic noise from Normandy Way and the roundabout on the proposed residential dwellings, based on the following methodology:

- The noise model was set up to apply the noise prediction methodology set out in the 1988 Department of Transport and the Welsh Office document Calculation of Road Traffic Noise for road traffic noise sources;
- Mapping of the Site and the surrounding area was calibrated into the noise model based on known Ordinance Survey grid reference points;
- Ground topography was approximated using publicly available Lidar Data from DEFRA;
- Off-site buildings which would provide screening to the Site have been incorporated as reflective façades;
- To reflect the local ground cover, ground absorption was set to G = 0.5 (50% acoustically absorptive ground);
- The model was set to include second order reflected noise from solid structures;
- The noise model has been calibrated using original on-site measured noise levels. Corrections have been applied at the roundabout to the south of The Site, where a lower speed has been assumed.

4.3 **Figures 4.1** and **4.2** present the predicted noise contours across the site from road traffic on Normandy Way.

Figure 4.1: Daytime Road Noise Contours at 1.5 m Height, dB $L_{Aeq,16h}$

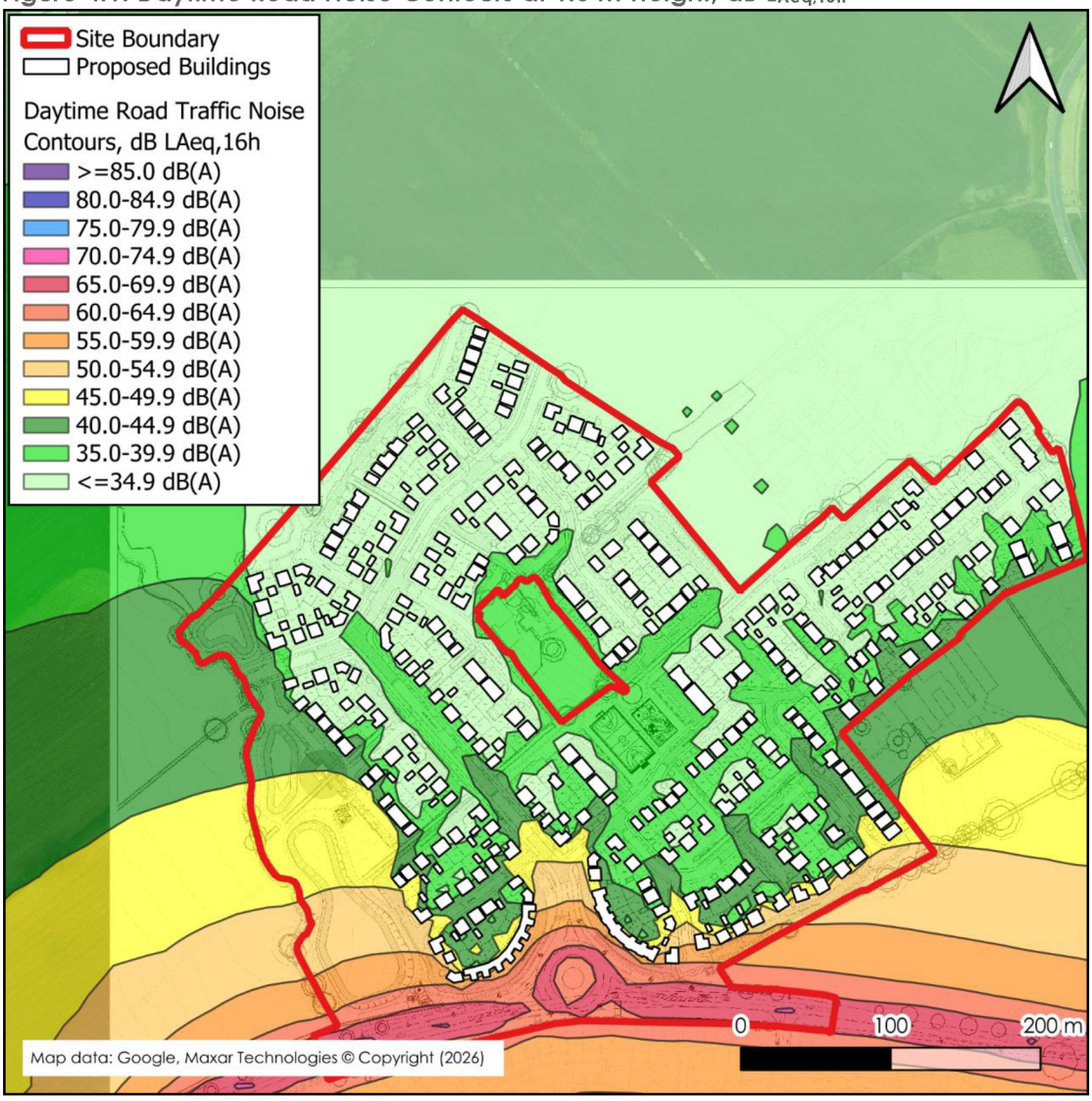
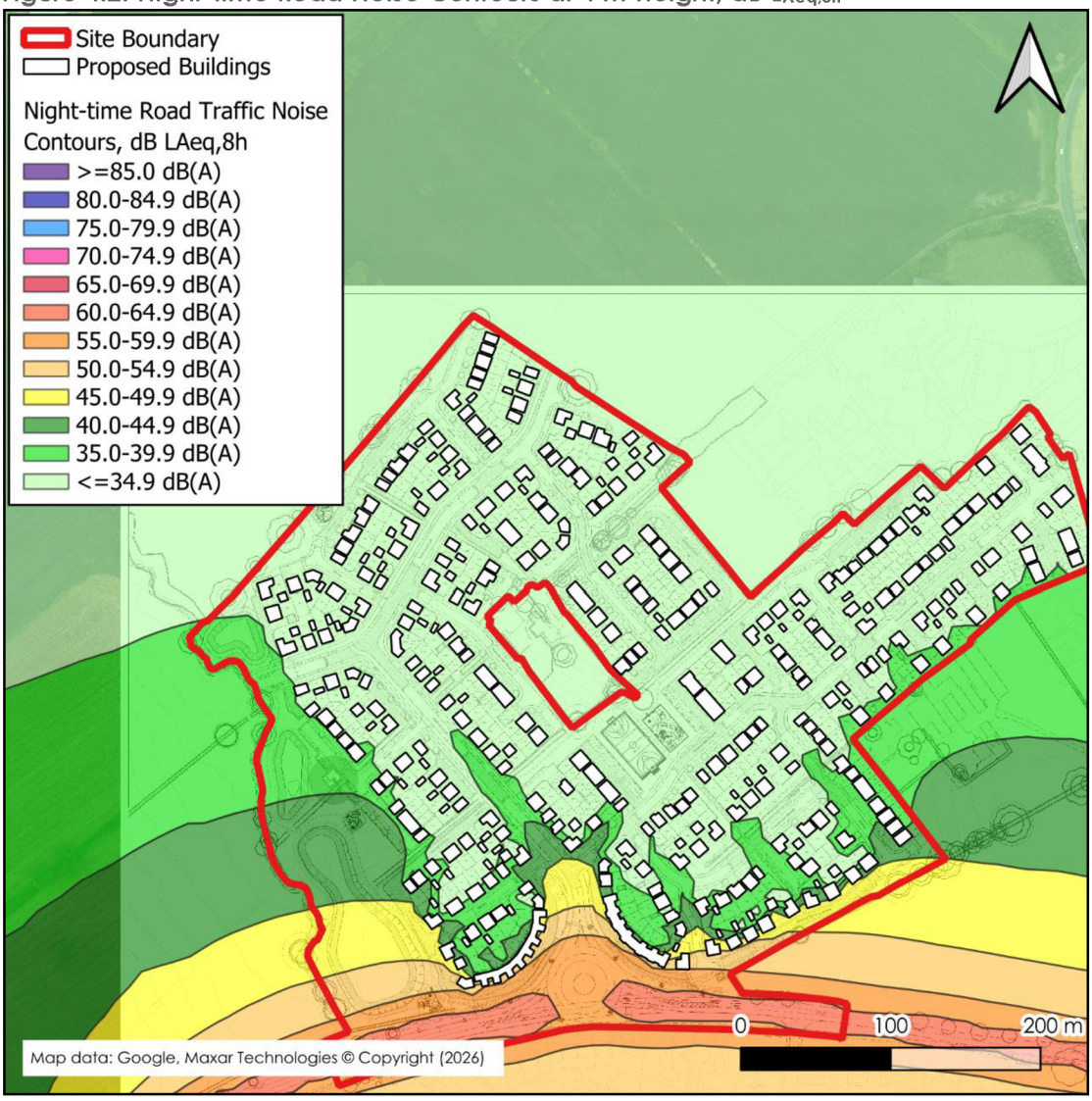


Figure 4.2: Night-time Road Noise Contours at 4 m Height, dB $L_{Aeq,8h}$



4.4 A maximum noise level of 74 dB L_{AFmax} has been used in the assessment for dwellings closest to the road, where the measurement position was a similar distance from the road as the proposed worst-case dwellings. For dwellings further back into the site, L_{AFmax} has been calculated based on propagation from a point source.

External Daytime Noise Levels

4.5 Due to the acoustic screening provided by proposed intervening buildings, the model calculates that in all instances external garden amenity areas will, in all cases, be lower than 55 dB $L_{Aeq,16h}$ and in the vast majority of cases will be lower than 50 $L_{Aeq,16h}$. These levels are considered acceptable based on BS 8233 guidelines.

Internal Noise Levels

4.6 The results of the noise modelling and calculations indicate noise levels at the worst affected receptors of 62 dB $L_{Aeq,16h}$ and 56 dB $L_{Aeq,8h}$ for daytime and night-time, respectively. The night-time L_{AFmax} noise level is 74 dB.

4.7 Assuming a 15 dB loss through a partially opened window, this would result in internal noise levels of 47 dB $L_{Aeq,16h}$ and 41 dB $L_{Aeq,8h}$ for daytime and night-time, respectively. A partially opened window would also result in an internal noise level of 60 dB L_{AFmax} during the night-time. Therefore, the criteria of 35 dB for the daytime and 30 dB and 45 dB $L_{AF,max}$ for the night-time, are likely to be exceeded/met, assuming partially opened windows. Consideration has been given to mitigation in Section 5.

Noise from Farm Operations

4.8 Consideration has been given to potential noise impacts from the existing farm situated within the centre of the Site, which is served by an access road extending to the north-east boundary.

4.9 From a review of available information, the farm appears to be solely arable farming and therefore likely to operate on a seasonal basis. As the baseline noise survey was undertaken during the winter months, operations at the farm were not considered to be typical.

4.10 To inform the assessment, measured library data of similar operations have been considered. Given the nature of the operations, it is considered likely that the most dominant source of noise will be from vehicle movements within the farm and along the access road. Tractor movements have therefore been considered for both the daytime and night-time periods.

4.11 In the absence of specific noise measurements, data for a tractor pass-by is included in **Table 4.1** which is considered to be representative of a tractor travelling along the Site access road.

Table 4.1: Summary of Historic Pass-by Noise Data Used in Assessment

Source	BS 5228 Ref	Pass by at 10m, dB $L_{AF,max}$
Tractor towing trailer	C.4, item 75	79

4.12 The noise levels from a tractor passby has been calculated using the *Method for mobile plant using a regular well-defined route (e.g. haul roads)* from BS 5228-1:2019+A1:2014[1], which is shown below:

$SWL = L_{Amax@10m} + 28$

4.13 In calculating the level of noise produced by tractor pass-bys on the site access road, two tractor movements have been assumed and vehicle speed of 10mph (16kmph) have been accounted for. The following equation has been used:

$$L_{Aeq,1hr} = L_{WA} - 33 + 10\log_{10} Q - 10\log_{10} V - 10\log_{10} (d)$$ (BS5228-1:2009+A1:2014(F.6)).

Where:

[1] British Standards Institute (2014), British Standard (BS) 5228-1:2009+A1:2014 – Code of practice for noise and vibration control on construction and open sites. Part 1: Noise

L_{WA} sound power level of the plant;

Q number of vehicles per hour; and

V average vehicle speed in km/h.

d distance in m.

4.14 **Table 4.2** calculates the level of noise from the farm access road as per the calculation detailed in BS 5228-1:2009+A1:2014. The sound power level used in equation F.6 has been derived from the sound pressure level in **Table 4.1**.

Table 4.2: Calculation of Noise Level from the Access Road

Period	L_{WA}	Number of vehicles per hour period	Average vehicle speed in km/h	Sound pressure level of access road at 9m $L_{Aeq,1hr}$
Day	107	2	16	55

4.15 Based on the worst-case dwelling distance of 9m from the access road, the above indicates that at worst, this would achieve the recommended upper guideline threshold of 55 dB $L_{Aeq,T}$ in line with BS 8233.

4.16 Assuming a 15 dB loss through a partially opened window, this would result in internal levels of 40 dB $L_{Aeq,1h}$ for daytime and night-time periods, the criteria of 35 dB for the daytime and 30 dB for the night-time, are likely to be exceeded, assuming partially opened windows. This represents a worst-case scenario, where the farm access road is not likely to be used continuously.

4.17 A partially opened window would also result in an internal level of 64 dB L_{AFmax} during the night-time which would exceed the criteria of 45dB L_{AFmax}. However, given that this criterion should not be exceeded more than 10-15 times per night, and vehicle pass-bys will likely be the only dominant source within the site itself, it is considered unlikely that there would be more than 15 pass-bys during the night-time period. Therefore, the predicted L_{AFmax} level is considered to be acceptable.

4.18 Consideration will be given to mitigation of farm access road noise in Section 5.

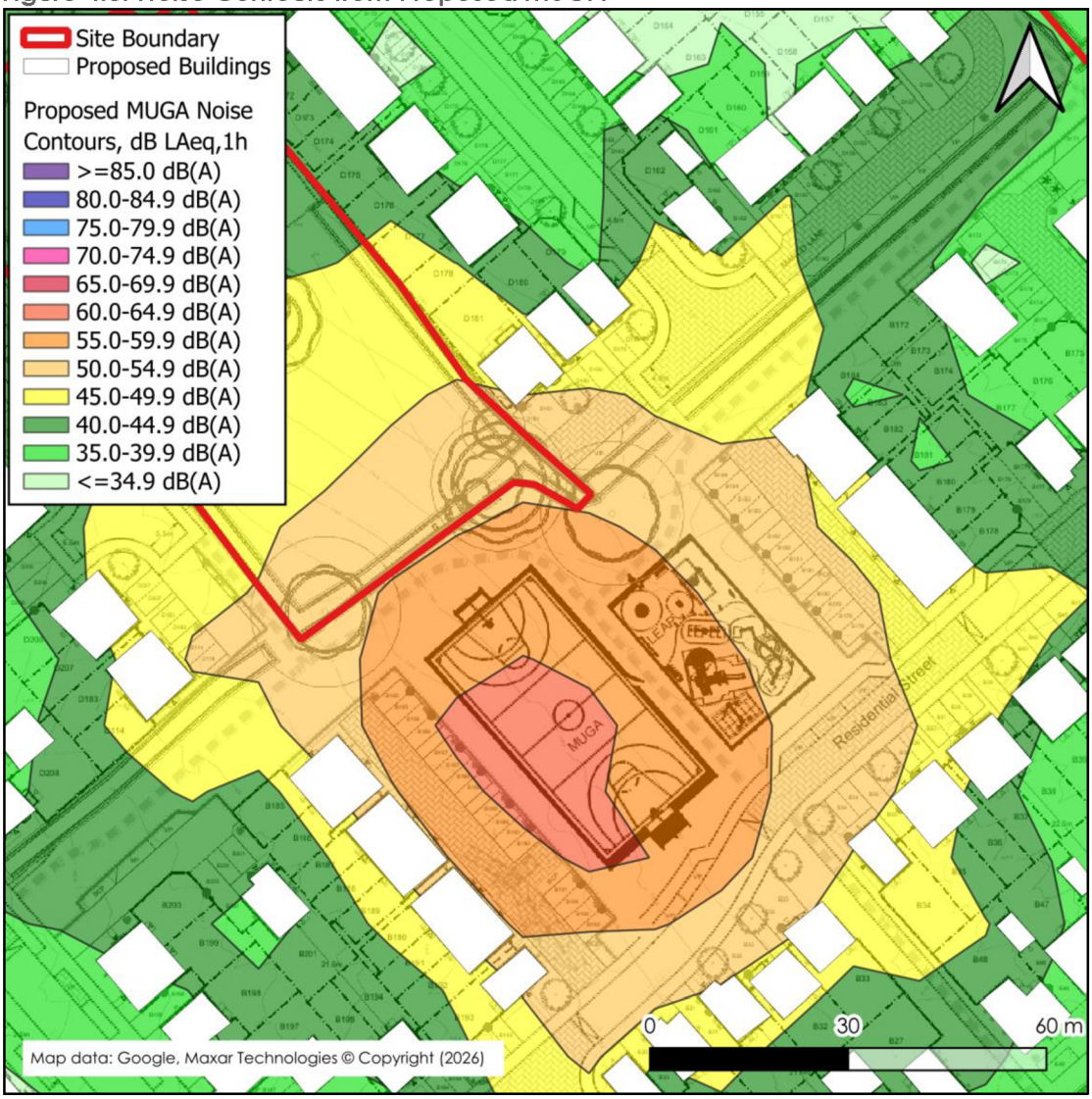
Noise from the Proposed Sports Pitches

4.19 An assessment has been undertaken to determine the potential noise levels generated by the proposed MUGA at existing and proposed residential receptors. Reference has been made to available assessment guidance set out in Sports England AGP Acoustics Note to estimate likely noise levels associated with the proposed MUGA.

4.20 The Sports England AGP Acoustics Note document has been compiled to enable assessment of artificial grass pitches and presents reference assessment data based on empirical measurements of sports sessions. It sets out a reference assessment level of 58 dB $L_{Aeq,1hr}$ taken at 10 m from the sideline halfway marking of a pitch as the representative worst-case source level for use in assessing noise propagation from these types of activities.

4.21 The proposed MUGA has been included in the noise model as an area source at 1.5m height, calibrated to a sound pressure level of 58 dB $L_{Aeq,T}$ at 10 m from the half way line in accordance with AGP guidance. The resultant noise contours are shown below in **Figure 4.3.**

Figure 4.3: Noise Contours from Proposed MUGA



4.22 It is considered that the façades of the nearest plots could be exposed to noise levels in the region of 55 dB $L_{Aeq,1hr}$ based on the noise contours shown in **Figure 4.3**.

4.23 Assuming a 15 dB loss through a partially opened window, this would result in an internal noise level of 40 dB $L_{Aeq,16h}$ for the daytime. Therefore, the criteria of 35 dB $L_{Aeq,16h}$ for the daytime is expected to be exceeded at proposed dwellings closest to the sports pitches and further consideration to mitigation is warranted.

Overheating

4.24 Consideration has been given to the balance between habitable noise levels within internal spaces and thermal comfort. This assessment is based on guidance set out in

ADO, the ANC "Approved Document O Noise Guide" and the predicted noise levels at the facades of proposed receptors.

4.25 As this is a moderate risk location as defined in ADO, the resulting outside-to-inside level difference for window openings necessary to satisfy the simplified method of ADO is expected to be 10 dB in line with the guidance in the ANC "Approved Document O Noise Guide".

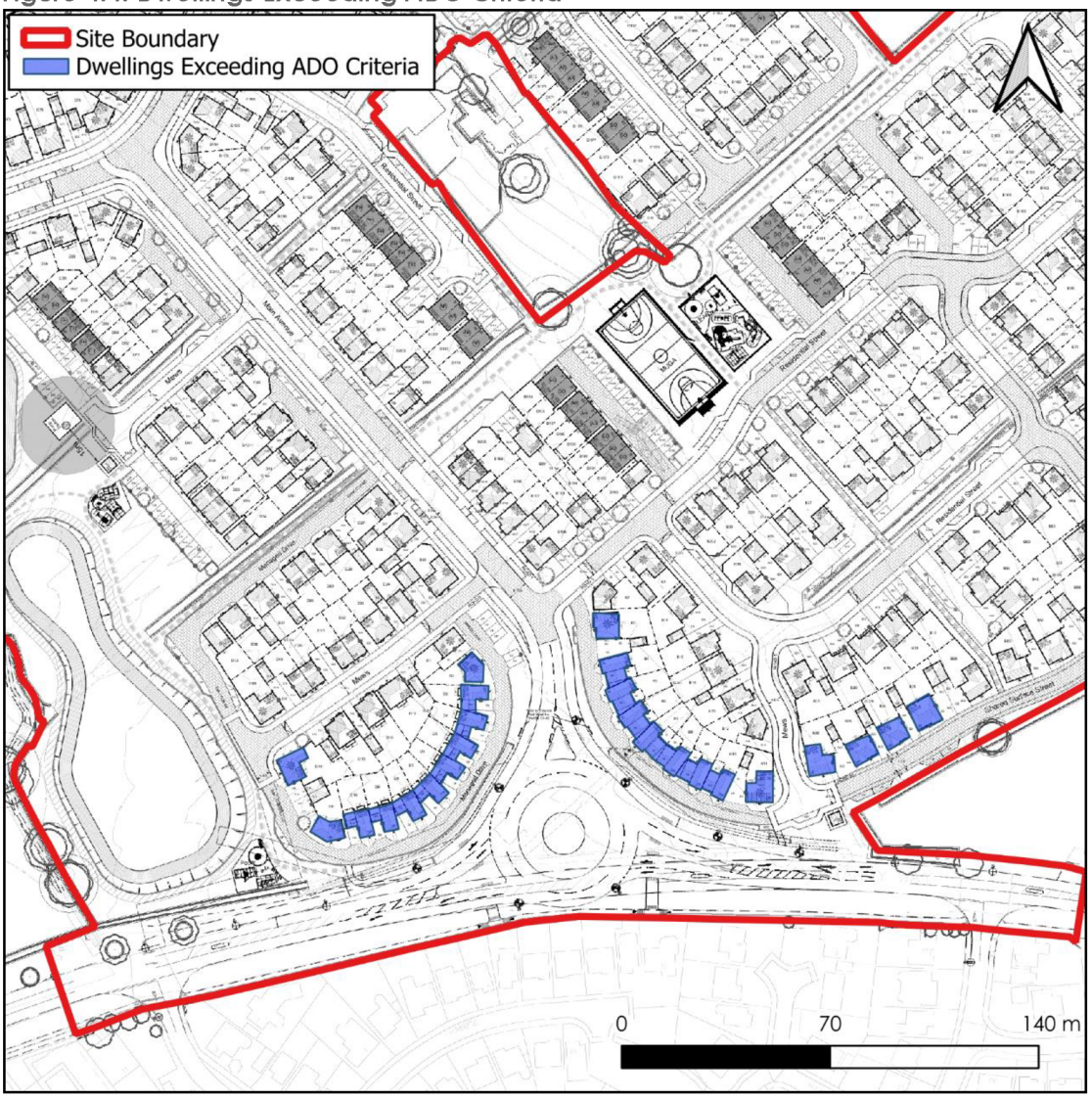
4.26 Therefore, to show the adopted criteria as stated in Approved Document O is achieved using the simplified method, the noise level at the facade of proposed properties should not exceed the following during night-time:

a. 50 dB $L_{Aeq,T}$, averaged over 8 hours (between 11pm and 7am).
b. 65 dB L_{AFmax}, more than 10 times a night (between 11pm and 7am)."

4.27 Based on the predicted road noise levels, these criteria are exceeded at some dwellings. **Figure 4.4** shows the proposed dwellings which are expected to exceed the criteria given in ADO and the ANC Approved Document O Noise Guide.

4.28 It should be noted that farm access road noise levels are not expected to exceed ADO criteria at the nearest receptors, where the access road is not expected to operate continuously through the night.

Figure 4.4: Dwellings Exceeding ADO Criteria



4.29 For proposed dwellings indicated with red hatch in **Figure 4.4**, the simplified method cannot be applied due to the influence of external noise. Consequently, dynamic thermal modelling, following the procedures of CIBSE TM59, is required to assess the risk of overheating under realistic occupancy and environmental conditions. As part of this assessment, the equivalent openable window areas necessary to mitigate overheating will be identified. These window areas can then inform an internal noise assessment, allowing comparison with the ADO acoustic criteria.

4.30 For proposed dwellings not highlighted in **Figure 4.4**, the internal noise criteria for ADO are met. Openable windows could be a viable strategy for mitigating overheating without compromising the internal acoustic environment. However, confirmation of the overheating strategy requires completion of a TM59 assessment.

5. MITIGATION

5.1 In **Section 4**, it has been determined that consideration should be given to mitigation measures to protect the amenity of sensitive receptors associated with the proposed development.

Internal Noise Levels – Road and Farm Noise

5.2 In order to assess the noise mitigation required to ensure an adequate level of protection against noise, it is appropriate to explore in the first instance the protection that could be afforded by the sound insulation performance of the external building fabric, and in particular the glazing elements.

5.3 Detailed noise break-in calculations have been undertaken in accordance with the rigorous method from section G.2 from BS 8233 based on the frequency spectra measured on Site and the following assumed dimensions and assumptions;

- Room dimensions of 3m (width) x 3 m (depth) x 2.5 m (height);
- Double glazed window dimensions of 1.8 m (width) x 1.2 m (height);
- External building fabric elements shall achieve a sound reduction performance of at least $R_w + C_{tr}$ 48 dB;
- A reverberation time of 0.5 seconds; and
- Assumed ventilator(s) provide an equivalent area of 8000 mm^2 per habitable room, in accordance with Approved Document F.

5.4 To achieve the daytime internal noise criterion of 35 dB $L_{Aeq,16h}$ adopted for this assessment, based on the façade closest to Normandy Way experiencing 62 dB $L_{Aeq,16h}$ free-field at the facade, a reduction of 27 dB would be required for habitable rooms. To achieve the internal criteria of 30 dB $L_{Aeq,8h}$ and 45 dB L_{AFmax} during the night-time, adopted for this assessment, a reduction of up to 29 dB would be required for habitable rooms.

5.5 The ventilation required for each dwelling is shown in **Figure 5.1** with the details of the glazing and ventilation in **Table 5.1**.

Figure 5.1: Glazing and Ventilation Requirements

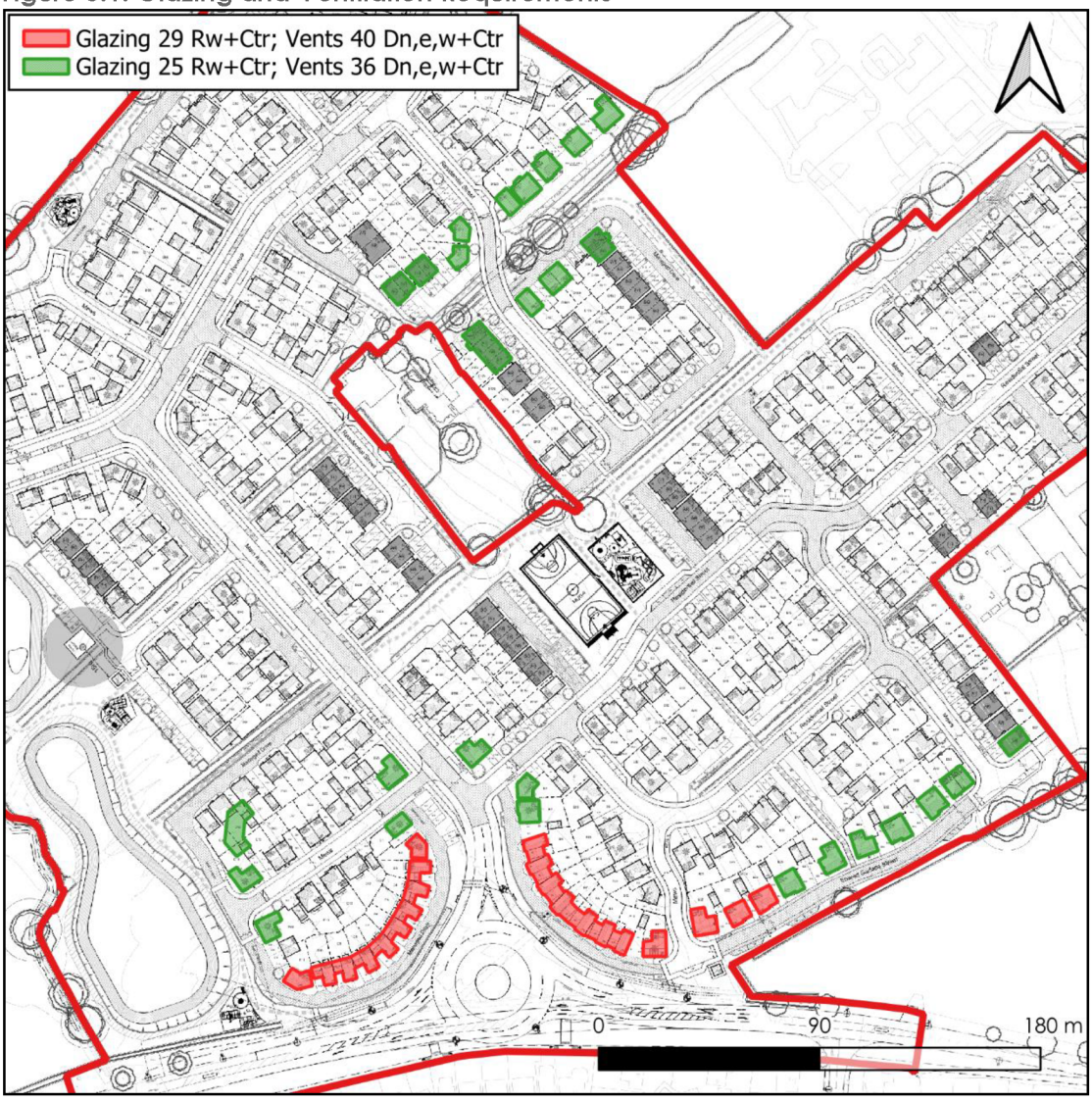


Table 5.1: Example Glazing and Ventilation Requirements

Colour	Example Glazing	$R_w + C_{tr}$	Example Ventilation	$D_{n,e,w} + C_{tr}$	Equivalent Area and Number of Ventilators
Red	8 mm / (6-16mm) / 4 mm double glazing	29	Greenwood 2500EA + 1 Acoustic Set	40	Assumed 3no. ventilators are required to meet 8000mm²
Green	4 mm / (6-16mm) / 4 mm double glazing	25	Greenwood 2500EA	36	

5.6 For dwellings that are located further back into the Site that benefit from screening provided by the development itself, shown with no colour indicator on **Figure 5.1**, it is likely that standard double glazing and hit and miss ventilators will be sufficient to mitigate noise to acceptable levels.

5.7 The octave band sound reduction index levels for the specified glazing and ventilation is provided in **Tables 5.2 and 5.3** below.

Table 5.2: Advised Glazing Specification

Product	Octave Band Sound Reduction (SRI) (L_{eq} dB)								$R_w + C_{tr}$
	63 Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz	
8 mm / (6-16mm) / 4 mm double glazing	18	22	21	28	38	40	47	52	**29**
4 mm / (6-16mm) / 4 mm double glazing	17	21	17	25	35	37	31	36	**25**

Table 5.3: Advised Ventilation Specification

Product	Octave Band Level Difference for Ventilators (L_{eq} dB)								$D_{n,e,w} + C_{tr}$
	63 Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz	
Greenwood 2500EA + 1 Acoustic Set	32	41	39	36	42	44	45	45	**40**
Greenwood 2500EA	39	45	44	40	35	34	38	38	**36**

5.8 The above presents solutions to satisfy the proposed internal ambient noise limits within habitable room during normal ventilation conditions.

5.9 **Table 5.4** shows the resultant internal noise levels in the worst affected rooms and demonstrates that BS 8233 and WHO guidance can be met subject to implementation of the mitigation recommended in this section.

Table 5.4: Predicted External and Internal Noise Levels with Mitigation, dB

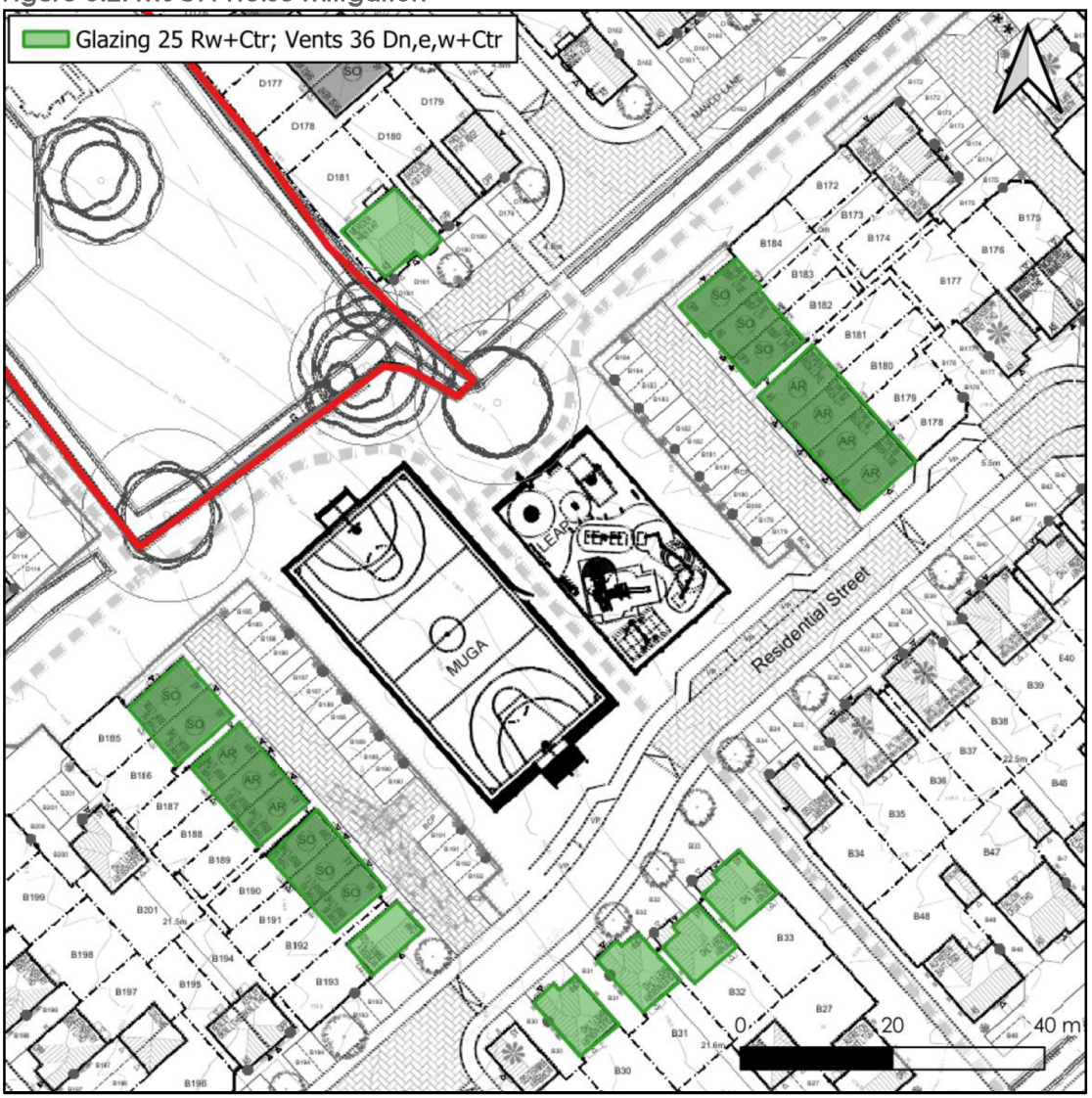
Dwelling Category	Highest Predicted External Noise Level, Free-field, dB			Resultant Internal Noise Level, dB		
	$L_{Aeq,16h}$	$L_{Aeq,8h}$	L_{AFmax}	$L_{Aeq,16h}$	$L_{Aeq,8h}$	L_{AFmax}
Red	62	56	74	34	28	45
Green	57	51	69	33	27	45
No indicator	Facades with no colour indicator achieve recommended internal noise levels with standard double glazing and hit and miss ventilators					

MUGA Mitigation

5.10 The assessment in Section 4 has identified that noise from the unmitigated MUGA is expected to exceed AGP guidance noise levels at the nearest receptors. As such, mitigation options have been explored.

5.11 It is recommended that noise can be suitably mitigated using the 'green' glazing and ventilation strategy on affected dwellings. Figure 5.2 shows dwellings where 25 dB $R_W + C_{tr}$ glazing and 36 dB $D_{n,e,w} + C_{tr}$ vents are required.

Figure 5.2: MUGA Noise Mitigation



6. CONCLUSIONS

6.1 A baseline noise survey was undertaken to inform the outline application in January 2022 and has been used for the basis of the subsequent assessment. A detailed noise assessment has been undertaken in accordance with current standards and guidance; and a condition enforced by Hinckley and Bosworth Borough Council.

6.2 Predictive noise modelling has demonstrated that all private garden areas are expected to achieve the upper guideline level of 55 dB $L_{Aeq,16h}$ in accordance with BS 8233. Therefore, mitigation will not be required to reduce noise levels in outdoor living areas of any dwelling.

6.3 The assessment shows that with appropriate noise mitigation measures including the provision of appropriate glazing and ventilation strategies, noise break-in from road and farm noise can be adequately controlled in accordance with BS 8233 guidance.

6.4 Noise from the unmitigated MUGA is expected to exceed AGP guidance noise levels at the nearest receptors. Mitigation has been recommended in the form of a suitable glazing and ventilation strategy for affected dwellings.

6.5 An assessment of overheating has found that some dwellings are expected to exceed the criteria given in Approved Document O. For these dwellings, the simplified method cannot be applied due to the influence of external noise. Consequently, dynamic thermal modelling, following the procedures of CIBSE TM59, is required to assess the risk of overheating under realistic occupancy and environmental conditions.

APPENDICES

APPENDIX A: Glossary of Acoustic Terms

Noise

Noise is defined as unwanted sound. Human ears are able to respond to sound in the frequency range 20 Hz (deep bass) to 20,000 Hz (high treble) and over the audible range of 0 dB (the threshold of perception) to 140 dB (the threshold of pain). The ear does not respond equally to different frequencies of the same magnitude but is more responsive to mid-frequencies than to lower or higher frequencies. To quantify noise in a manner that approximates the response of the human ear, a weighting mechanism is used. This reduces the importance of lower and higher frequencies, in a similar manner to the human ear.

Furthermore, the perception of noise may be determined by a number of other factors, which may not necessarily be acoustic. In general, the impact of noise depends upon its level, the margin by which it exceeds the background level, its character and its variation over a given period of time. In some cases, the time of day and other acoustic features such as tonality or impulsiveness may be important, as may the disposition of the affected individual. Any assessment of noise should give due consideration to all of these factors when assessing the significance of a noise source.

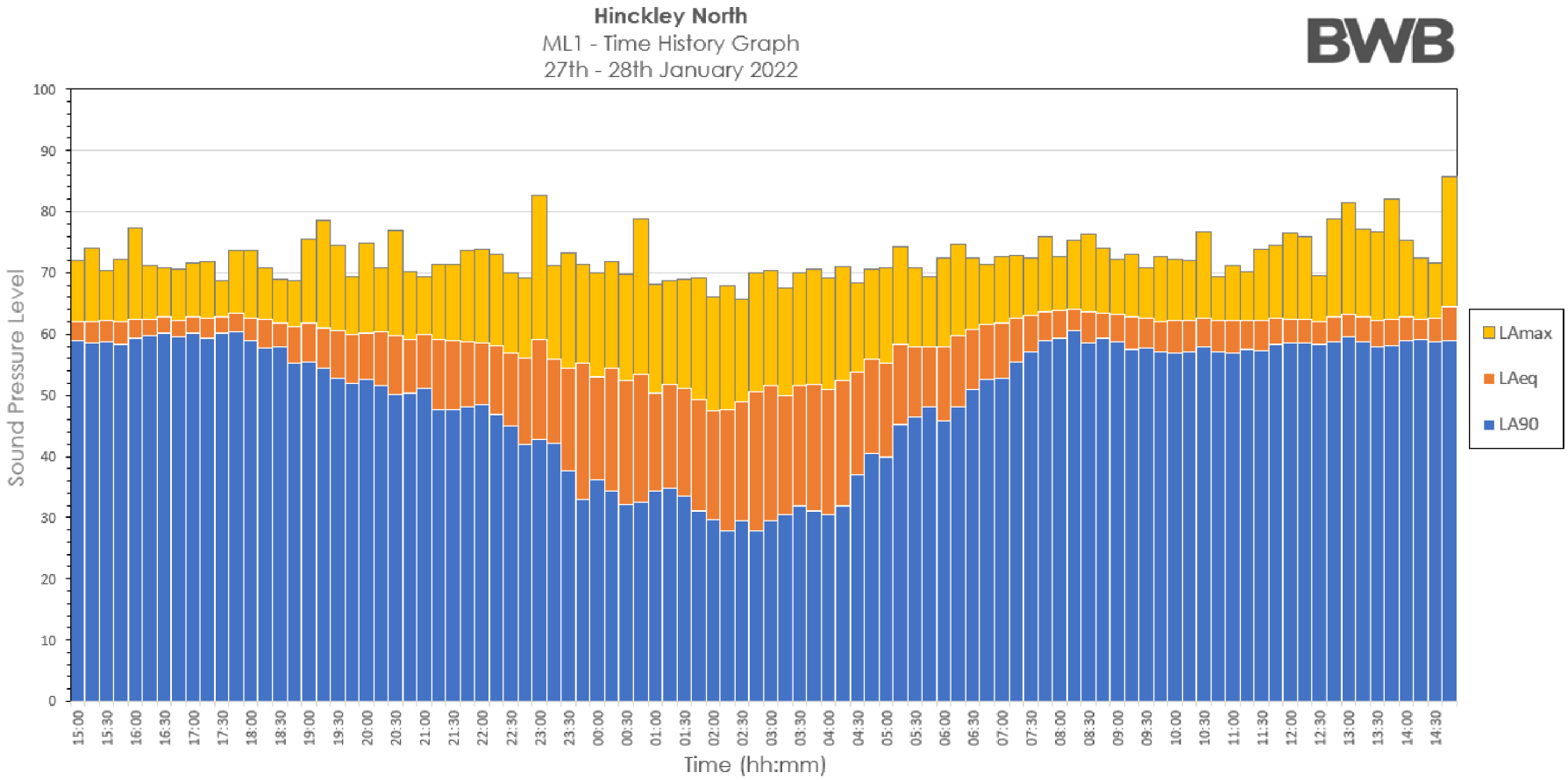
The most widely used weighting mechanism that best corresponds to the response of the human ear is the 'A'-weighting scale. This is widely used for environmental noise measurement, and the levels are denoted as dB(A) or L_{Aeq}, L_{A90} etc., according to the parameter being measured.

The decibel scale is logarithmic rather than linear, and hence a 3 dB increase in sound level represents a doubling of the sound energy present. Judgement of sound is subjective, but as a general guide a 10 dB(A) increase can be taken to represent a doubling of loudness, whilst an increase in the order of 3 dB(A) is generally regarded as the minimum difference needed to perceive a change under normal listening conditions.

Acoustic Terminology

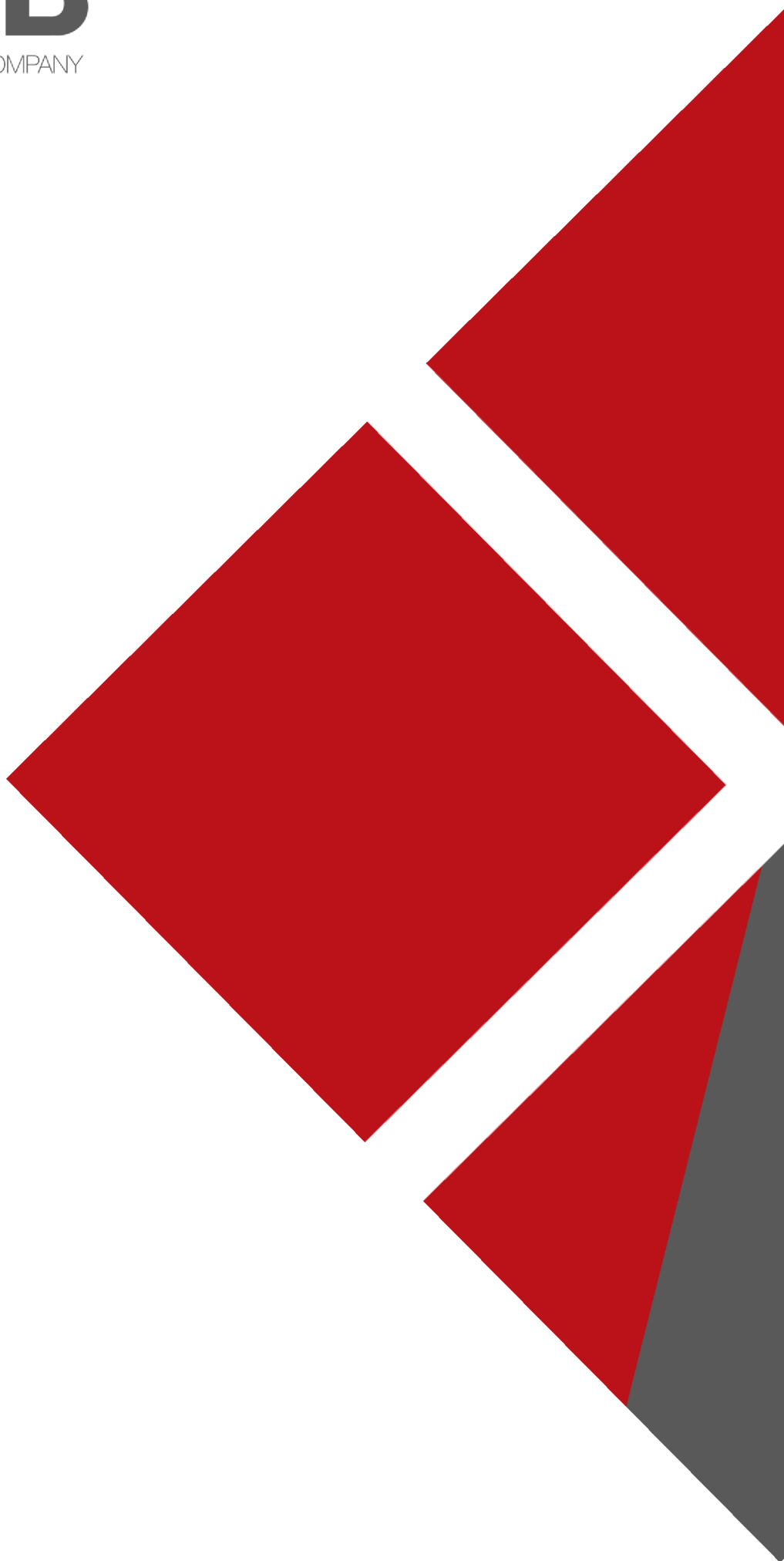
Term	Description
dB (decibel)	The scale on which sound pressure level is expressed. Sound pressure level is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (2x10-5Pa).
dB(A)	A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. 'A' - weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
$L_{Aeq,T}$	L_{Aeq} is defined as the notional steady sound level which, over a stated period of time (T), would contain the same amount of acoustical energy as the A - weighted fluctuating sound measured over that period.
L_{Amax}	L_{Amax} is the maximum A - weighted sound pressure level recorded over the period stated. L_{Amax} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
L_{10} and L_{90}	If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The L_n indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence L_{10} is the level exceeded for 10% of the time, and the L_{90} is the level exceeded for 90% of the time.
Sound Power Level, L_w	logarithm of the ratio of a given sound power to the reference sound power. Such power level in decibels is ten times the logarithm to the base ten of the ratio. unless otherwise specified, the reference sound power is 1 pW. Sound power is the total sound energy radiated by a sound source and measured in watts (W). Sound power level
Free-field Level	A sound field determined at a point away from reflective surfaces other than the ground with no significant contributions due to sound from other reflective surfaces. Generally as measured outside and away from buildings.
Façade Level	A sound field determined at a distance of 1m in front of a large sound reflecting object such as a building façade.
R/R_w	R is the laboratory measurement of the sound insulating properties of a material or building element in a stated frequency band R_w is the weighted Sound Reduction Index a single number quantity which characterises the airborne sound insulation of a material or building element over a range of frequencies, based on laboratory measurements.
D_{ne}/$D_{ne,w}$	D_{ne} is the laboratory measured level difference of a building element which has been normalised to a referenced absorption of $10m^{2.}$ $D_{ne,w}$ is the weighted element-normalised level difference. This is a single number quantity which characterises the airborne sound insulation of a building element over a range of frequencies, based on laboratory measurements.
C_{tr}	Spectrum Adaptation Terms (C and C_{tr}) the single number rating method defined in BS EN ISO 717 uses a standard reference curve to determine the weighted value of airborne sound insulation. The spectrum adaptation term C_{tr} is used to take into urban traffic noise.

APPENDIX B: Noise Survey Data


Hinckley North
ML1 - Time History Graph
27th - 28th January 2022
Sound Pressure Level
Time (hh:mm)
LAmax
LAeq
LA90

BWB

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