



**BECK HOMES (UK) LIMITED
PROPOSED RESIDENTIAL
REDEVELOPMENT
STATION ROAD, ASHWELL**

NOISE IMPACT ASSESSMENT

29TH SEPTEMBER 2025



the journey is the reward

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1 Introduction

- 1.1 Mayer Brown Ltd has been instructed by Beck Homes (UK) Limited to prepare a noise impact assessment to accompany their planning application for a proposed residential development at the site located at Station Road, Ashwell. The proposed development site falls within the jurisdiction of North Hertfordshire District Council (NHDC).
- 1.2 An environmental sound survey was undertaken on site to establish the acoustic baseline conditions. The results of the survey were used to build a 3D model to predict sound levels across the site.
- 1.3 A noise impact assessment for the proposed residential units was undertaken based on the predicted façade incident sound levels and relevant guidance.
- 1.4 Plant limits were set for the external plant based on the measured background sound levels.
- 1.5 Please note that any advice within this report is in relation to acoustics only and should, as such be subject to review/evaluation by other relevant disciplines as necessary.
- 1.6 A glossary of the acoustic terminology used in this report is presented at **Appendix A**.

2 Planning Policy, Standards and Guidance

National Planning Policy

2.1 The overarching national planning policies relevant to this type of development include:

- National Planning Policy Framework (NPPF)¹;
- Noise Policy Statement for England (NPSE)², and
- Planning Practice Guidance – Noise (PPG-N)³.

2.2 Further details are provided in **Appendix B**.

National Design Guidance

2.3 The overarching national design guidance relevant to this type of development includes:

- BS 8233:2014 “*Guidance on sound reduction for buildings*”⁴;
- ProPG: Planning & Noise, New Residential Development, May 2017⁵
- BS 4142:2014+A1:2019 “*Methods for rating and assessing industrial and commercial sound*”⁶.

2.4 Further details are provided in **Appendix B**.

Regional and Local Planning Policy

2.5 The overarching regional and local planning policy relevant to this type of development include:

- North Hertfordshire Local Plan 2011 - 2031 (adopted November 2022).

2.6 Further details are provided in **Appendix B**.

¹ Ministry of Housing, Communities & Local Government. *National Planning Policy Framework: HSMO*. July 2018. Rev. December 2024

² Department for the Environment, Food and Rural Affairs. *Noise Policy Statement for England*. Defra. 2010.

³ Department for Communities and Local Government. *National Planning Practice Guidance*

⁴ British Standards Institution (2014) *British Standard 8233:2014 “Guidance on sound reduction for buildings”*, February 2014, BSI.

⁵ *Professional Practice Guidance on Planning and Noise (ProPG: Planning & Noise) – New Residential Development*, May 2017. Association of Noise Consultants (ANC).

⁶ British Standards Institution (2029) *British Standard 4142:2014+A1:2019 “Methods for Rating and Assessing Industrial and Commercial Sound”*, June 2019, BSI.

3 Site Description

Site Location

- 3.1 The proposed development is bounded by Station Road to the south and southwest, by Small Gains Lane to the northwest, by the ongoing Senuna park development directly to the west and by undeveloped land to the north, east and south. Ashwell is located ca 850 m to the northwest. The approximate site location can be seen in **Figure 3.1** below.
- 3.2 Small Gains Lane provides access to an area that is understood to be leased by Ashwell Parish Council, which includes allotments, Small Gains sports field and an associated car parking area. A sports field to the north is understood to be leased to Ashwell Academicals Football Club. Further north is Ashridge Farm Caravan Club Site campsite.



Figure 3.1: Site Location in Relation to Local Highway Network

- 3.3 The proposed development site is approximately 20 km northeast of Luton Airport and 20 km northwest of Stansted Airport. The location of the site in relation to these airports is shown in **Figure 3.2** below.
- 3.4 The proposed development site falls outside of the 57 dB L_{Aeq} 16hours/ 48 dB L_{Aeq} 8hours Luton airport contour based on current daytime/night-time noise contour maps⁷.
- 3.5 Similarly, the proposed development site falls outside of the 51 dB L_{Aeq} 16hours/ 45 dB L_{Aeq} 8hours Stansted airport contour based on current daytime/night-time noise contour maps⁸.



Figure 3.2: Site Location in Relation to Luton and Stansted Airport

Potential Noise Sources

- 3.6 The main existing noise source that is expected to affect the proposed development is road traffic on the surrounding road network, primarily on Station Road.
- 3.7 The main future noise source associated with the operation of the proposed development will be plant related to the proposed buildings. The additional road traffic flows that will be generated due to the proposed development are expected to be minor, and thus their contribution to the future noise conditions can be considered negligible.
- 3.8 Also, noise associated with activities at the existing Ashwell Small Gains Playing Field has the potential to affect the building facades that are proposed to be located towards the north boundary of the site.
- 3.9 Based on the available information in the planning portal, there appears to be no planning application in the vicinity of the proposed development that could introduce future noise sources in the site's surrounding area.

⁷ Noise Control Scheme London Luton Airport, August 2015.

⁸ Noise Exposure Contours for Stansted Airport 2023, ERCD REPORT 2403, 2024.

Noise and Vibration Sensitive Receptors

- 3.10 The identified existing noise sensitive receptors (NSRs) at the vicinity of the proposed development are:
- **NSR A:** the residential receptors off Ashwell Street, which lie at approximately 210 m to the northwest of the site boundary;
 - **NSR B:** the residential receptors along Station Road, which lie at approximately 180 m to the west of the site boundary;
 - **NSR C:** the residential receptors along Station Road at approximately 200 m to the southeast of the site boundary, and
 - **NSR D:** the residential receptors of the ongoing Senuna park development, directly to the west of the site boundary.
- 3.11 The identified NSRs, which this assessment intends to consider are shown in **Figure 3.3** below.
- 3.12 Based on the available information in the planning portal, there appears to be no planning application in the vicinity of the proposed development that could introduce future noise sensitive receptors in the site's surrounding area.



Figure 3.3: Approximate site location, NSRs and monitoring locations

Proposed Development

- 3.13 The development proposal is for the erection of 36 residential dwellings.
- 3.14 The general arrangement (GA) drawings for each building are given in **Appendix C**.
- 3.15 It is understood that currently Air Source Heat Pumps (ASHPs) are being considered for the dwellings. Extract ventilation would be provided to bathrooms, utility spaces and kitchens.
- 3.16 With regards to the dwellings' ventilation, it is understood that natural ventilation is considered for the scheme.

4 Baseline Environmental Sound Survey

Survey Locations

- 4.1 A baseline sound survey has been undertaken to establish the baseline sound levels of the site and inform the noise impact assessment.
- 4.2 One long-term (LT) sound monitor was left within the site boundary, between Thursday 19th June and Thursday 26th June 2025 at location LT1 shown in **Figure 4.1**.
- 4.3 It should be noted that as construction works were undertaken at the ongoing adjacent Senuna Park development site during part of the survey. The affected data were excluded from the data processing.



Figure 4.1: Sound Monitoring Locations

- 4.4 Location LT1 was near the southwest boundary of the site, approximately 8 m from the edge of Station Road. The purpose of this long-term monitor was to capture the baseline sound levels of the development site. It is expected to be suitably representative of the general area and in specific the development site.
- 4.5 The microphone was mounted on a tripod at approximately 1.5 m above ground level in a free-field position (i.e., at least 3.5 m from any reflecting surface, excluding the ground), using an appropriate weather windshield at all locations.

- 4.6 The long-term sound level measurement was made using ‘Class 1’ Rion sound level meter (SLM) in accordance with BS 7445-2:1991⁹. The SLM was set up to log the A-weighted broadband sound pressure level (SPL) in 100 ms periods. Levels were post-processed into 15-minute periods.

Instrumentation

- 4.7 Details of the instrumentation used for the survey are provided in **Table 4.1** below. Calibration certificates of the equipment are available upon request. Internal calibration of the equipment was carried out before and after measurements with no significant drift ($< \pm 0.5$ dB) observed.

Equipment	Measurement Location	Make / Model	Serial Number	Calibration Ref / Start / End	Last Calibration Date
Sound level meter	LT1	Svantek 971A SLM	121150	114 dB / 114.4 dB / 114.4 dB	02/09/2024
Calibrator	All locations	Svantek SV33	57563	114dB	01/11/2024

Table 4.1 Instrumentation Details

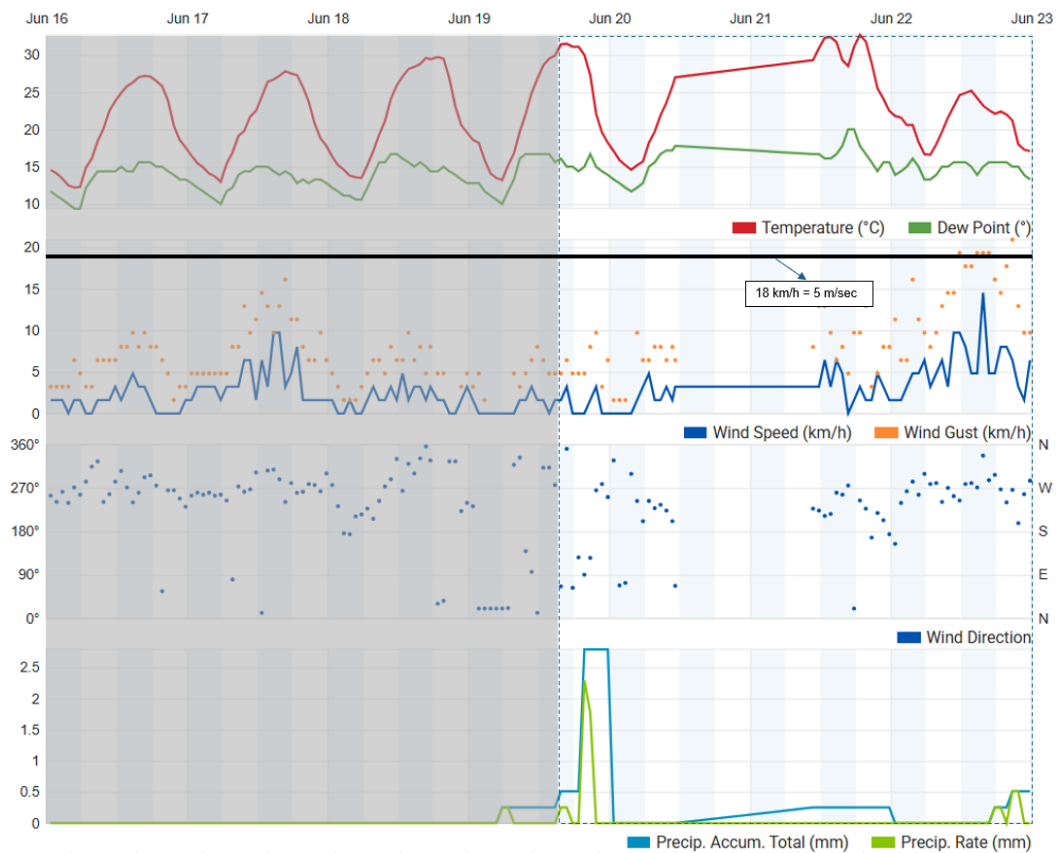
Weather Conditions

- 4.8 Meteorological conditions have been assessed based on the data from a nearby weather station from Weather Underground (*station ID: IBALDOCK6*), located at approximately 1.5 km from the measurement location¹⁰.
- 4.9 The weather data can be seen in **Figure 4.2** below. The areas of the graphs of **Figure 4.2** that appear in grey are outside of the monitoring period and not relevant to this assessment.
- 4.10 During the survey period two rain events occurred. Wind speeds reaching higher than 5 m/s (18 km/h) were not observed.
- 4.11 At the time of setting up the survey, there was no cloud cover and no precipitation. The road surfaces were dry, and the temperature was 28 °C.

⁹ British Standard 7445-2:1991 “Description and measurement of environmental noise – Guide to the acquisition of data pertinent to land use”

¹⁰ A link to the data can be found here: <https://www.wunderground.com/dashboard/pws/IBALDOCK6/graph/2025-06-22/2025-06-22/weekly>

June 16, 2025 - June 22, 2025



June 23, 2025 - June 29, 2025

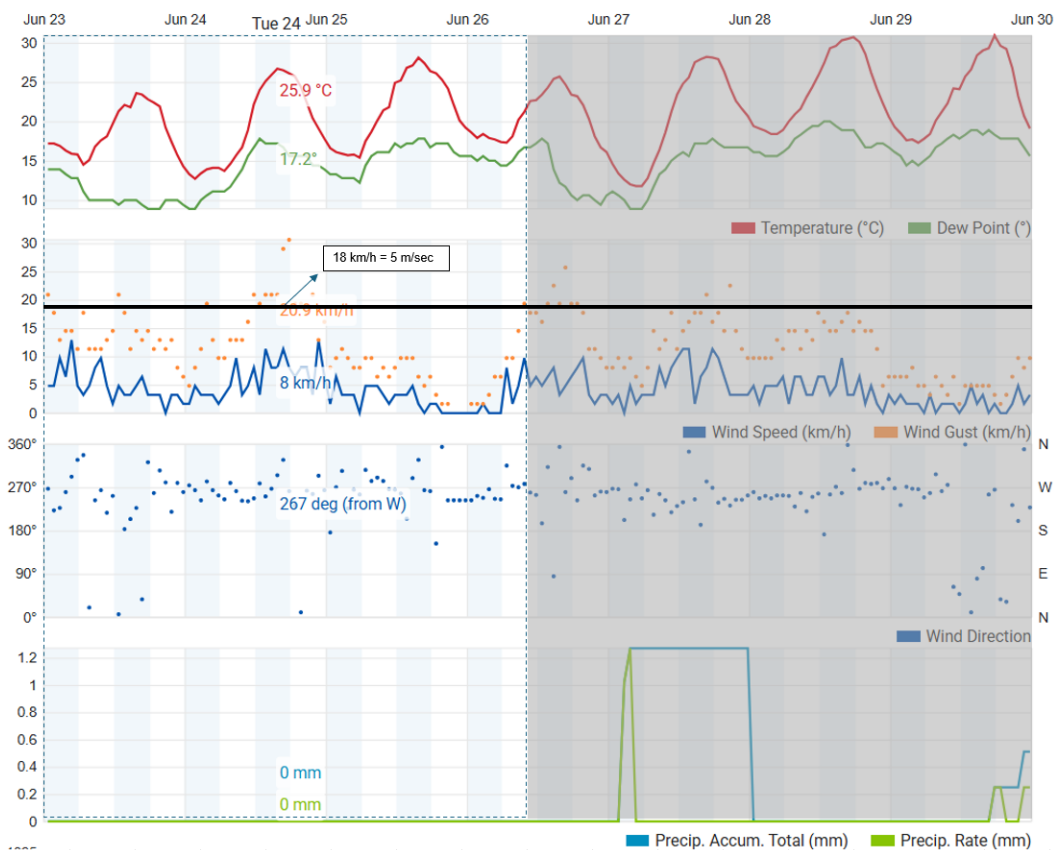


Figure 4.2: Weather data

(<https://www.wunderground.com/dashboard/pws/IBALDOCK6/graph/2025-06-22/2025-06-22/weekly>)

Subjective Description of the Noise Climate

- 4.12 At the time of setting up the survey at location LT1, the sound environment was dominated by construction noise from the phase 1 construction site. Occasional road traffic noise on Station Road was also audible as well as birdsong.

Survey Results

- 4.13 The survey results can be seen in **Table 4.2** below.

Measurement Location	Daytime (07:00-23:00)			Night-time (23:00-07:00)		
	Average $L_{Aeq,16hr}$ (dB)*	Typical $L_{A90,15min}$ (dB)**	90 th percentile $L_{AF,max}$ ***	Average $L_{Aeq,16hr}$ (dB)*	Typical $L_{A90,15min}$ (dB)**	$L_{AF,max, 1min}$ ****
LT1	58	37	79	49	31	75
<i>Notes:</i> <i>All values have been rounded to the nearest whole number, where 0.5 is rounded up.</i> <i>* logarithmic average.</i> <i>** The histograms of the background sound levels for daytime and night-time were used to derive the most frequent, i.e., the typical background sound level.</i> <i>*** The 90th percentile is a statistical measure that indicates the value below which 90% of a dataset falls. This means that only 10% of the $L_{AF,max}$ values are greater than the levels indicated in the table. This statistical measure has been used to identify the higher values of $L_{AF,max}$ during daytime</i> <i>**** Maximum sound pressure level of 10th loudest event during the night-time period (23:00-07:00). These values were used in the noise break-in calculations</i>						

Table 4.2 Sound Survey Results

5 Calculations and Noise Modelling

5.1 In order to obtain a detailed understanding of the propagation of noise across the development site, a computational noise model has been developed using Datakustik CadnaA® noise modelling software. This software implements the “*Calculation of Road Traffic Noise*”¹¹ (CRTN). The model is constructed using the following input data/assumptions.

Parameter	Input / Assumption
Software Version	Datakustik CadnaA, Version 2021 MR2 32-Bit (Build 187.5163)
Calculation Methodology	CRTN (1988)
Validation	Model was calibrated to the sound levels measured at location LT1
Source Height	Road sources were set to the local ground.
Mapping	Basemap CAD file provided by OS free data. Development CAD file data provided by the client.
Topography	Site topography has been provided by the client and free OS map topo data.
Ground Absorption	Semi-hard ground ($G = 0.6$) assumed for all the parts of the study area where residential areas are located. This is because the study area is rural, including plenty of amenity spaces/ soft ground. Any grass/field areas were modelled as soft ground ($G=1$).
Building Heights	On-site building heights taken from CAD file data provided by the client. Heights of surrounding buildings were estimated from site observations and/or street view imagery.
Model Grid	The model grid has been set to a 1 m x 1 m spacing.
Model Output	The model produces “free-field” measurement.

Table 5.1 Noise Model Input and Assumptions

Results

Daytime Noise Model Results

5.2 **Figure 5.1** below presents the predicted daytime ($L_{Aeq,16hour}$) noise levels at the external amenity areas at 1.5 m above local ground.

¹¹ Department of Transport. (1988). “*Calculation of Road Traffic Noise*”. HMSO, London.



Figure 5.1: Daytime Noise Model $L_{Aeq,16hour}$ on external amenity areas, at 1.5 m AG

5.3 **Figure 5.2** below presents modelled daytime ($L_{Aeq,16hour}$) free-field noise levels.



Figure 5.2: Daytime Noise Model $L_{Aeq,16\text{hour}}$

Night-time Noise Model

5.4 **Figure 5.3** presents modelled night-time ($L_{Aeq,8\text{hour}}$) free-field noise levels.



Figure 5.3: Night-time Noise Model $L_{Aeq,8hour}$

Night-time L_{Amax} Noise Model

5.5 **Figure 5.4** presents modelled L_{Amax} night-time free-field noise levels.



Figure 5.4: Night-time Noise Model L_{Amax}

6 Stage 1: Initial Noise Risk Assessment

- 6.1 With reference to **Figure 5.2** to **Figure 5.4**, noise levels are predicted to be up to 58 dB $L_{Aeq,16 \text{ hours}}$ for daytime and up to 49 dB $L_{Aeq,8 \text{ hours}}$ night-time periods. On this basis, the site falls into the low to medium risk category.
- 6.2 For development sites falling into the medium risk category, ProPG recommends carrying out a Stage 2 risk assessment which includes a full acoustic design statement (ADS), which is provided in the following section.

7 Stage 2: Acoustic Design Statement

7.1 With reference to the ProPG, if a Stage 2 assessment is required, planning applications for new residential development, should include evidence that the following have been considered:

1. check the feasibility of relocating, or reducing noise levels from relevant sources;
2. consider options for planning the site or building layout;
3. consider the orientation of proposed building(s);
4. select construction types and methods for meeting building performance requirements;
5. examine the effects of noise control measures on ventilation, fire regulation, health and safety, cost, CDM (construction, design and management) etc;
6. assess the viability of alternative solutions; and
7. assess external amenity area noise.

7.2 The above points are considered in the following sections below.

Mitigating Existing Noise Levels and Design Considerations (Items 1 to 3 above)

7.3 With regards to the feasibility of relocating or reducing noise levels from existing noise sources affecting the proposed development, this will not be possible as the dominant noise source affecting the site is road traffic on Station Road.

7.4 The current buildings' orientation ensures that some noise screening is provided to any facades facing away from the main roads.

Internal Noise Levels (Item 4 above) – Windows Closed

7.5 With reference to **Table 3.1**, the guidance in BS 8233:2014 proposes that the external building fabric for residential dwellings be designed such that a minimum steady-state internal daytime noise level of 35 dB $L_{Aeq, 16hr}$ and a night-time level of 30 dB $L_{Aeq, 8hr}$ can be achieved within habitable rooms.

7.6 Furthermore, with reference to the ProPG, it is recommended that individual internal noise events do not normally exceed 45 dB L_{AFmax} more than ten times a night.

7.7 In order to achieve these ProPG criteria for each façade, the ventilation strategy, glazing and cladding should be designed to achieve the appropriate minimum performance standards for internal noise levels.

- 7.8 The façades of the proposed development will be exposed to noise levels up to 58 dB $L_{Aeq, 16 \text{ hours}}$ during daytime, up to 49 dB $L_{Aeq, 8 \text{ hours}}$ during night-time and to maximum noise levels up to 74 dB L_{Amax} during night-time.

External Wall Construction

- 7.9 Noise intrusion into buildings is normally determined by the acoustic performance of the windows and ventilators, since these represent the “weakest” elements acoustically. For preliminary calculation purposes, it is assumed that a “solid” external wall construction will maintain the following minimum apparent sound reduction indices.

Apparent Sound Reduction Index, dB					
125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz
30	35	40	45	50	50

Table 7.1 Estimated Apparent SRI for Solid External Walls Elements

- 7.10 The above performance values should be achievable with a standard cavity brick/block wall construction or similar. It therefore provides a robust assessment basis for identifying the likely acoustic performance requirements of windows and feasibility of maintaining an appropriate level of sound insulation with windows closed.

Room Acoustic Conditions

- 7.11 As noted earlier, noise intrusion into flats/houses will also be partially determined by the internal room finishes, which will determine the reverberation times within the building. For this assessment, a reverberation time of 0.5 seconds has been assumed for all rooms, in line with the standardised reverberation time implemented in Approved Document E of the Building Regulations 2010 (as amended).

Ventilation and Glazing Requirements

- 7.12 For all habitable rooms of Plot 1 to 4, directly facing or near Station Road, an acoustic ventilator with no less than 42 dB $D_{n,e,w}$ (equivalent area of 2500 mm²) and standard double glazing with performance of at least 30 dB R_w+C_{tr} will be required to achieve the required level of attenuation.
- 7.13 For the rest of the facades, a standard non-acoustic trickle ventilator and standard double glazing with a sound insulation performance of at least 29 dB R_w+C_{tr} will be required to achieve the necessary level of attenuation.
- 7.14 The external walls and any internal wall linings will need to be designed to ensure that the glazing sound insulation is not undermined. This typically requires a sound insulation performance at least 10 dB better than the glazing sound insulation performance. The

exact build-ups and products to be used to meet the acoustic criteria will be developed during the detailed design.

Purge Ventilation

- 7.15 Approved Document F requires that adequate provision is made for purge ventilation. Purge ventilation is the process of removing high concentrations of pollutants and water vapour released from occasional activities (such as painting and decorating) or accidental releases (such as smoke from burnt food or spillage of water). Since the need for purge ventilation is by its definition “occasional”, this is normally achieved by giving residents the ability to open their windows. Whilst noise intrusion will increase as a result of windows being open, the occasional and temporary occurrence of such a situation can be readily accepted, particularly since occupants are “*in control*” of both the timing and duration of purge ventilation being required.
- 7.16 It is therefore proposed that purge ventilation for all flats will be achieved by means of openable windows. This approach is consistent with the guidance given in section 8.4.5.4 of BS 8233:2014 which states:

8.4.5.4 Ventilation

*The Building Regulations’ supporting documents on ventilation [48, 49, 50] recommend that habitable rooms in dwellings have background ventilation. Where openable windows cannot be relied upon for this ventilation, trickle ventilators can be used and sound attenuating types are available. **However, windows may remain openable for rapid or purge ventilation, or at the occupant’s choice.***

- 7.17 The acceptability of using openable windows for providing purge ventilation is also in accordance with paragraph 2.35 of ProPG guidance which states:

“It should also be noted that the internal noise level guidelines are generally not applicable under “purge ventilation” conditions as defined by Building Regulations Approved Document F, as this should only occur occasionally (e.g. to remove odour from painting and decorating or from burnt food).”

External Noise Levels in Amenity Areas (Item 7 above)

- 7.18 Based on the predicted sound levels shown in **Figure 5.1** and the proposed site layout, the sound levels at most external amenity spaces of the proposed development are below 55 dB $L_{Aeq,16hours}$. Only one part of the amenity area of Plot 1 to 4 is predicted to be exposed to sound levels up to 57 dB $L_{Aeq,16hours}$. The rest of the areas where external

sound levels higher than 55 dB $L_{Aeq,16hours}$ are predicted are either parking spaces or spaces that are not going to be used as amenity spaces.

- 7.19 The ProPG refers to the design ranges in BS 8233:2014 with respect to the assessment of external amenity. The ProPG also refers to guidance in the PPG-N¹². Based on these two documents, the following guidance is provided with respect to the assessment of noise in external amenity areas:

“The acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50 – 55 dB $L_{Aeq,16hr}$.”

- 7.20 According to BS 8233:2014, an upper guideline value of 55 dB $L_{Aeq,16hour}$ could be acceptable in noisier environments. Based on the predicted external levels shown in **Figure 5.1**, the daytime noise levels for the proposed external amenity spaces are expected to be below 55 dB $L_{Aeq,16hours}$ at most of the external amenity areas.

Overheating

- 7.21 According to the Building Regulations Approved Document O (ADO), “*windows are likely to be closed during sleeping hours if noise within bedrooms exceeds the following limits:*
- a. 40dB $L_{Aeq,T}$, averaged over 8 hours (between 11pm and 7am)*
 - b. 55dB L_{AFmax} , more than 10 times a night (between 11pm and 7am)”*
- 7.22 It should be noted that although ADO is determined through Building Regulations and not planning, an initial assessment of internal noise levels with windows open in the bedroom was carried out to provide some high-level guidelines for the requirements during the design stage.
- 7.23 The assessment has been carried out for bedroom rooms, which are exposed to sound levels between 23 and 49 dB $L_{Aeq,8h}$ during night-time and between 28 and 74 dB $L_{Amax,1min}$ during night-time. A sound reduction of 9 dB has been assumed due to the open window.
- 7.24 The results of the assessment are given in **Table 7.2**.

¹² National Planning Practice Guidance - Noise, June 2019

Location	Internal ADO Criterion	External Free-Field Levels dB(A)	Open Window Attenuation	Calculated Internal Levels dB(A)	Meets criterion?
Bedroom façade	40 dB L _{Aeq} , 8h	29 - 49 dB L _{Aeq} , 8h	9 dB	20 - 40	Yes
	55 dB L _{Amax} , 1min	28 - 74 dB L _{Amax} , 1min	9 dB	28 - 74	No*
* The criterion is only met for external night-time maximum sound levels less than 64 dB L _{Aeq} , 8h					

Table 7.2 Internal Sound Levels Assessment – Bedroom – Windows Open

7.25 The assessment has shown that the internal ADO criterion for the maximum night-time sound levels with windows open is exceeded at any bedrooms exposed to external free-field night-time maximum sound levels higher than 64 dB L_{Aeq}, 8h. Therefore, it is likely that during detailed design stage alternative means of removal of excess heat, i.e., a mechanical ventilation system or a mechanical cooling system, would need to be considered for such façades with bedrooms in order to meet the ADO criteria. These façades are shown in **Figure 7.1** in red.



Figure 7.1: Overheating assessment and ventilation – Plots 1-4, 5-14 and 37-38

Compliance with National and Local Policy

- 7.26 Based on the above, internal and external sound levels will meet the guideline values contained within the ProPG. The proposed development accords with local policies, with national guidance NPSE¹³ and NPPF¹⁴ and, with reference to the PPG-N, it is considered that internal levels will result in effects below the LOAEL and are therefore acceptable.

¹³ *Noise Policy Statement for England, 2010*

¹⁴ *National Planning Policy Framework, published July 2021 revised December 2023*

8 Plant Noise Limits

- 8.1 At this stage there is no detailed information on the exact type of internal and external plant that will be used for the proposed development.
- 8.2 A noise emission limit for all external plant has been set based on the representative background sound levels at all NSRs as shown in **Table 4.2**. The rating level from all plant is set to be equal to the background sound levels at all NSRs.
- 8.3 Cumulative noise from all plant proposed to be located externally should meet the criteria set in **Table 8.1** below. It should be noted that the noise emission limits set in the table below are for the sound rating levels inclusive of any corrections for tonality, impulsivity or any other sound characteristics as described in BS 4141:2014+A1:2019.

Representative NSR(s)	Daytime Plant Noise Limit (07:00-23:00)	Night-time Plant Noise Limit (23:00-07:00)
All NSRs	37	31

Table 8.1 External plant noise emission limits

9 Conclusions

- 9.1 Mayer Brown Ltd has been instructed by Beck Homes (UK) Limited to prepare a noise impact assessment to accompany their planning application for a proposed residential development at the site located at Station Road, Ashwell.
- 9.2 An environmental sound survey was undertaken on site to establish the baseline conditions. The results of the survey were used to build a 3D model to predict sound levels across the site.
- 9.3 A noise impact assessment for the proposed development was undertaken based on the predicted façade incident sound levels and relevant guidance.
- 9.4 The assessment of internal noise levels when windows are closed, assuming a standard external façade built-up capable to achieve at least 50 dB R_w+C_{tr} for cladding/external walls, has shown that:
- For all habitable rooms of Plot 1 to 4, directly facing or near Station Road, an acoustic ventilator with no less than 42 dB $D_{n,e,w}$ (equivalent area of 2500 mm²) and standard double glazing with performance of at least 30 dB R_w+C_{tr} will be required to achieve the required level of attenuation.
 - For the rest of the facades, a standard non-acoustic trickle ventilator and standard double glazing with a sound insulation performance of at least 29 dB R_w+C_{tr} will be required to achieve the necessary level of attenuation.
- 9.5 The assessment has shown that the internal ADO criterion for the maximum night-time sound levels with windows open is exceeded at any bedrooms exposed to external free-field night-time maximum sound levels higher than 64 dB $L_{Aeq, 8h}$. Therefore, it is likely that during detailed design stage alternative means of removal of excess heat, i.e., a mechanical ventilation system or a mechanical cooling system, would need to be considered for such façades with bedrooms in order to meet the ADO criteria.
- 9.6 Plant limits were set for the external plant based on the measured background sound levels.
- 9.7 Noise levels in amenity spaces have been assessed as being in compliance with aspirational levels.
- 9.8 Based on the above, internal and external sound levels will meet the guideline values contained within the ProPG. The proposed development accords with local policies, national guidance NPSE and NPPF and, with reference to the PPGN, it is considered that internal levels will result in effects below the LOAEL and are therefore acceptable.

APPENDIX A: Glossary

General

A vibrating surface or turbulent fluid flow will cause pressure fluctuations in the surrounding air. These pressure fluctuations are perceived by the human ear as "sound".

Measurement Units

The human ear can detect sound pressures as low as about 20 µPa, and can tolerate (for short periods) sound pressures as high as 200 Pa, an amplitude range of 10 million times. To take account of this huge amplitude range, sound pressure levels (often written in "acoustic shorthand" as SPL or Lp) are quantified using a logarithmic scale, the decibel (dB) scale. This is based on a reference pressure of 20µPa, thus a sound pressure of 20µPa would equate to 0dB and a pressure of 200Pa would equate to 140dB.

Frequency (Pitch) Characteristics

The sound received at any particular location is not solely influenced by the sound pressure level, the frequency characteristics (pitch) of the noise is also an important factor. Noise audible to a human (with "normal" hearing), typically covers the frequency range 20 Hertz to 20,000 Hertz, Hertz (Hz) are defined as the number of times the sound pressure fluctuates in one second. "Low" pitched sounds fluctuate less times per second than "high" pitched sounds. Whilst humans are capable of detecting a wide range of frequencies, the ear is not equally sensitive to all frequencies – the ear is most sensitive at frequencies towards the middle of the audible range and less sensitive to the lower and higher frequencies.

To take account of this frequency response, sound pressure fluctuations are normally quantified by applying a frequency-weighting network or filter which simulates the frequency response of the ear. In essence, this means that more significance is given to the frequencies at which the ear is most sensitive and less significance to those at which the ear is less sensitive. Noise measurements relating to human reaction are generally made using an "A-weighting" network. These measurements are reported as A-weighted decibels or dB(A). The A-weighted sound pressure level is written in "acoustic shorthand" as L_A.

Variation of Sound with Time

It will be appreciated that the sound pressure level of most noise sources will fluctuate with time. In order to take account of the way in which the human ear perceives noise, it is normal for the sound pressure level to be quantified using a time weighting network, to mimic the speed of response of the human ear. The standardised setting for most types of noise is a "Fast" time weighting.

The manner in which sound fluctuates with time can also influence the subjective manner in which noise is perceived. Noise can be continuous (showing no significant variation with time as in the case of a fan), intermittent (i.e. the noise is transient in it's nature, such as a train pass-by) or impulsive (i.e. there is a sudden build up of noise - this can range from "clanking" types sounds as might be experienced next to railway goods yard or a high energy discharge such as an explosion)

Measurement of Sound

Sound pressure levels are measured using equipment comprising a pressure-sensitive microphone, associated amplifier, frequency weighting network, time weighted network and output indicator. In its simplest form this is a small hand-held instrument called a sound level meter. More sophisticated instrumentation (a sound level analyser) is also available which allows the real-time output of the frequency characteristics of the sound to be quantified.

Comparison of Sound Levels

To put the significance of noise measurement into context, the following Table presents the A-weighted sound pressure level of some typical sources:

Sound Pressure Level, dB(A)	Typical Noise Source . Activity
160	Saturn Rocket Taking Off
140	Military Jet Taking Off at 30m
100	Nightclub
90	Heavy goods vehicle driving past at 7m
80	Busy urban road
70	Domestic vacuum cleaner at 3m
60	Busy office environment
55	Normal speech at 1m
40	Whispered conversation at 2m
30	Bedroom at night (BS 8233: 1999)
20	Remote country location
0	Threshold of hearing – a very eery silence

Addition of Sound Levels

It is important to note that the use of a logarithmic scale to describe noise does not allow normal arithmetic addition. This means that two noise sources each generating a level of, say, 60dB(A) will not generate a combined sound level of 120dB(A). The values must be added logarithmically, which would actually yield a combined sound level of 63dB(A) in this example.

Subjective Perception of Sound Levels Changes

With regard to the human perception of sound level changes, the human ear:

- Cannot generally perceive a sound level difference of less than 3dB(A)
- Will perceive a sound level difference of 4-5dB(A) as "noticeable"
- Will perceive a sound level difference of 10dB(A) as a doubling (or halving) of loudness.

Acoustic Terminology

As stated previously, most sources of noise will fluctuate with time. In order to characterize such noise, it is therefore normal to represent the noise climate using a variety of noise parameters and statistical indices. The most commonly adopted noise parameters are described below:

$L_{Aeq,T}$

This is the equivalent continuous A-weighted sound level measured over a specified time period “T”. This is the notional continuous sound level which, over the time T, contains the same amount of energy as the actual fluctuating sound being measured. This parameter is widely accepted as being the most appropriate noise descriptor for most environmental noise and the effects of noise on humans.

$L_{Amax,fast}$

This is maximum A-weighted sound pressure measured with a fast frequency response recorded during the stated measurement period. It is typically used to characterise the highest sound level caused during a noise event.

$L_{A90,T}$

This is the A-weighted sound pressure level exceeded for 90% of the specified time period “T”. It is normally used to describe the underlying background noise level of an environment since it inherently excludes the effects of transient noise sources.

Noise Rating (NR) Level

When describing noise from building services installations, it is common to express noise levels in terms of a Noise Rating (NR) Level. The NR level is determined by plotting the measured frequency spectrum of a noise against a series of reference curves, which roughly approximate to equal loudness values. This method permits higher sound levels at low frequencies corresponding to the sensitivity of the human ear. The NR level is defined as the value of the highest curve “touched” by the plotted frequency spectrum. For typical sources of building services noise, the overall A-weighted sound level is numerically around 5-6dB higher than the NR level of the noise.

Airborne Sound Insulation Measurement Parameters

The ability of a building element to reduce airborne noise can be described by a number of different parameters relevant to both laboratory and on-site performance evaluation. In general, the higher these values, the better the resistance of the construction to the transmission of airborne sound. The most commonly used parameters include:

R_w

The “**Weighted Sound Reduction Index**” (R_w) is a single value measure of the intrinsic sound reduction capabilities of a construction, as measured in an acoustic laboratory. Measurement values are determined in accordance with the BS EN ISO 10140 series of standards and weighted in accordance with BS EN ISO 717-1: 2013.

R'_w

The “**Weighted Apparent Sound Reduction Index**” (R'_w) is a single value measure of the apparent sound reduction capabilities of a construction, when installed on-site (which will normally be some way lower than the laboratory value due to less favourable installation conditions, the quality of workmanship, etc.). Measurement values are determined in accordance with the BS EN ISO 10140 series of standards and weighted in accordance with BS EN ISO 717-1: 2013. In practice, the R'_w of a construction can only be reliably determined if “direct” sound transfer through the partition can confidently be taken as the dominant noise transfer path (i.e. there is no “flanking” sound transmission).

D_w

The “**Weighted Sound Level Difference**” (D_w) is a single value measure of the on-site sound reduction between two rooms. This value inherently includes “direct” sound transmission through any separating construction and “flanking” transmission through other building elements.

Measurement values are determined in accordance with BS EN ISO 140-4: 1998 (for Building Regulations compliance purposes) or BS EN ISO 16283-1: 2014 and weighted in accordance with BS EN ISO 717-1: 2013.

$D_{nT,w}$

The “**Weighted Normalised Flanking Level Difference**” ($D_{nT,w}$) is a single figure measure of the sound reduction between two rooms solely due to sound transmission through a specified flanking path. This parameter is frequently used to provide an indication of the sound reduction capabilities of suspended ceiling and raised access floor constructions where there is common void between adjacent rooms or as a measure of sound that may be transmitted between rooms through external curtain walling. Measurements are undertaken in accordance with BS EN ISO 10848-2: 2017 and weighted in accordance with BS EN ISO 717-1: 2013.

Impact Sound Insulation Measurement Parameters

Some building elements also have the potential to generate “impact” noise, for example due to human “footfall” on floor structures, or the impact of rainfall on lightweight roofing components. A variety of parameters are again available to define the amount of noise likely to be generated. In general, the lower these values, the less sound the construction will generate as a result of impacts. Typical measurements parameters include:

$L_{nT,w}$

The “**Standardised Impact Sound Pressure Level**” is a “single number” rating describing the intrinsic impact sound insulation capabilities of a construction (such as a floor system) as measured in an acoustic laboratory. Values are determined in a vertical sound transmission suite by locating a “tapping machine” in the upper room of the suite and measuring the amount of sound radiated by the floor in the room below. Measurement values are determined in accordance with the BS EN ISO 10140 series of standards and weighted in accordance with BS EN ISO 717-2: 2013.

$L_{nT,w}$

The “**Normalised Flanking Impact Sound Pressure Level**” is a “single number” rating describing the amount of flanking sound that would be transmitted to an adjoining space (separated by a partition) due to impacts on the test sample. It is, for example, used to indicate the amount of noise that may be generated due to footfall noise on a raised access floor system. Values are determined in a horizontal sound transmission suite by locating a “tapping machine” one side of a separating partition built off the test sample and measuring the amount of noise radiated by the floor in the adjoining space on the other side of the partition. Measurement values are determined in accordance with BS EN ISO 10848-2: 2017 and weighted in accordance with BS EN ISO 717-2: 2013.

Room Acoustic Measurements

T

The “**Reverberation Time**” (T) of a room is defined as the time taken for the sound energy produced by a source (RT) to decay by 60 dB after the source has been switched off. The reverberation time of a space can be calculated by considering the volume of the room and the areas and sound absorption qualities of room surface finishes. Small, “soft” rooms tend to give low reverberation times, whilst large, “hard” rooms tend to give long reverberation times.

α_p

The “**Practical Acoustic Absorption Coefficient**” (α_p) is a measure of how much sound energy is absorbed by a building element at a particular frequency, as measured in accordance with BS EN ISO 354: 2003.

α_w

The “**Weighted Absorption Coefficient**” (α_w) is a single figure measure of the overall sound absorption capabilities of a building element determined in accordance with BS EN ISO 11654: 1997.

APPENDIX B: Planning Policy, Standards and Guidance

National Planning Policy Framework

- B.1. The National Planning Policy Framework (NPPF) adopted in 2012 in England outlines the Government's planning policies and requirements for the planning system. The NPPF forms a material consideration in planning decisions and hence should be complied with for planning permission to be granted.
- B.2. Regarding noise, the NPPF states that the planning system should contribute to and enhance the natural and local environment by preventing both new and existing development from contributing to or being put at unacceptable risk from or being adversely affected by unacceptable levels of noise pollution.
- B.3. The planning system should therefore seek to:
- Avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;
 - Mitigate and reduce to a minimum other adverse impact on health and quality of life arising from noise from new development, including through the use of planning conditions;
 - Recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established; and
 - Identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.
- B.4. To achieve these aims the NPPF refers to the Noise Policy Statement for England 2010.

Noise Policy Statement for England

- B.5. The Noise Policy Statement for England (NPSE) sets out the long-term overarching vision of Government noise policy, which is to promote good health and a good quality of life through the management of noise within the context of Government policy on sustainable development.
- B.6. The NPSE describes a Noise Policy Vision and three Noise Policy Aims and states that the vision and aims provide:
- “the necessary clarity and direction to enable decisions to be made regarding what is an acceptable noise burden to place on society.”

- B.7. In other words, the purpose of the document is to provide guidance for the decision maker on whether the noise impact is an acceptable burden to bear in order to receive the economic and other benefits of the proposal.
- B.8. Where existing policy and guidance does not provide adequate guidance then decision makers can go back to the aims of the policy statement to provide overriding guidance. The “Noise Policy Vision” is to “promote good health and good quality of life through the effective management of noise within the context of Government policy on sustainable development”. This long-term vision is supported by the following aims, through effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:
- avoid significant adverse impacts of health and quality of life;
 - mitigate and minimise adverse impacts on health and quality of life; and
 - where possible, contribute to the improvement of health and quality of life.
- B.9. The aims of the policy differentiate between noise impacts on health (e.g. sleep disturbance, hypertension, stress etc.) and noise impacts on quality of life (e.g. amenity, enjoyment of property etc.). The aims also differentiate between “significant adverse impacts” and “adverse impacts”. The explanatory note to the NPSE clarifies that a significant adverse impact is deemed to have occurred if the “Significant Observed Adverse Effect Level” (SOAEL) is exceeded. An adverse effect, on the other hand, lies between the “Lowest Observed Adverse Effect Level” (LOAEL) and the SOAEL.

Planning Practice Guidance - N

- B.10. Planning Practice Guidance on Noise (PPG-N) provides guidance to local planning authorities to ensure effective implementation of the planning policy set out in the National Planning Policy Framework. The PPG-N suggests that planning authorities should ensure that unavoidable noise emissions are controlled, mitigated or removed at source and establish appropriate noise limits for extraction in proximity to noise sensitive properties.
- B.11. The PPG-N reiterates general guidance on noise policy and assessment methods provided in the NPPF, NPSE and British Standards and contains examples of acoustic environments commensurate with various effect levels.

B.12. The PPG-N provides a relationship between various perceptions of noise, effect level and required action in accordance with the NPPF. This is reproduced in **Table B.1**, below.

Perception	Examples of Outcomes	Increasing Effect Level	Action
No Observed Effect Level (NOEL)			
Not noticeable	No Effect	No Observed Effect	No specific measures required
Noticeable and not intrusive	Noise can be heard but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level (LOAEL)			
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, 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 perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level (SOAEL)			
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, 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
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

Table B.1 Noise Exposure Hierarchy based on the Likely Average Response

B.13. The PPG-N describes sound that is not noticeable to be at levels below the No Observed Effect Level (NOEL). It describes exposures that are noticeable but not to the extent there is a perceived change in quality of life as below the LOAEL and need no mitigation. The audibility of sound from a development is not a criterion to judge noise effects that is commensurate with national planning policy.

- B.14. The PPG-N suggests that noise exposures above the LOAEL cause small changes in behaviour.
- B.15. In line with the NPPF and NPSE, the PPG-N states that consideration needs to be given to mitigating and minimising effects above the LOAEL but taking account of the economic and social benefits being derived from the activity causing the noise.
- B.16. The PPG-N suggests that noise exposures above the SOAEL cause material changes in behaviour.
- B.17. In line with the NPPF and NPSE, the PPG-N states that effects above the SOAEL should be avoided and that, whilst the economic and social benefits being derived from the activity causing the noise must be taken into account, such exposures are undesirable.

North Hertfordshire Local Plan 2011 - 2031

- B.18. The North Hertfordshire Local Plan 2011-2031 was adopted on Tuesday 8 November 2022 and replaces the saved policies of the District Plan Second Review with Alterations.
- B.19. For this project, policy D3: Protecting Living Conditions is relevant and is given in detail below.

Policy D3: Protecting living conditions

Planning permission will be granted for development proposals which do not cause unacceptable harm to living conditions

Where the living conditions of proposed developments would be affected by an existing use or the living conditions of an existing development would be affected by a proposed use, the Council will consider whether there are mitigation measures that can be taken to mitigate the harm to an acceptable level. If the Council is not satisfied that mitigation proposals would address the identified harm, development proposals will not be permitted.

- B.20. Additionally, airport noise (e.g. from nearby London Luton Airport) is explicitly recognized. The plan states that development affected by airport noise must include appropriate mitigation measures.
- B.21. The Council references national guidance, such as ProPG (Professional Practice Guidance on Planning & Noise), which complements the NPPF to promote good acoustic design early in the planning process.

BS 8233: 2014 'Sound Insulation and Noise Reduction for Buildings'

- B.22. BS 8233: 2014 'Sound Insulation and Noise Reduction for Buildings' (BS 8233:2014) offers the following design guidance for indoor ambient noise levels within dwellings:

Activity	Location	07:00 to 23:00 hours	23:00 to 07:00 hours
Resting	Living Room	35 dB $L_{Aeq,16hour}$	--
Dining	Dining Room/Area	40 dB $L_{Aeq,16hour}$	--
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hour}$	30 dB $L_{Aeq,8hour}$

Table B.2 BS 8233:2014 Indoor Ambient Noise Level Design Guidance

- B.23. A note accompanying the above table states:

“Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,F}$ depending on the character and number of events per night. Sporadic noise events could require separate values.”

- B.24. With regards to external amenity spaces, Section 7.7.3.2 of BS 8233:2014 states:

“For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external 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. However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited.

Professional Practice Guidance on Planning and Noise

- B.25. *"Professional Practice Guidance on Planning & Noise - New Residential Development" (ProPG)* was published in May 2017. The guidance was authored by the Chartered Institute of Environmental Health (CIEH), Institute of Acoustics (IOA) and Association of Noise Consultants (ANC) and seeks to consolidate and standardise existing industry best practice in order to expedite the planning process with regard to the consideration of noise.
- B.26. The guidance essentially promotes a two-stage assessment process to determine the suitability of a site for residential development and an appropriate noise mitigation strategy for addressing potential noise constraints.
- B.27. A "Stage 1" assessment considers the initial noise *"risk"* of the site. An assessment in accordance with this guidance was presented in the *"Noise and Vibration Assessment"* prepared by Mayer Brown Limited which accompanied the outline planning application. This concluded that subject to adherence to a good acoustic design process, the site would be suitable for residential development.
- B.28. This report therefore focusses on the more detailed requirements of Stage 2 of the ProPG guidance. In essence, this requires consideration of four key elements:
- **Element 1** – Good Acoustic Design Process
 - **Element 2** – Internal Noise Level Guidelines
 - **Element 3** – External Amenity Area Noise Assessment
 - **Element 4** – Assessment of Other Relevant Issues
- B.29. Element 1 (Good Acoustic Design Process) encourages the development of sites with due regard to the following hierarchy of mitigation strategies:
- Reducing noise "at source";
 - Providing "buffer" zones to limit noise exposure;
 - Reducing noise propagation across site (e.g. through the use of barriers);
 - Developing the layout of the site to optimise acoustic protection (e.g. through the use of "barrier" blocks to help further limit noise propagation and the use of courtyard style development to protect external amenity areas);

- The orientation/general internal arrangement of buildings (e.g., by locating non-habitable rooms on ‘noisier’ facades and more sensitive uses on acoustically screened facades); and
- Providing buildings with appropriate sound insulation through the specification of appropriate external fabric constructions (in particular windows) and providing appropriate alternative means of ventilation if acceptable internal noise levels cannot be achieved if windows are open.

B.30. In relation to Element 2 (Internal Noise Design Targets), Figure 2 of ProPG makes the following design recommendations. It is included as Figure B.1 below:

ACTIVITY	LOCATION	07:00 – 23:00 HRS	23:00 – 07:00 HRS
Resting	Living room	35 dB $L_{Aeq,16\text{ hr}}$	-
Dining	Dining room/area	40 dB $L_{Aeq,16\text{ hr}}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16\text{ hr}}$	30 dB $L_{Aeq,8\text{ hr}}$ 45 dB $L_{Amax,F}$ (Note 4)

Figure B.1: ProPG Internal Noise Level Design Guidance

B.31. The above recommendations are accompanied by a number of notes. Of particular relevance are:

- **Note 4** – which clarifies that the recommended $L_{Amax,fast}$ value should not normally be exceeded 10 times per night; and
- **Note 5** – which states “Where it is not possible to meet internal target levels with windows open, internal noise levels can be assessed with windows closed, however any façade openings used to provide whole dwelling ventilation (e.g. trickle ventilators) should be assessed in the “open” position and, in this scenario, the internal L_{Aeq} target levels should not normally be exceeded....”.

B.32. It should be noted that the above design guidance is primarily intended for sites characterised by noise from transportation sources. Where existing noise levels are dominated by industrial or commercial noise, ProPG recommends that reference is made to the assessment methodology of BS 4142: 2014¹⁵.

B.33. For sites where industrial or commercial noise may be present but not “dominant”, ProPG suggests that the industrial noise component may be

¹⁵ This standard has now been replaced by BS 4142: 2014 + A1: 2019.

included and combined with the transportation noise component and professional judgement used to determine appropriate mitigation. ProPG clarifies that noise can be considered “*dominant*” where the impact would be rated as “*adverse or greater, subject to context*”. This implies a plant rating level that is at least 5 dB above the typical background level, when rated in accordance with BS 4142:2014+A1:2019.

- B.34. In relation to Element 3 (External Amenity Area Noise Assessment), the following guidance is given:

“The acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50 – 55 dB $L_{Aeq,16hr}$.

These guideline values may not be achievable in all circumstances where development might be desirable. In such a situation, development should be designed to achieve the lowest practicable noise levels in these external amenity spaces.”

- B.35. Element 4 (Assessment of Other Relevant Issues) does not set out any quantitative technical guidance but requires consideration of “*issues that should be considered about the noise aspects of a particular planning proposal for new residential development*”.

British Standard 4142:2014+A1:2019 ‘Methods for rating and assessing industrial and commercial sound’

- B.36. BS 4142:2014+A1:2019 provides a method for rating industrial and commercial sound and method for assessing resulting impacts upon people. The method is applicable to fixed plant installations, sound from industrial and manufacturing process and other associated activities.
- B.37. The assessment procedure initially compares the ‘Rating Level’ of the source with the ‘Background Sound Level’ when the source is not present.
- B.38. The ‘*Rating Level*’ (L_{Ar}) referred to is the specific sound level of the noise source under investigation (in terms of the L_{Aeq} noise index), to which corrections are applied if the noise has certain audible characteristics. **Table B.3** summarises the corrections to be applied based on a subjective assessment of noise source characteristics.

Character Correction				
Feature / Perception	Tonality	Impulsivity	Intermittency	Other acoustic characteristics
Just Perceptible	+2dB	+3dB	When the specific sound has identifiable On/Off conditions that are readily distinctive. +3dB	+3dB
Clearly Perceptible	+4dB	+6dB		
Highly Perceptible	+6dB	+9dB		

Table B.3 BS 4142:2014+A1:2019 Character Correction for Rating Level Calculation

- B.39. The **‘Background Sound Level’** (L_{A90}) represents the sound level that is exceeded for 90% of the stated measurement period. For assessment purposes, the background sound level needs to be determined without the noise source under investigation operating.
- B.40. An initial estimate of the impact of the specific sound is obtained by subtracting the measured background sound level from the rating level of the specific sound. In the context of the Standard, adverse impacts include, but are not limited to, annoyance and sleep disturbance. Typically, the greater this difference, the greater the magnitude of the impact:
- 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, 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.
- B.41. Aligning the above guidance with national planning policy objectives:
- An assessment level 10 dB above the background level might be considered to be a *“Significant Observed Adverse Effect Level”* (SOAEL).
 - An assessment level that does not exceed the background level might be considered to be a *“Lowest Observed Adverse Effect Level”* (LOAEL).

B.42. Notwithstanding the above, BS 4142:2014+A1:2019 importantly notes that any initial estimate of a noise impact should be modified to account for its “context”. Such considerations include:

- The absolute level of the sound - the magnitude of the overall impact might be greater for an acoustic environment where the residual sound level is high than for an acoustic environment where the residual sound level is low. 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.
- Where residual sound levels are very high, the residual sound might itself result in adverse impacts or significant adverse impacts, and the margin by which the rating level exceeds the background might simply be an indication of the extent to which the specific sound source is likely to make those impacts worse.
- The character and level of the residual sound compared to the character and level of the specific sound.
- The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions.

APPENDIX C: Drawings



Unit 6, Longley Lane
Northenden, Manchester
M22 4WT

DWG NO.
M3942-PA-01-V01

CLIENT:
Beck Homes Ltd

T: 0161 946 0808
E: design@barneswalker.co.uk
W: www.barneswalker.co.uk

WORK STAGE:
Planning

SCALE:
1:500@A1

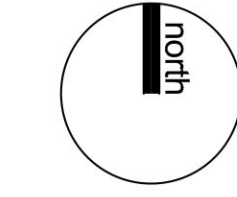
DWG TITLE:
Phase 2 Landscape Layout

PROJECT TITLE:
Phase 2 - Station Road, Ashwell

DATE:
08.2025

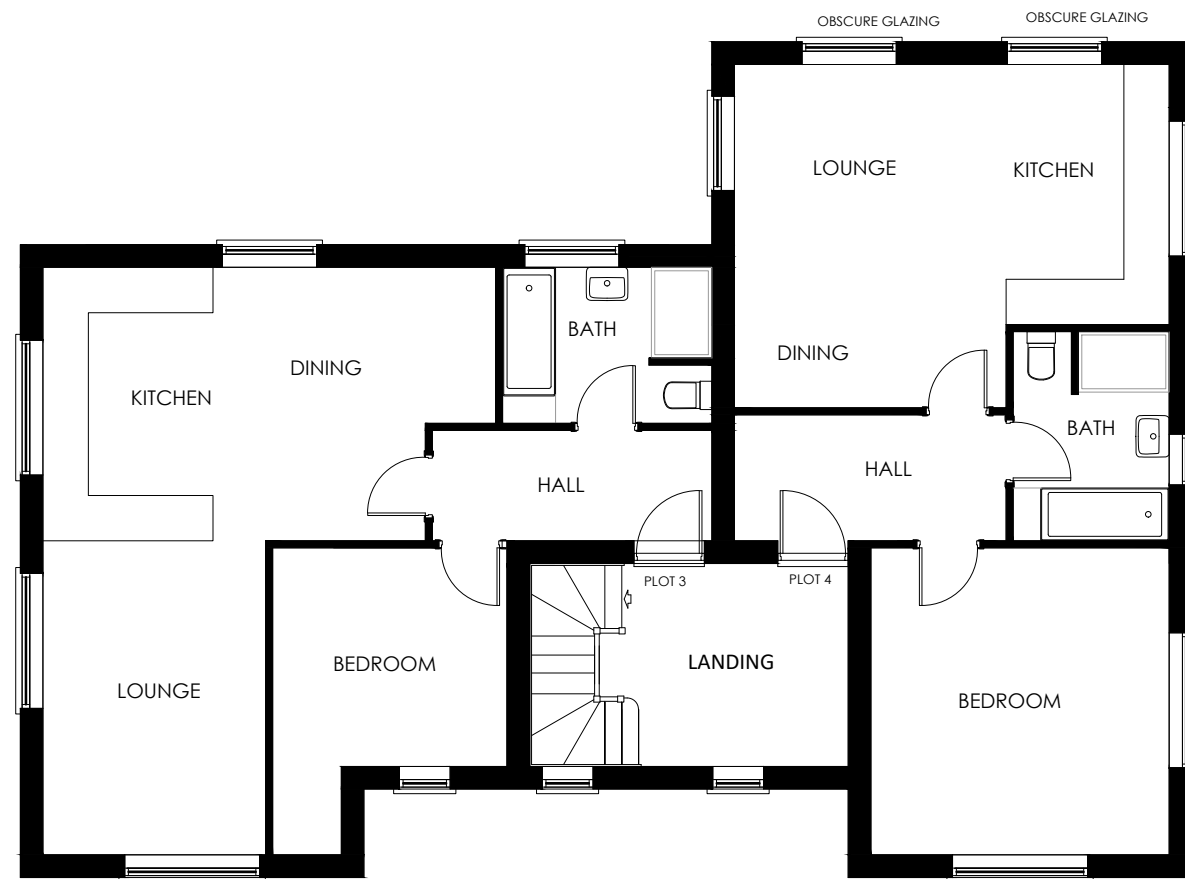
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XY

CHECKED BY:
MW

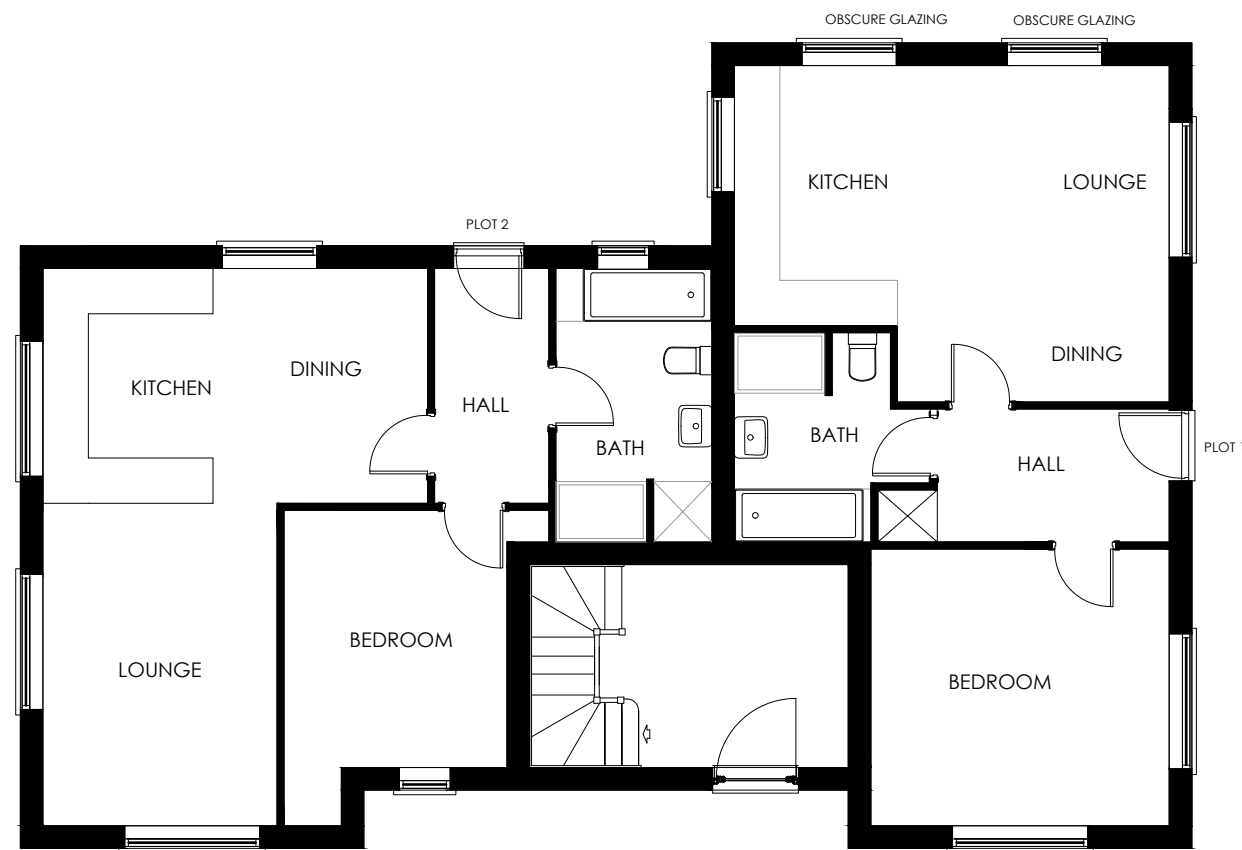


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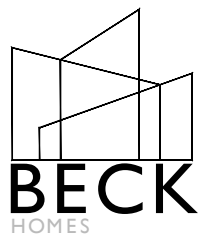
date	revision	by	no.



First floor plan



Ground floor plan



BECK HOMES LTD
BARRINGTON HOUSE, HEYES LANE
ALDERLEY EDGE, CHESHIRE SK9 7LA
W. www.beck-group.co.uk

Station Road, Ashwell			
PLOTS 1-4 FLOOR PLANS			
drawn	status	scale	date
JS	Planning	1:100 @ A3	AUG 2025
25-167-P000			

date	revision	by	no.



South elevation



East elevation



North elevation



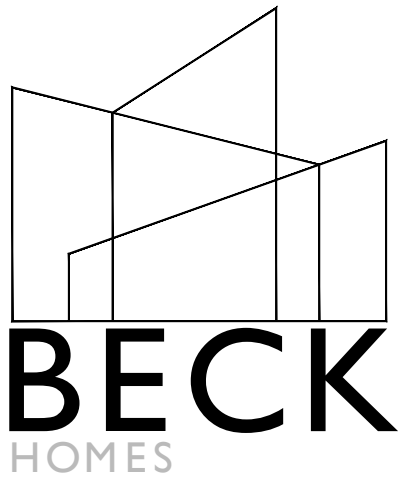
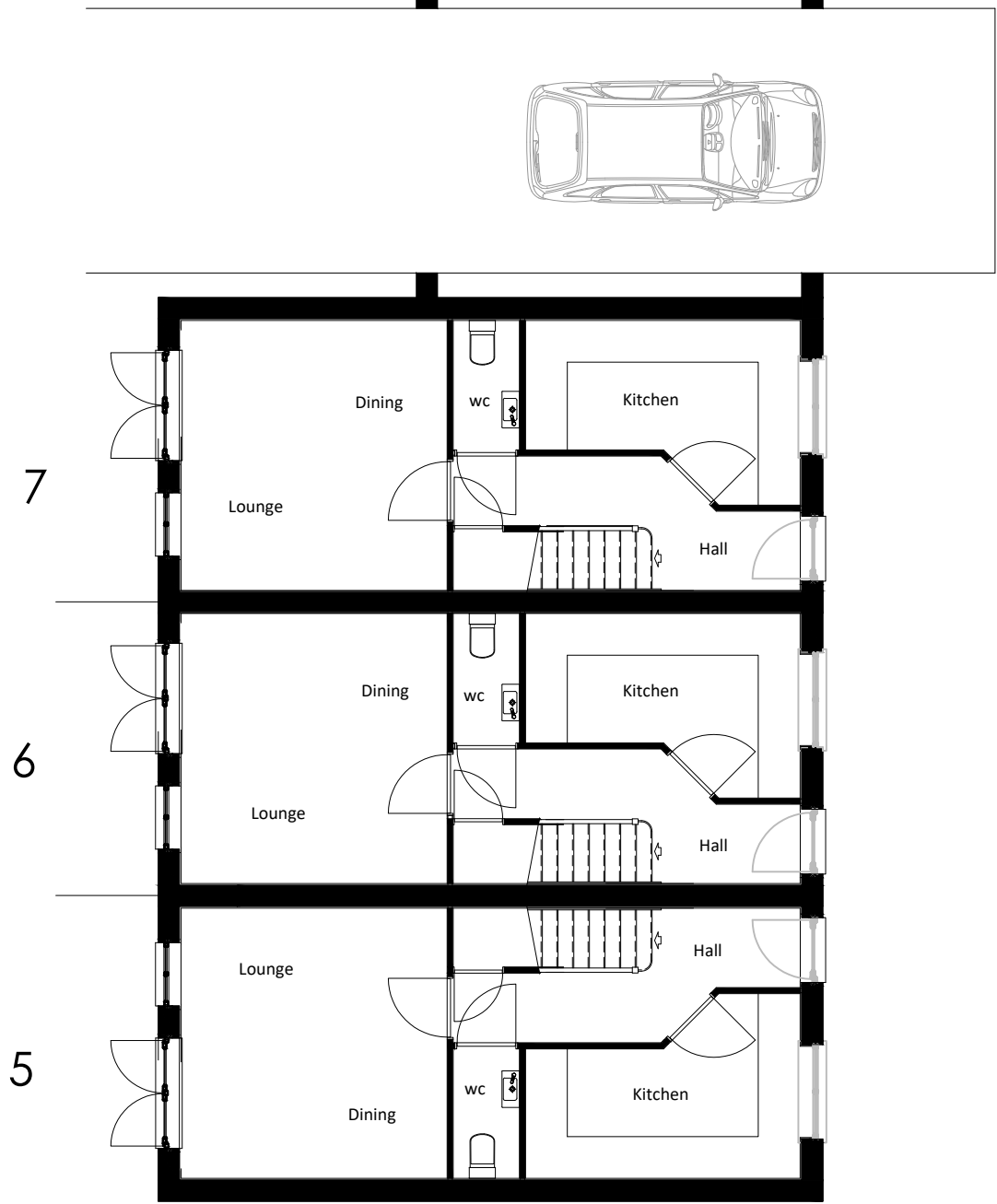
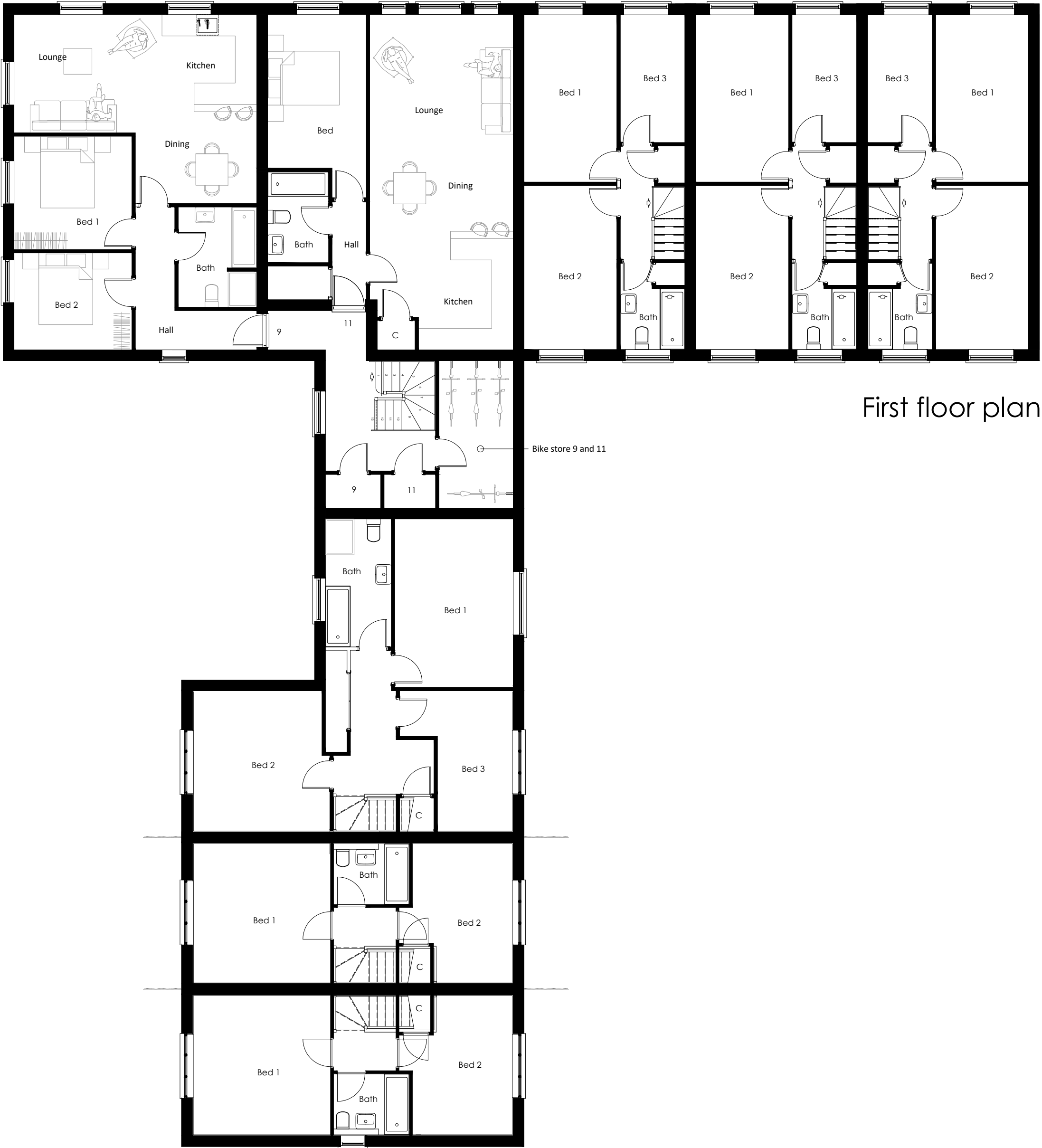
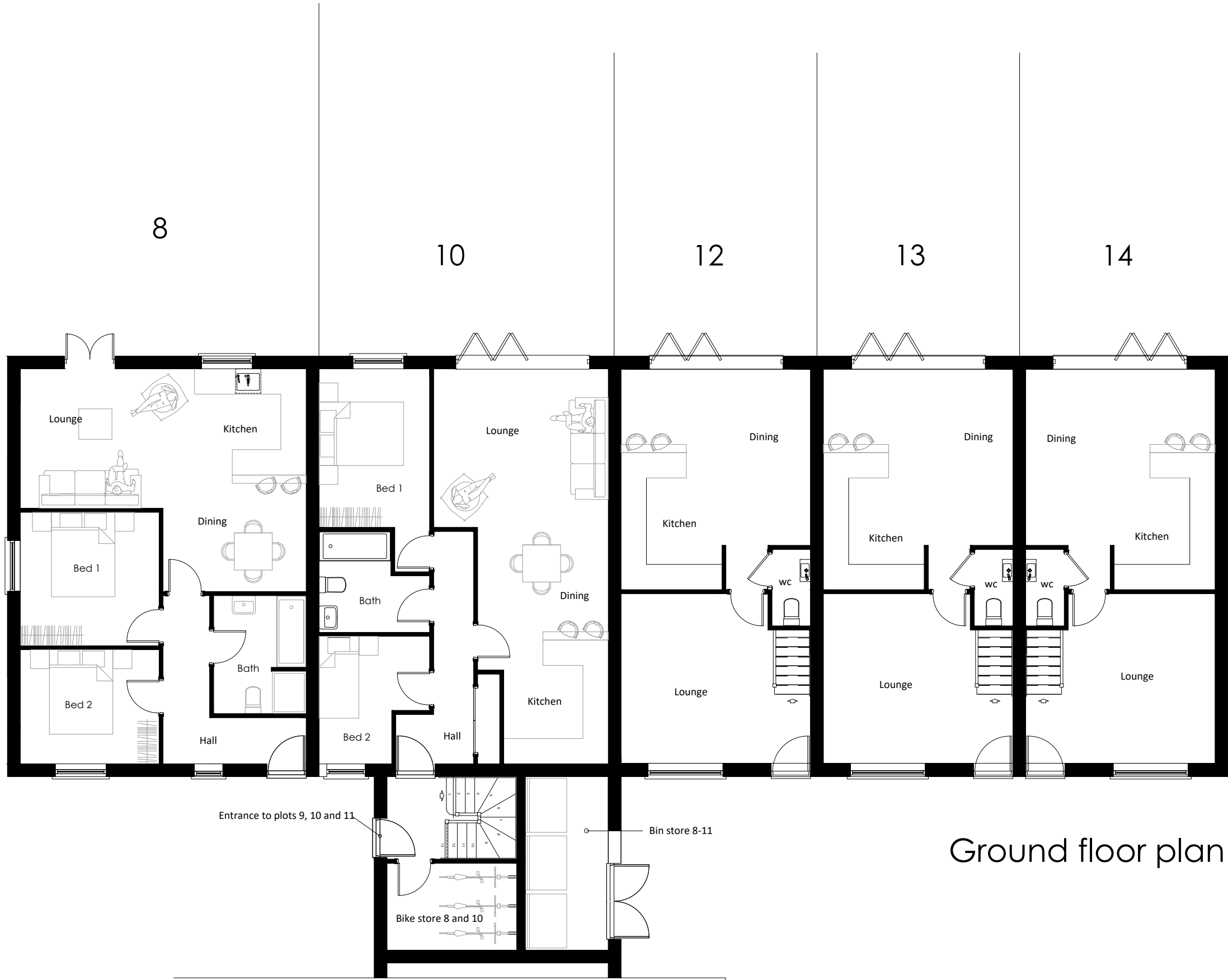
West elevation



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job			
Station Road, Ashwell			
drawing			
PLOTS 1-4 ELEVATIONS			
drawn	status		
JS	Planning		
date	scale	dwg no.	rev
AUG 2025	1:100 @ A3	25-167-P000	-

date	revision	by	no.



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Job
Station Road, Ashwell
drawing
PLOTS 5-14 FLOOR PLANS

drawn	status	scale	date	rev
JS	Planning			
JULY 2025	1:500 @ A1	25-167-P000		

date	revision	by	no.



East elevation



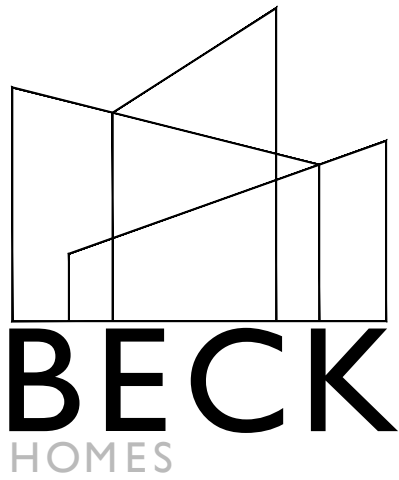
North elevation



West elevation



South elevation



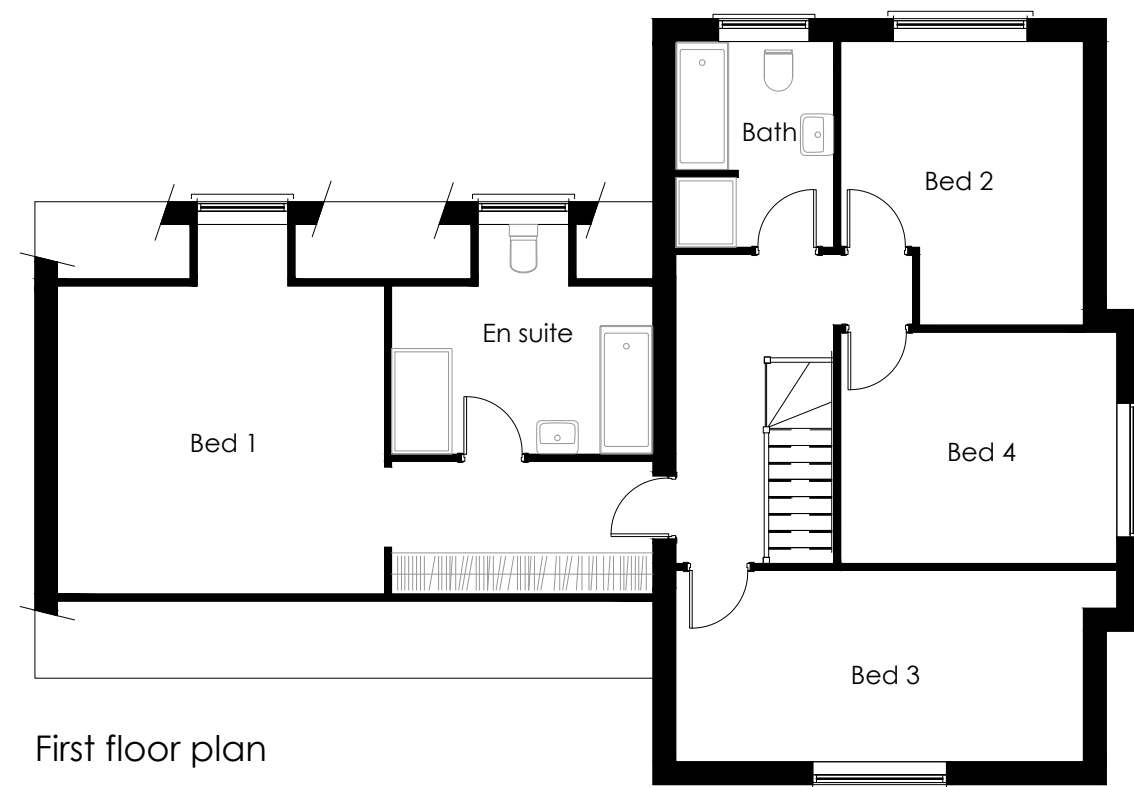
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Job
Station Road, Ashwell
Drawing
PLOTS 5-14 ELEVATIONS

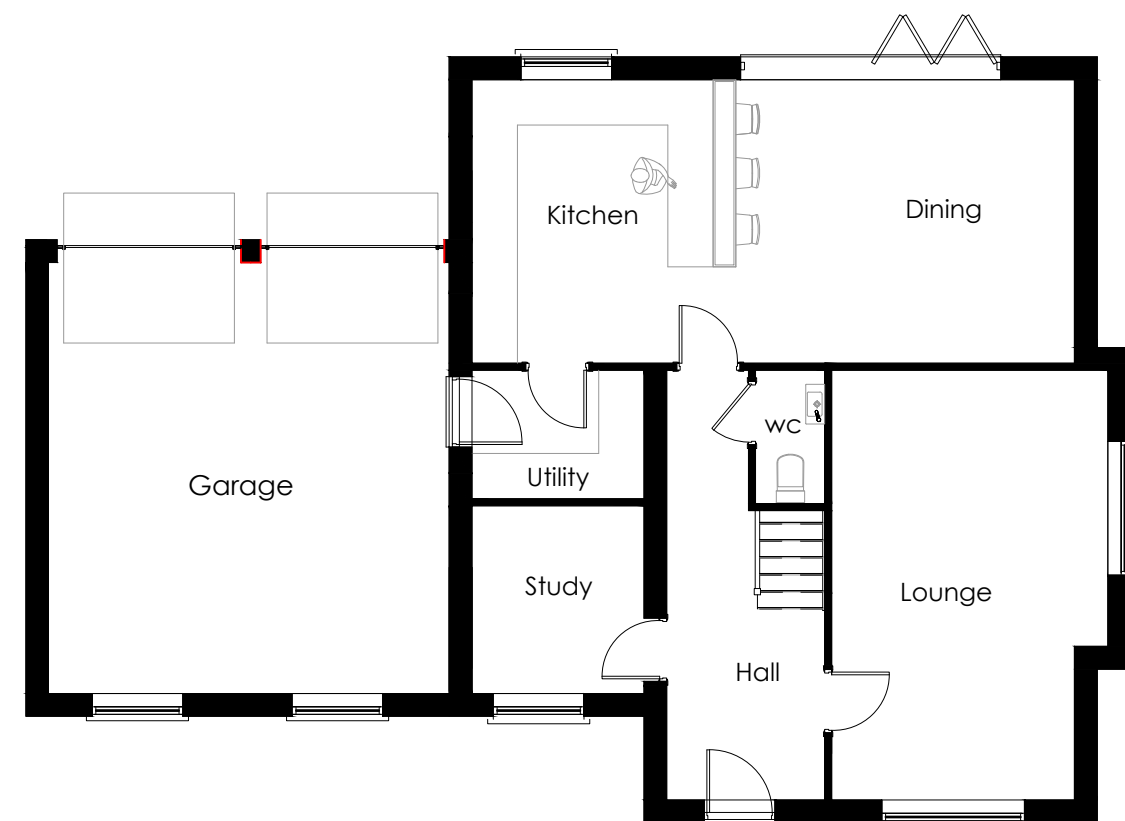
drawn	status	scale	date	rev
JS	Planning			

date	scale	fig no.	rev
JULY 2025	1:500 @ A1	25-167-P000	

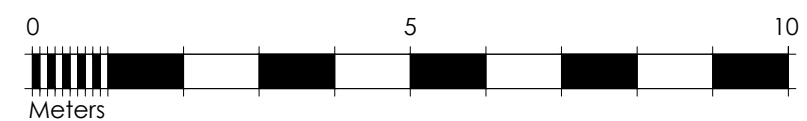
date	revision	by	no.



First floor plan



Ground floor plan



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job Station Road, Ashwell			
drawing PLOT 15 FLOOR PLANS			
drawn JS	status Planning	scale 1:100 @ A3	date AUG 2025
deg no. 25-167-P000		rev -	

date	revision	by	no.



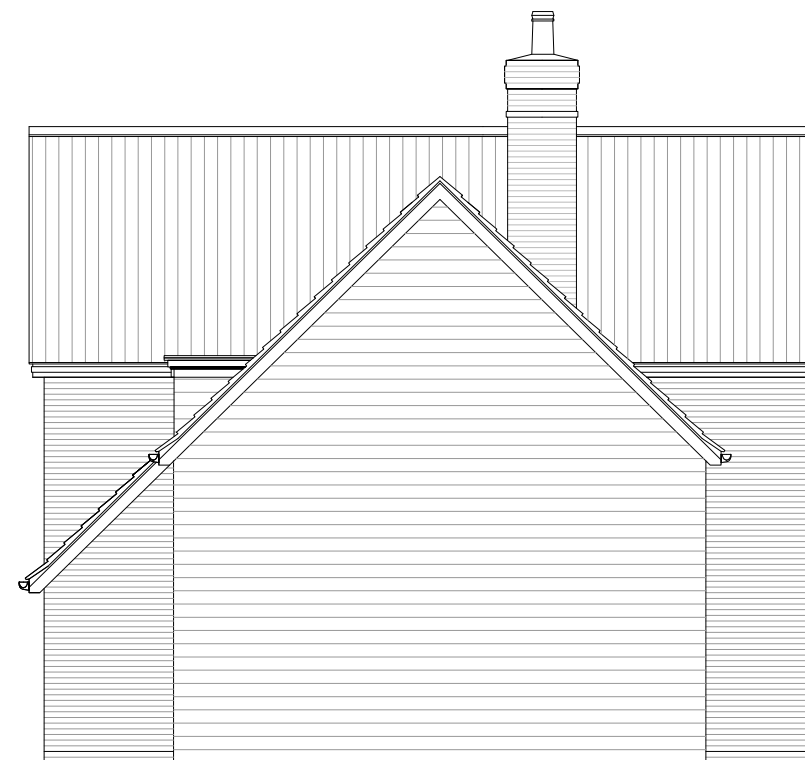
South elevation



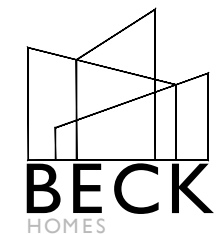
East elevation



North elevation

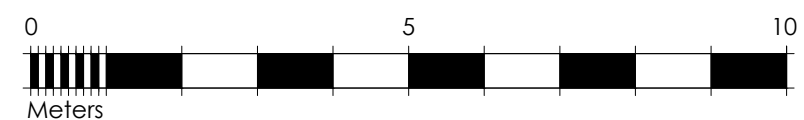


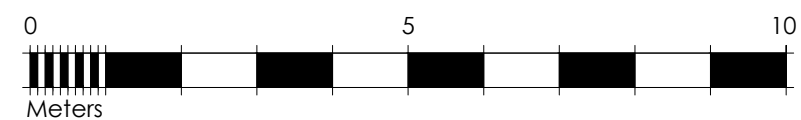
West elevation



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job Station Road, Ashwell			
drawing PLOT 15 ELEVATIONS			
drawn JS	status Planning	scale 1:100 @ A3	date AUG 2025
deg no. 25-167-P000 -		rev -	





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job
Station Road, Ashwell

drawing
PLOT 16 FLOOR PLANS

drawn	status
JS	Planning

date	scale	drg no.	re
AUG 2025	1:100 @ A3	25-167-P000	

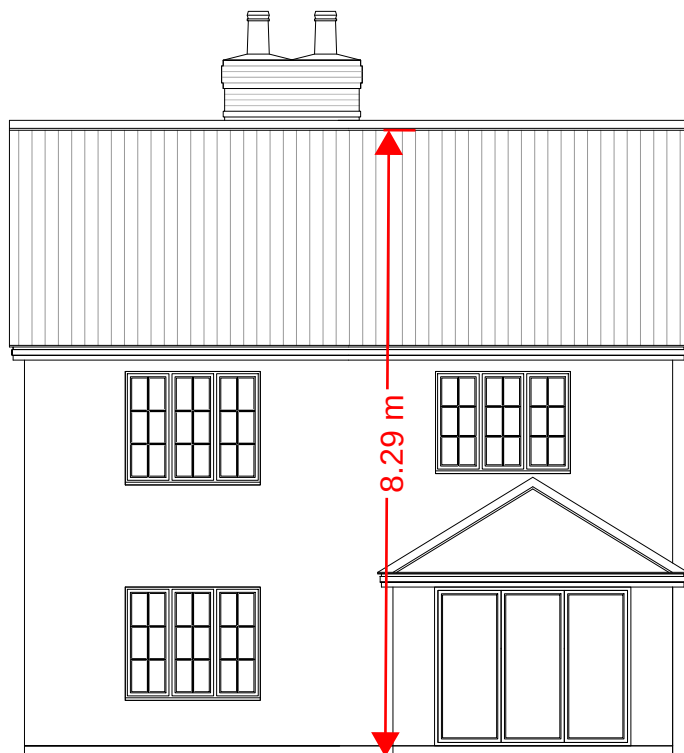
date	revision	by	no.



West elevation



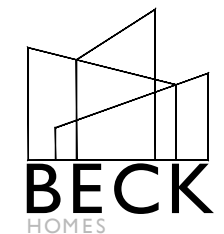
South elevation



East elevation

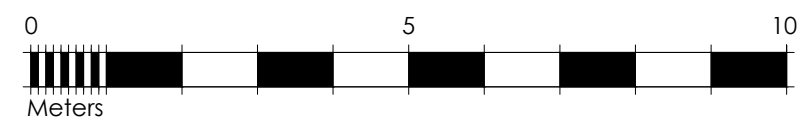


North elevation

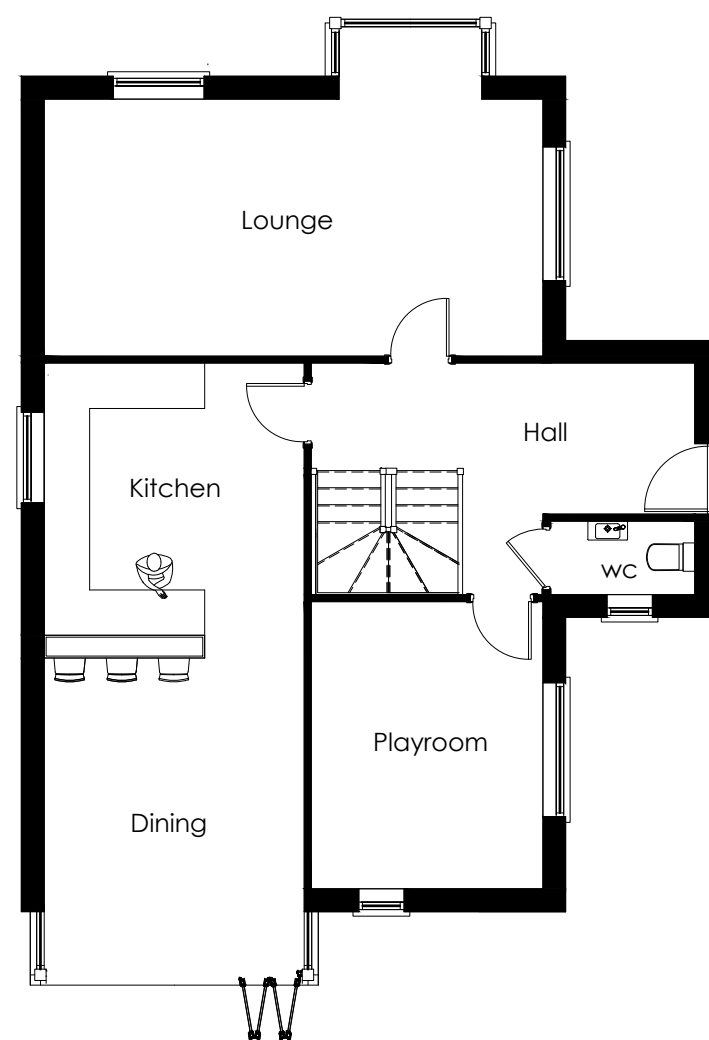


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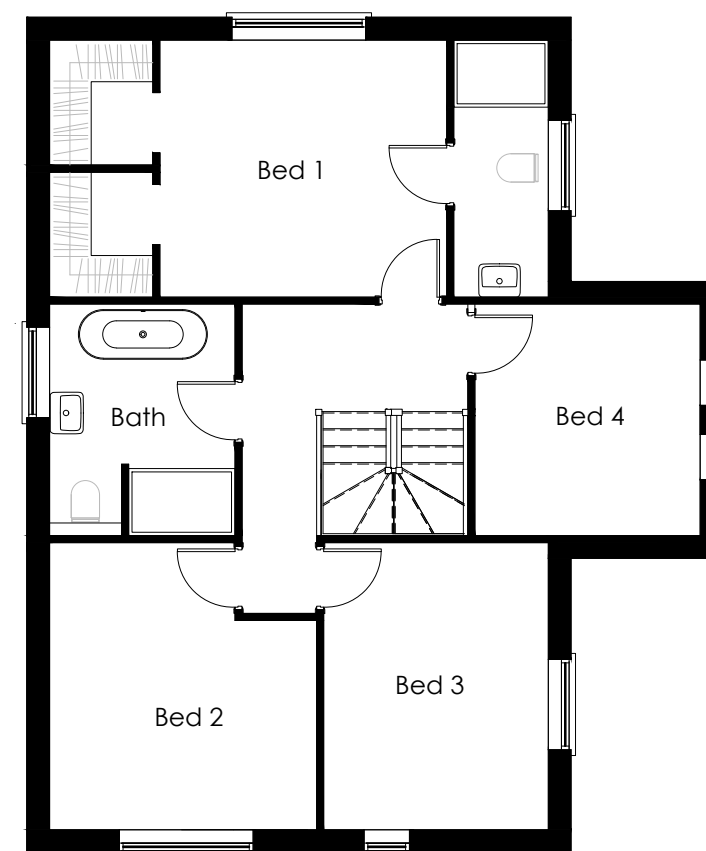
job Station Road, Ashwell			
drawing PLOT 16 ELEVATIONS			
drawn JS	status Planning		
date AUG 2025	scale 1:100 @ A3	dag no. 25-167-P000	rev -



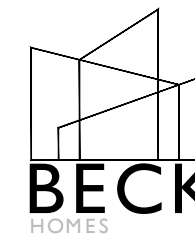
date	revision	by	no.



Ground floor plan



First floor plan



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job Station Road, Ashwell			
drawing PLOT 17 FLOOR PLANS			
drawn JS	status Planning	scale 1:100 @ A3	deg no. 25-167-P000 -
date AUG 2025			rev

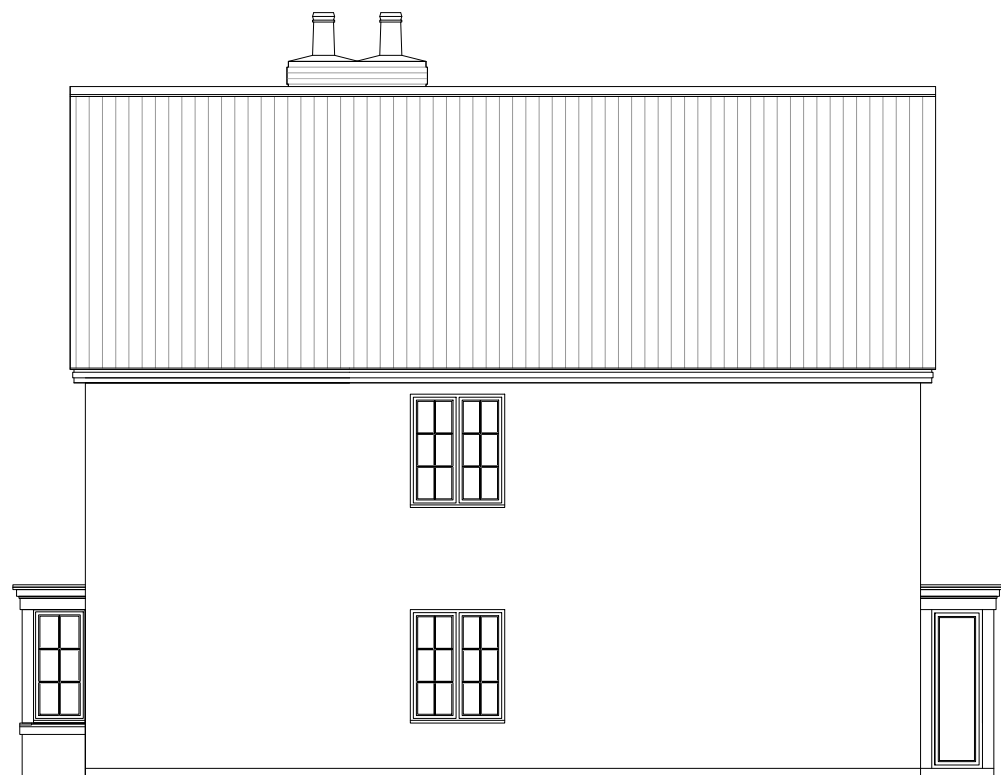
date	revision	by	no.



North elevation



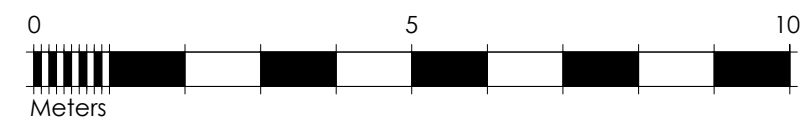
West elevation



South elevation

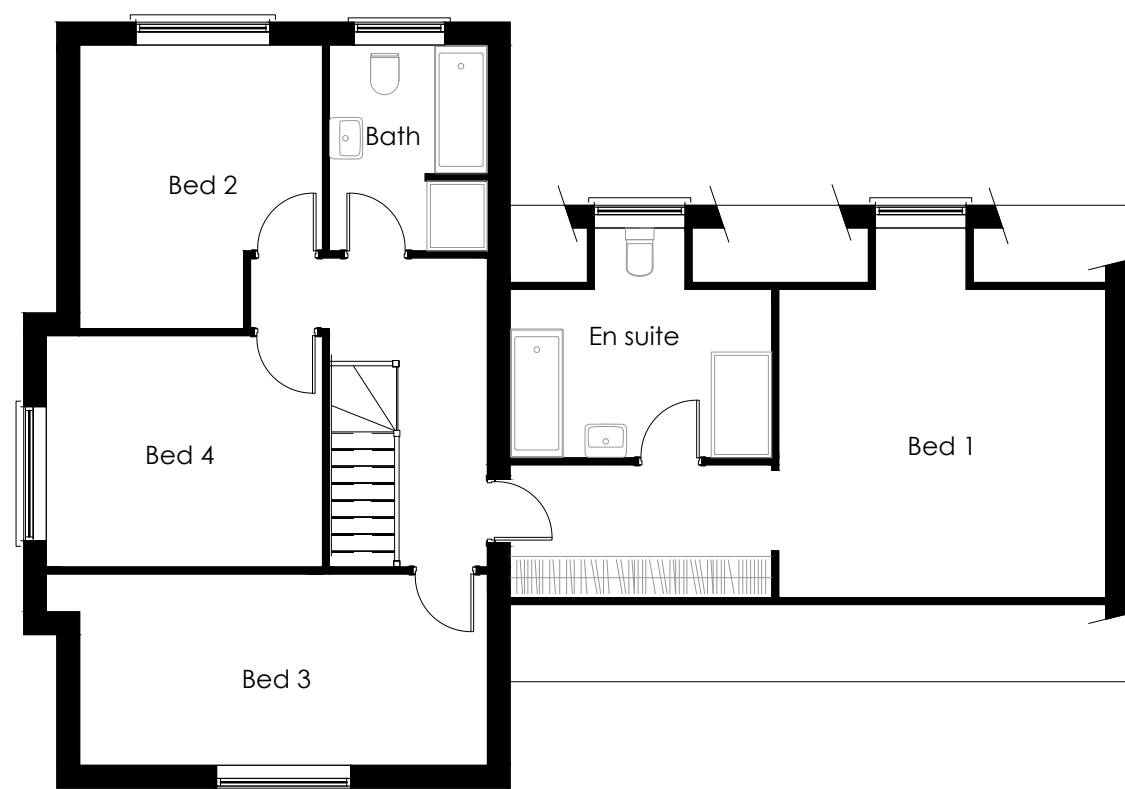


East elevation

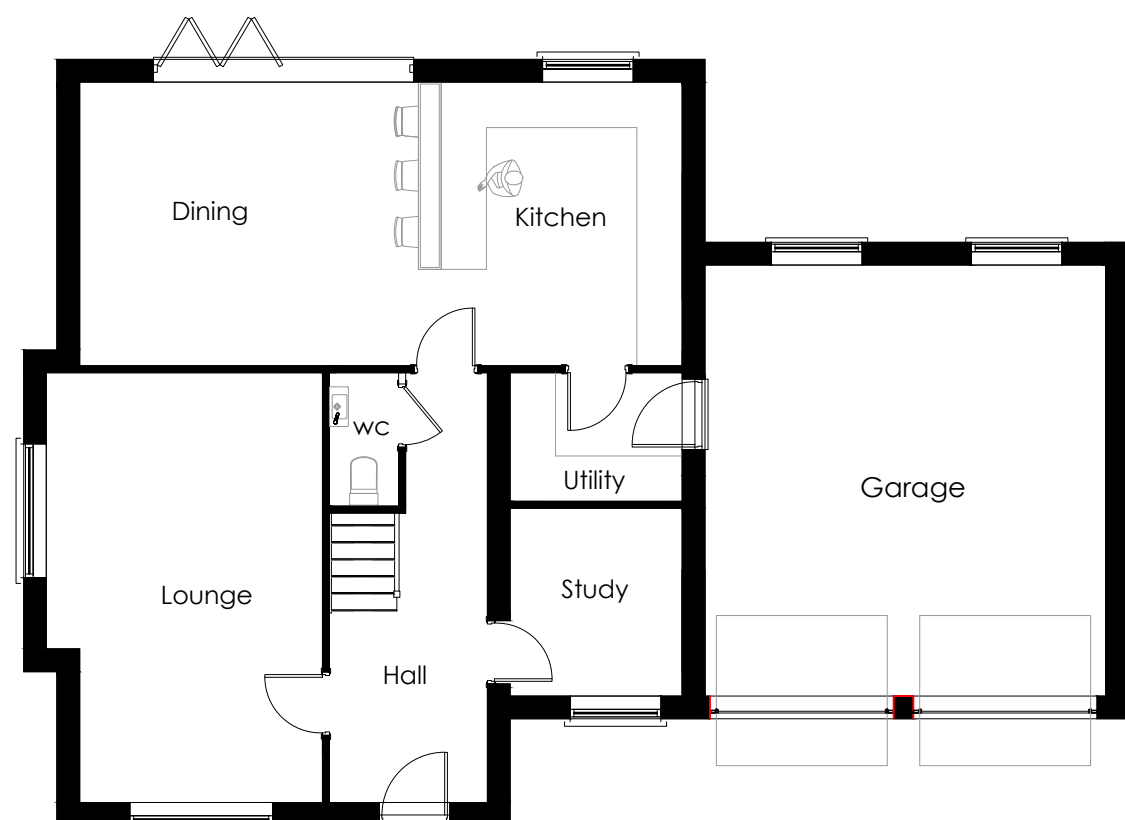


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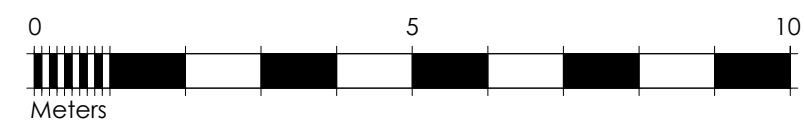
job Station Road, Ashwell			
drawing PLOT 17 ELEVATIONS			
drawn JS	status Planning	scale 1:100 @ A3	date AUG 2025
deg no. 25-167-P000		rev -	



First floor plan



Ground floor plan



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job
Station Road, Ashwell

drawing
PLOT 18 FLOOR PLANS

drawn	status
JS	Planning

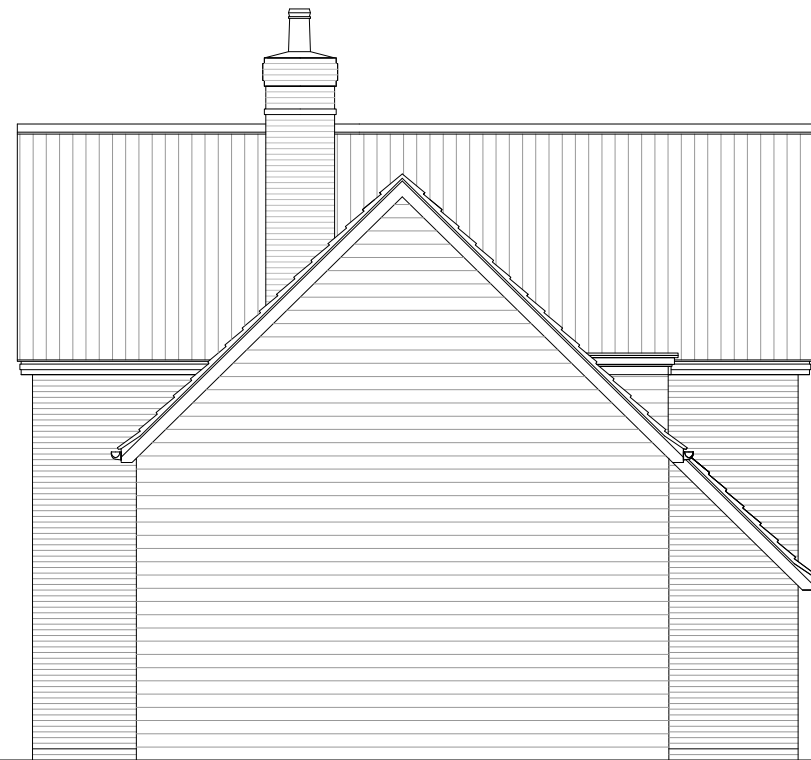
date	scale	drg no.	re
AUG 2025	1:100 @ A3	25-167-P000	

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date	revision	by	no.



North elevation



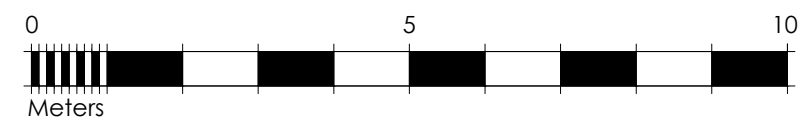
West elevation



South elevation



East elevation



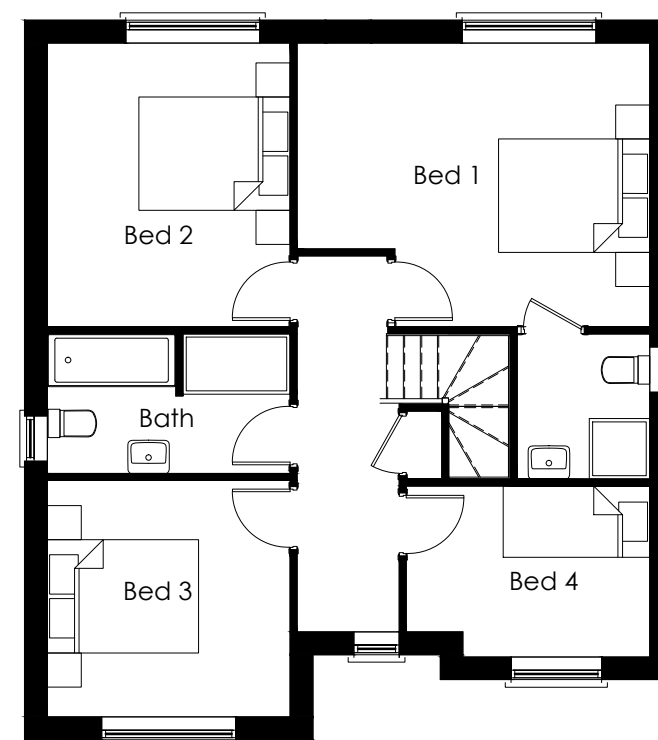
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job Station Road, Ashwell			
drawing PLOT 18 ELEVATIONS			
drawn JS	status Planning	scale 1:100 @ A3	date AUG 2025
diag no. 25-167-P000		rev -	

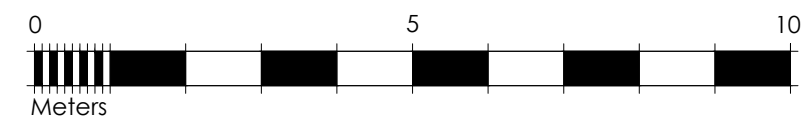
date	revision	by	no.



Ground floor plan



First floor plan



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job Station Road, Ashwell			
drawing PLOT 19 FLOOR PLANS			
drawn JS	status Planning	scale 1:100 @ A3	deg no. 25-167-P000 -
date AUG 2025			rev

date	revision	by	no.



East elevation



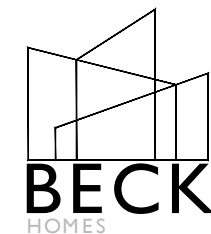
South elevation



West elevation

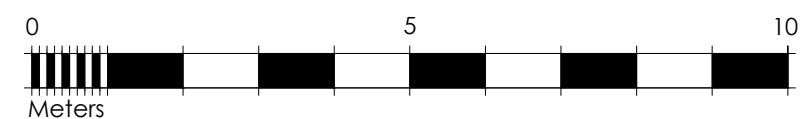


North elevation

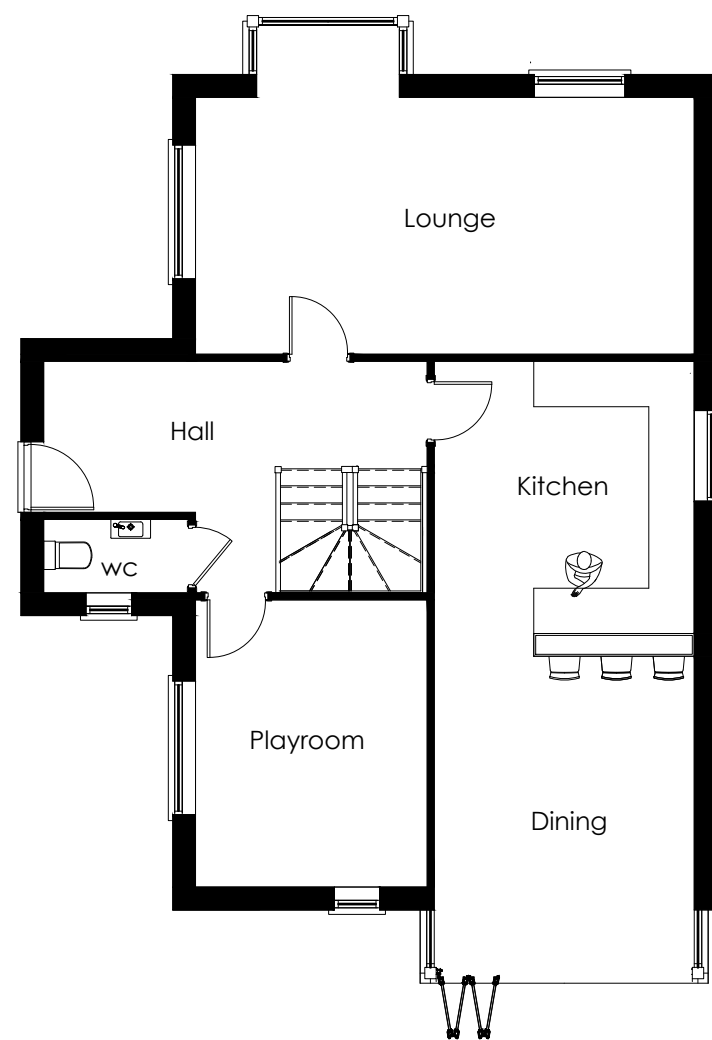


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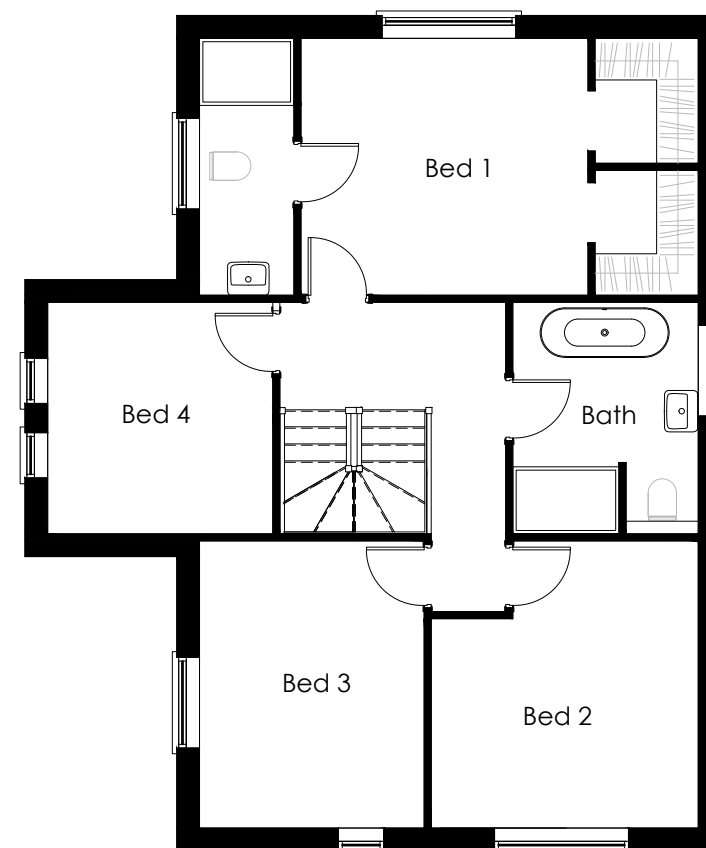
job Station Road, Ashwell			
drawing PLOT 19 ELEVATIONS			
drawn JS	status Planning		
date AUG 2025	scale 1:100 @ A3	dag no. 25-167-P000	rev -



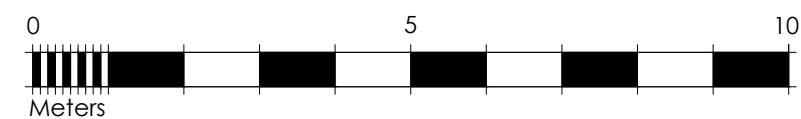
date	revision	by	no.



Ground floor plan



First floor plan



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job Station Road, Ashwell			
drawing PLOT 20 FLOOR PLANS			
drawn JS	status Planning		
date AUG 2025	scale 1:100 @ A3	dag no. 25-167-P000 -	rev

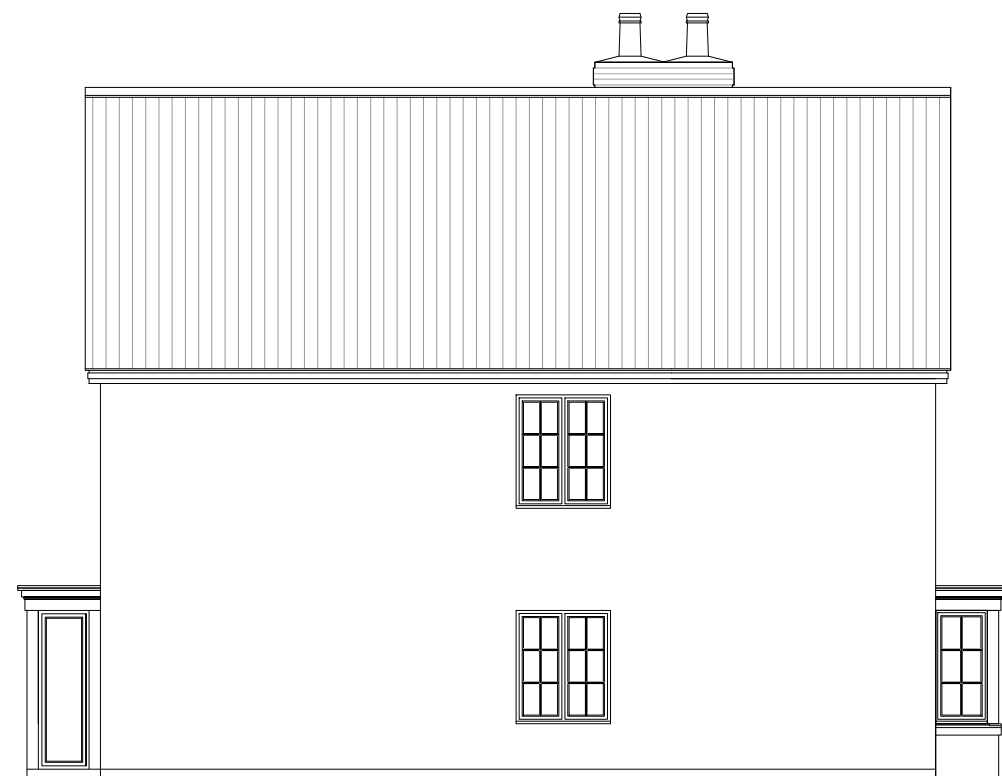
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South elevation



East elevation



North elevation



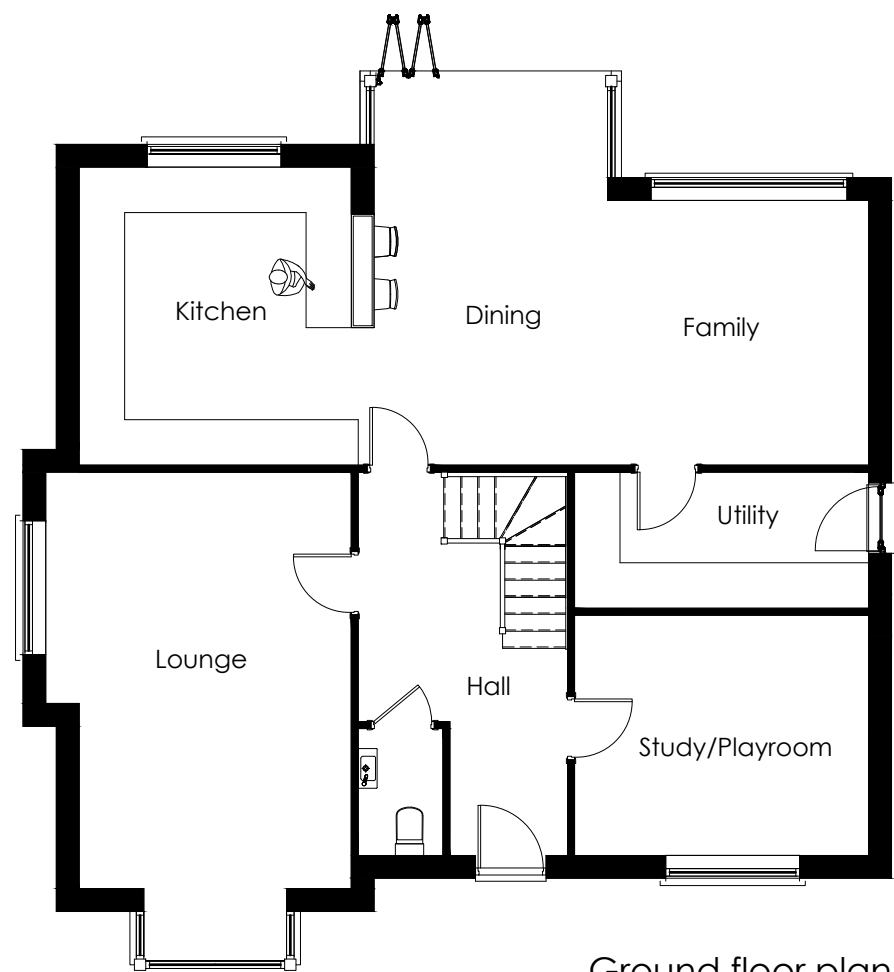
West elevation



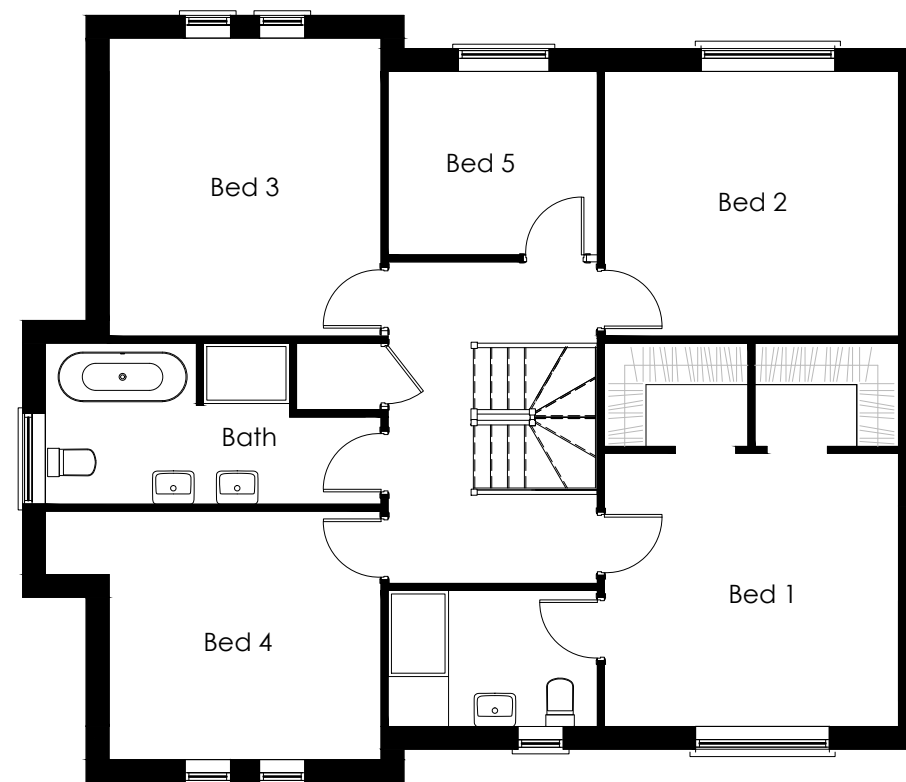
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job Station Road, Ashwell			
drawing PLOT 20 ELEVATIONS			
drawn JS	status Planning	scale 1:100 @ A3	date AUG 2025
deg no. 25-167-P000		rev -	

date	revision	by	no.



Ground floor plan

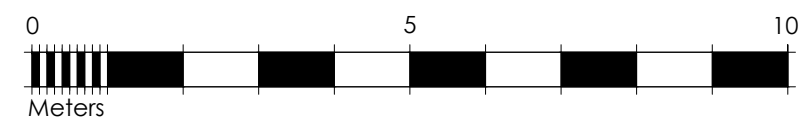


First floor plan



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job Station Road, Ashwell			
drawing PLOT 21 FLOOR PLANS			
drawn JS	status Planning		
date AUG 2025	scale 1:100 @ A3	dag no. 25-167-P000	rev -



date	revision	by	no.



West elevation



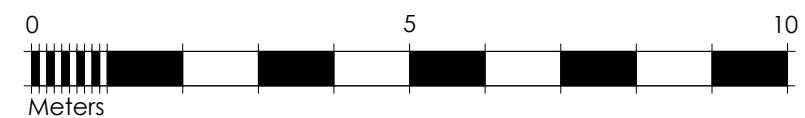
North elevation



East elevation



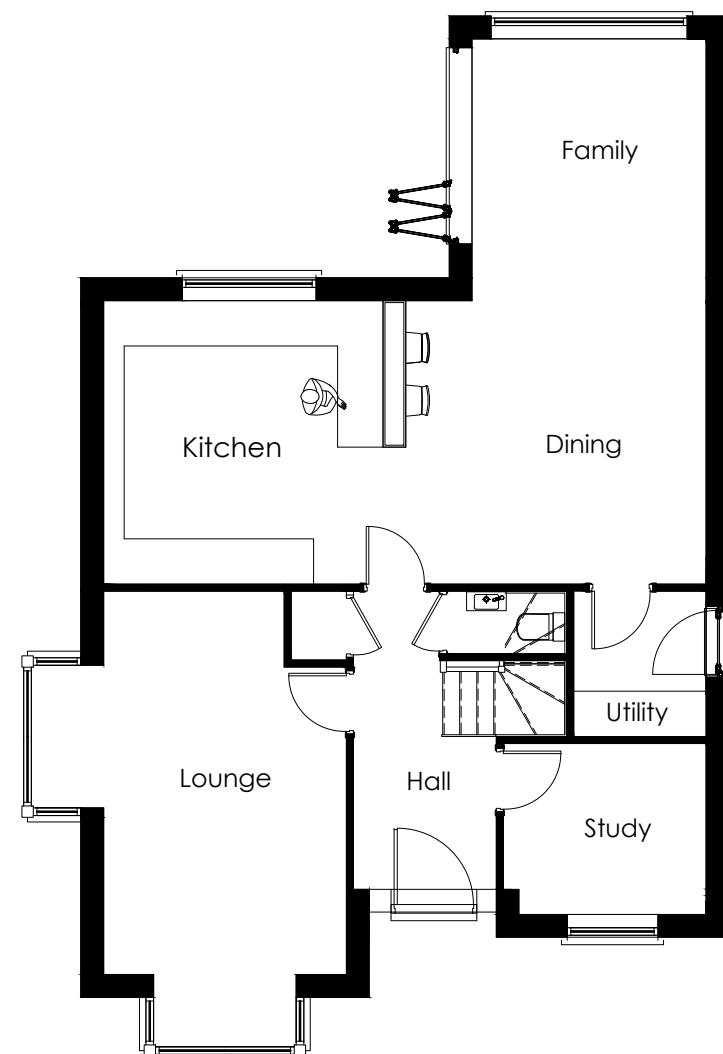
South elevation



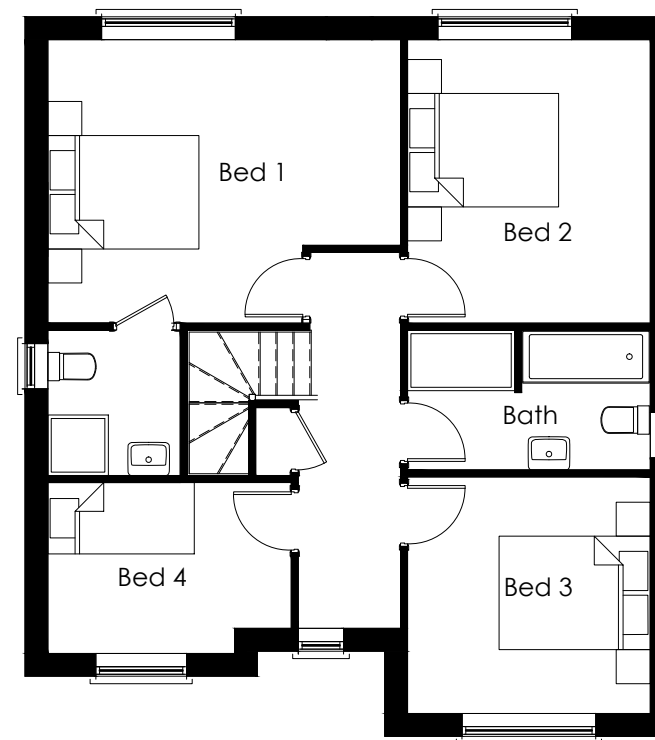
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job	Station Road, Ashwell		
drawing	PLOT 21 FLOOR PLANS		
drawn	JS	status	Planning
date	AUG 2025	scale	1:100 @ A3
dag no.	25-167-P000	rev	-

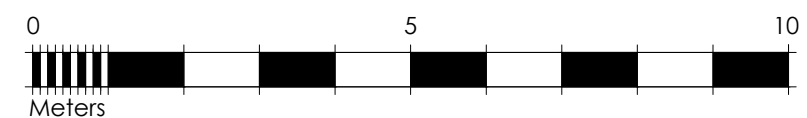
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Ground floor plan



First floor plan



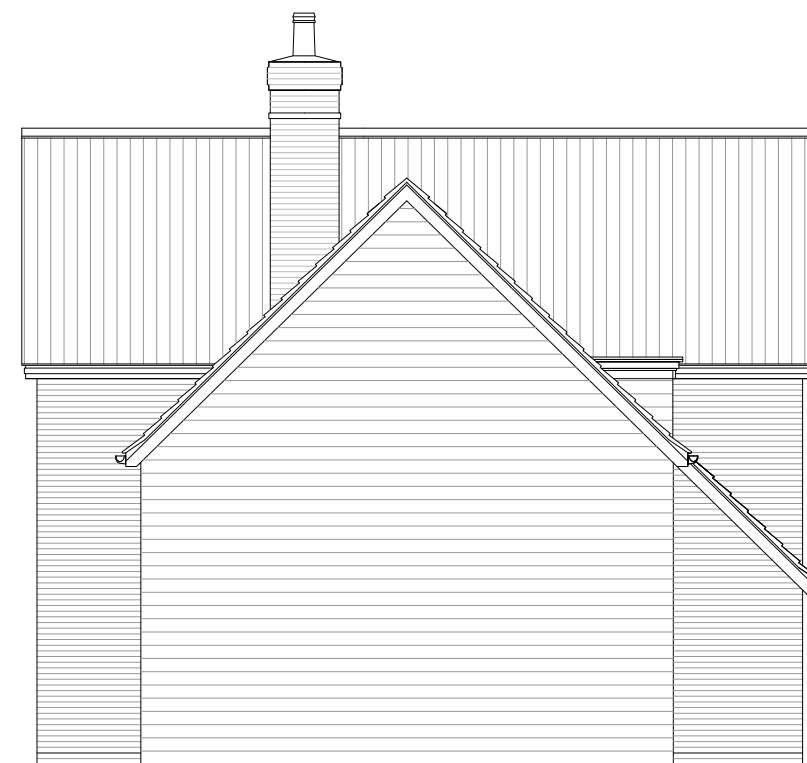
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job		Station Road, Ashwell	
drawing		PLOT 23 FLOOR PLANS	
drawn	status		
JS	Planning		
date	scale	deg no.	rev
AUG 2025	1:100 @ A3	25-167-P000 -	

date	revision	by	no.



North elevation



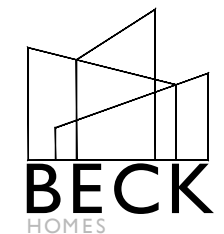
West elevation



South elevation

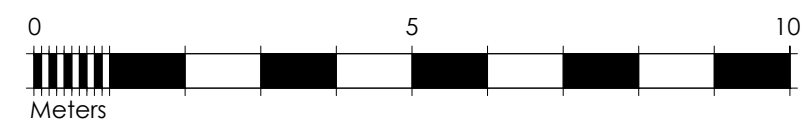


East elevation

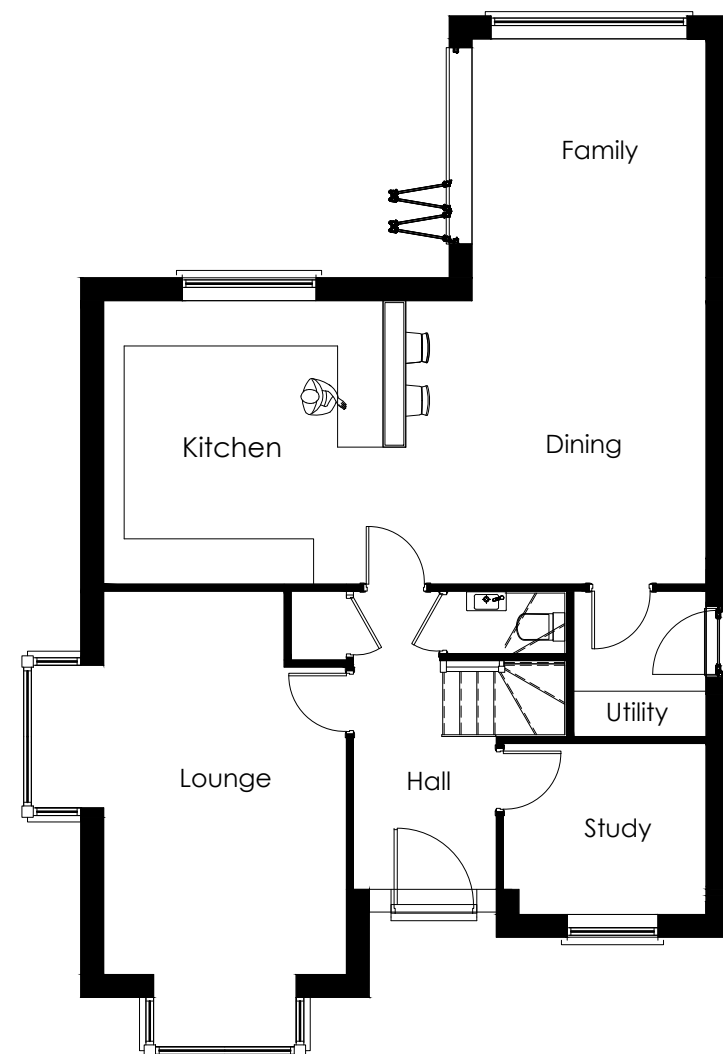


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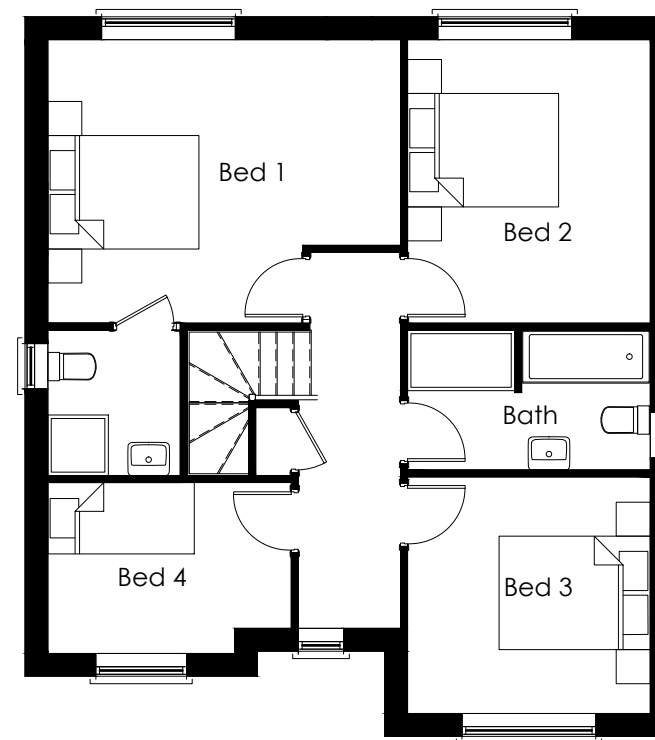
job			
Station Road, Ashwell			
drawing			
PLOT 22 FLOOR PLANS			
drawn	status		
JS	Planning		
date	scale	dag no.	rev
AUG 2025	1:100 @ A3	25-167-P000 -	



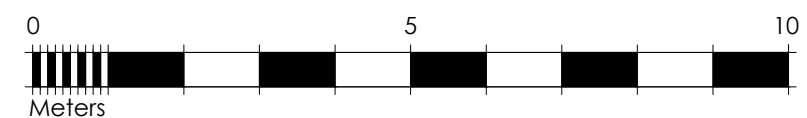
date	revision	by	no.



Ground floor plan



First floor plan



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job		Station Road, Ashwell	
drawing		PLOT 23 FLOOR PLANS	
drawn	status		
JS	Planning		
date	scale	deg no.	rev
AUG 2025	1:100 @ A3	25-167-P000 -	

date	revision	by	no.



East elevation



North elevation



West elevation

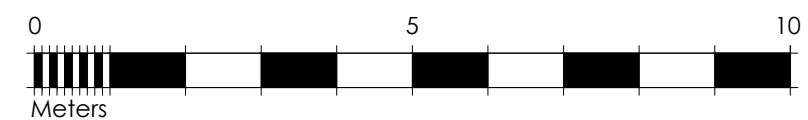


South elevation

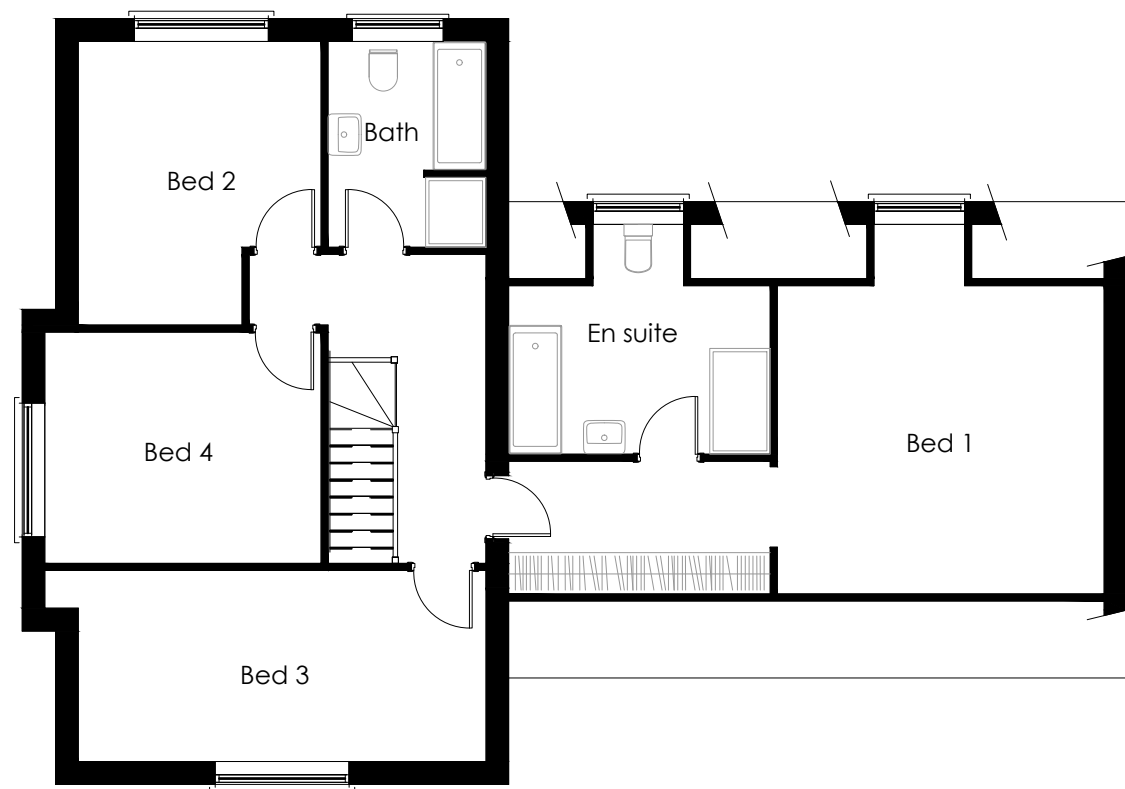


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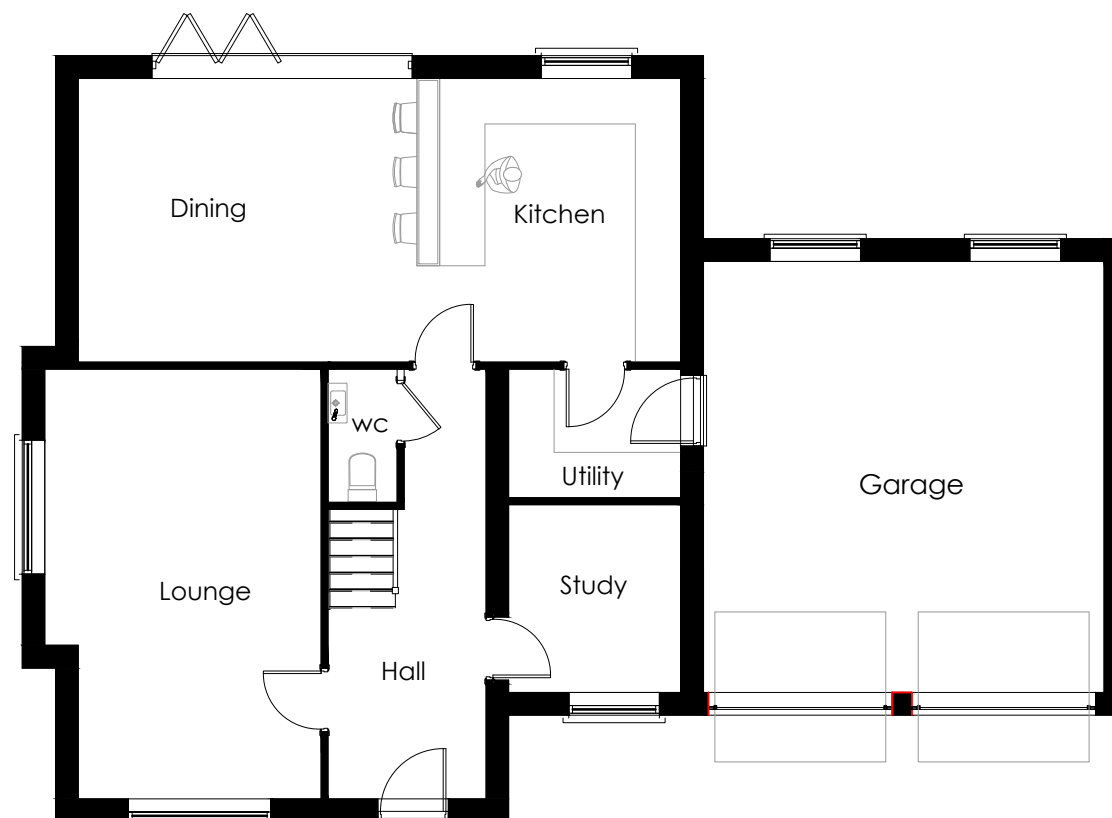
job Station Road, Ashwell			
drawing PLOT 23 ELEVATIONS			
drawn JS	status Planning	scale 1:100 @ A3	date AUG 2025
deg no. 25-167-P000		rev -	



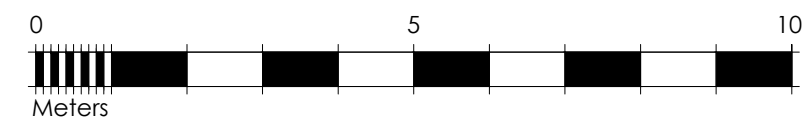
date	revision	by	no.



First floor plan



Ground floor plan



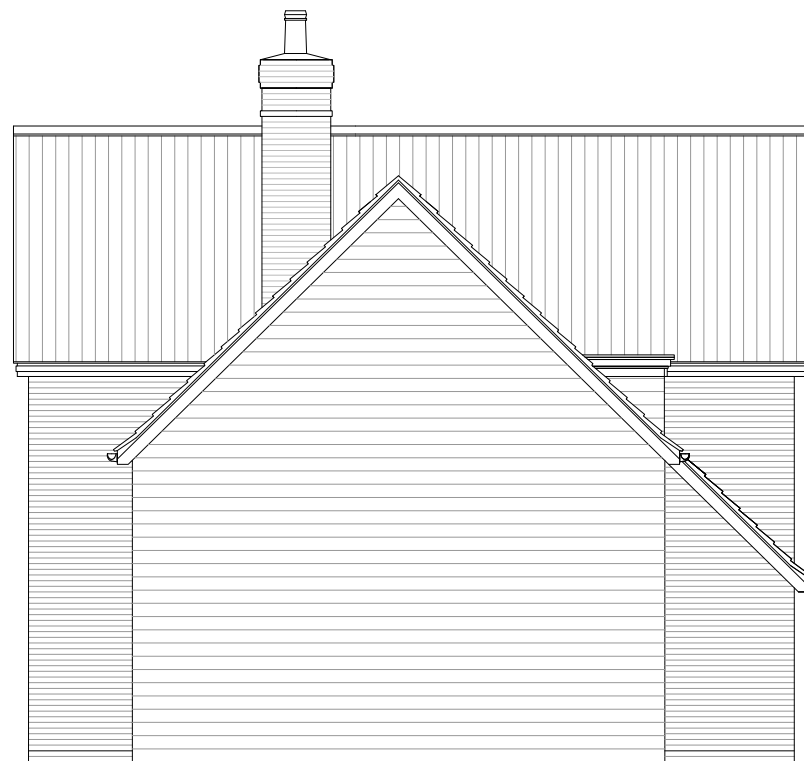
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job Station Road, Ashwell			
drawing PLOT 24 FLOOR PLANS			
drawn JS	status Planning	scale 1:100 @ A3	date AUG 2025
deg no. 25-167-P000		rev -	

date	revision	by	no.



North elevation



West elevation



South elevation

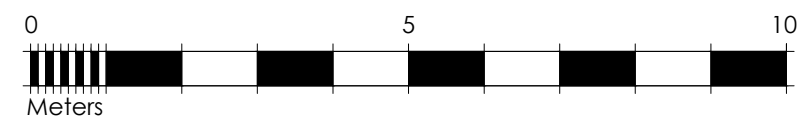


East elevation

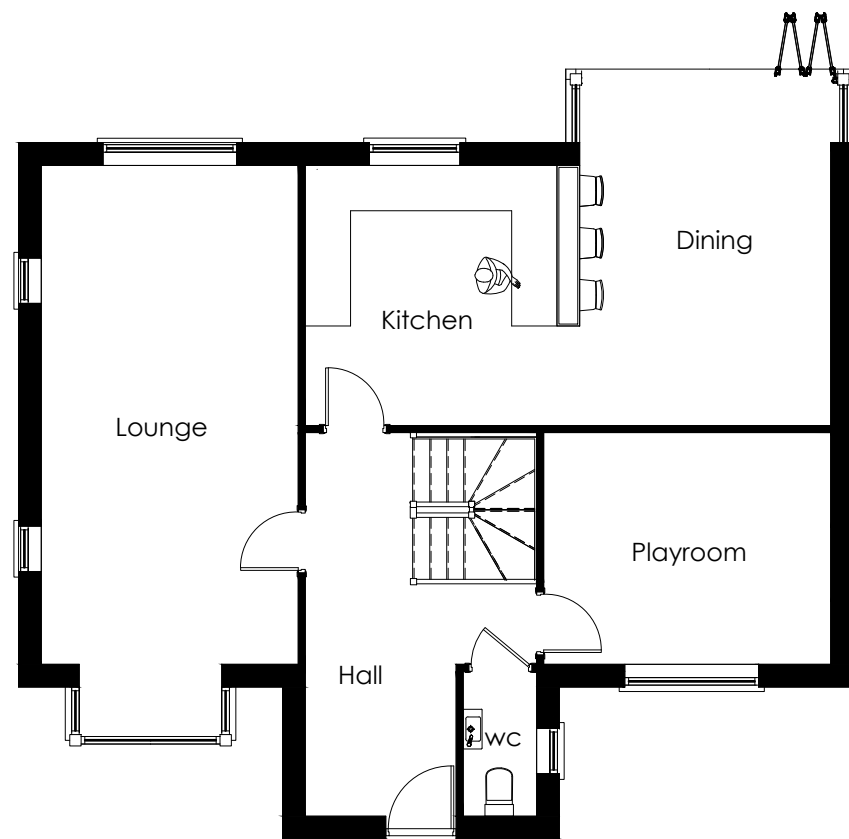


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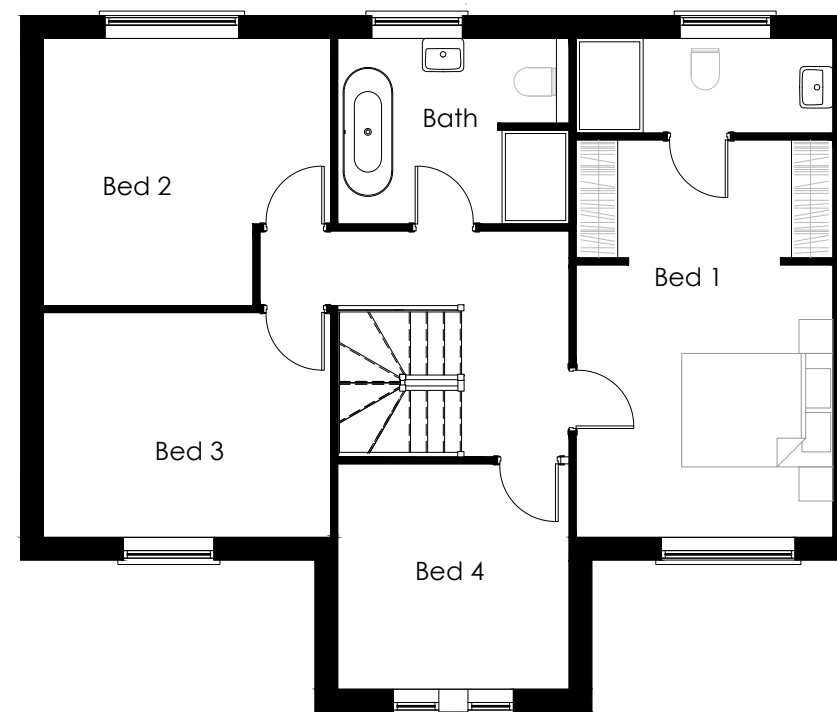
job Station Road, Ashwell			
drawing PLOT 24 ELEVATIONS			
drawn JS	status Planning	scale 1:100 @ A3	date AUG 2025
diag no. 25-167-P000		rev -	



date	revision	by	no.



Ground floor plan

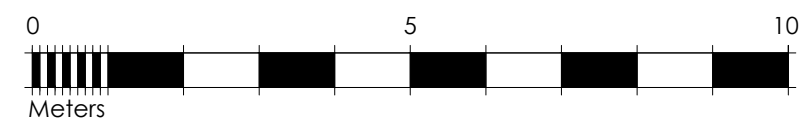


First floor plan



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job Station Road, Ashwell			
drawing PLOT 25 FLOOR PLANS			
drawn JS	status Planning	scale 1:100 @ A3	deg no. 25-167-P000 -
date AUG 2025			rev



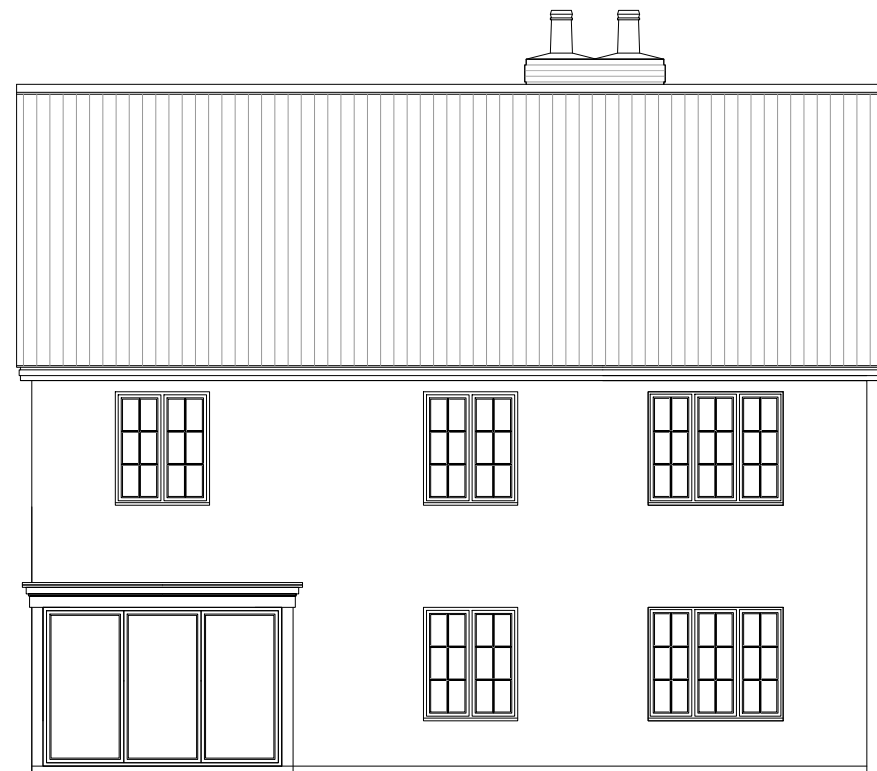
date	revision	by	no.



East elevation



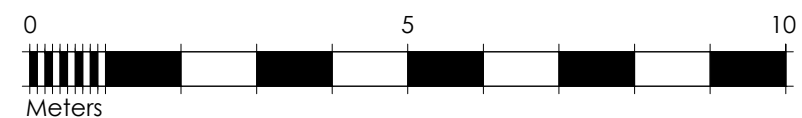
North elevation



West elevation



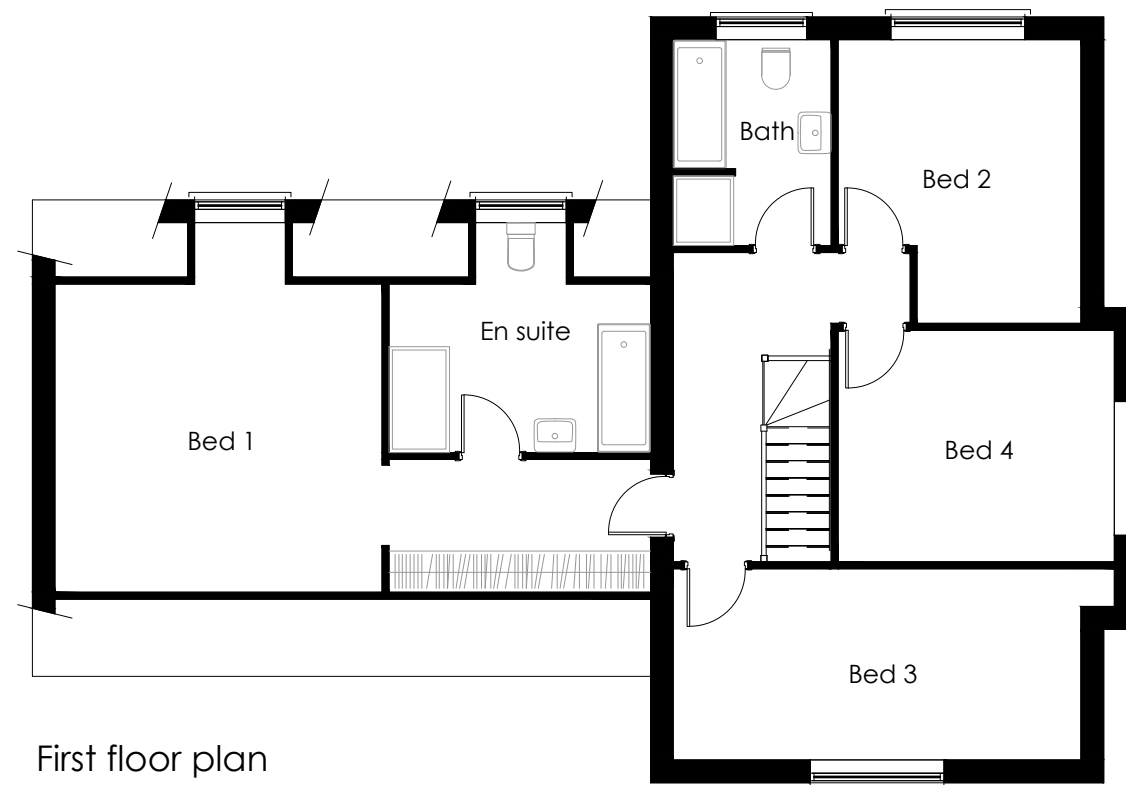
South elevation



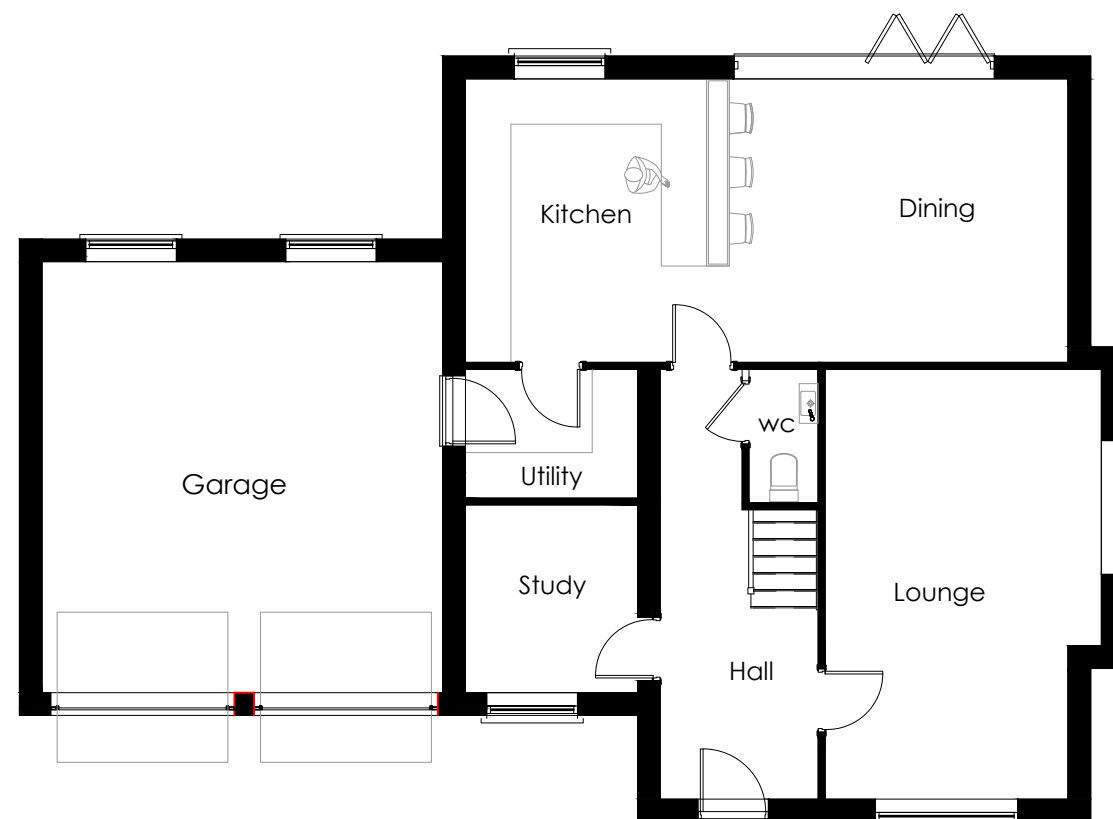
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job Station Road, Ashwell			
drawing PLOT 25 ELEVATIONS			
drawn JS	status Planning		
date AUG 2025	scale 1:100 @ A3	dag no. 25-167-P000	rev -

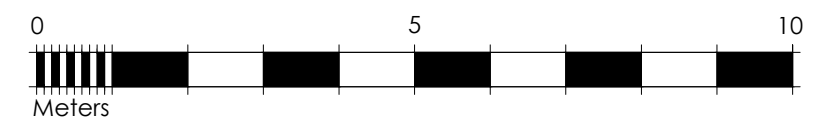
date	revision	by	no.



First floor plan



Ground floor plan



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Station Road, Ashwell			
PLOT 26 FLOOR PLANS			
drawn	status	date	rev
JS	Planning	AUG 2025	
scale		deg no.	
1:100 @ A3		25-167-P000	

date	revision	by	no.



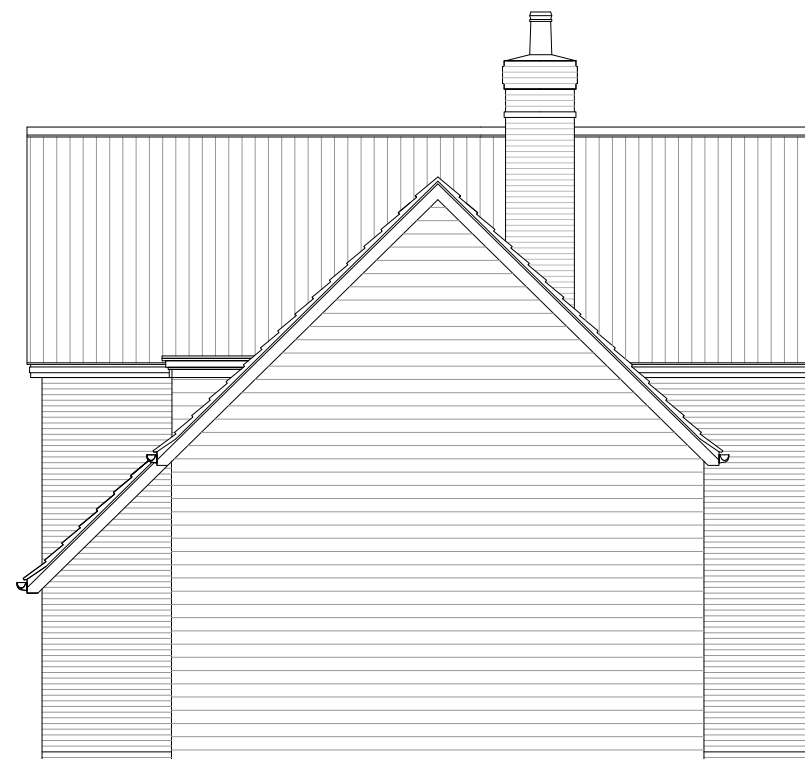
South elevation



East elevation



North elevation

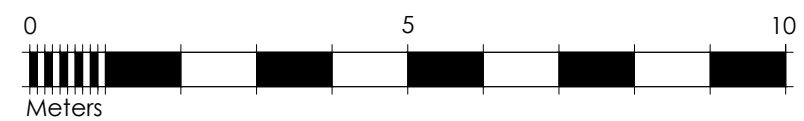


West elevation

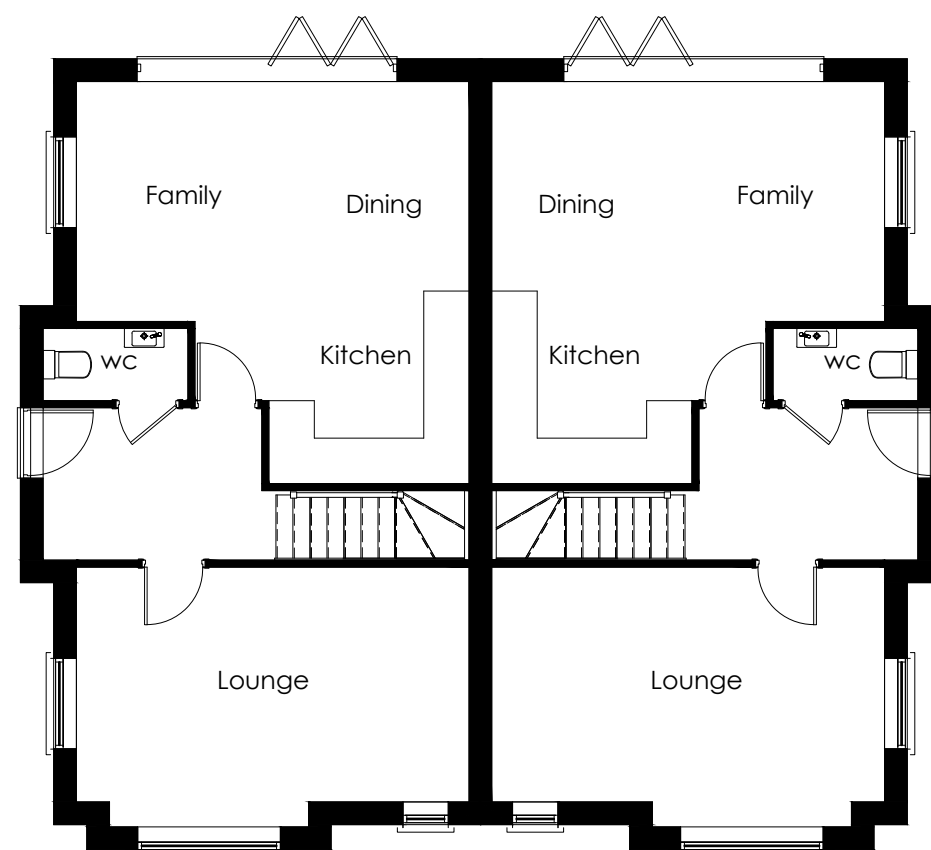


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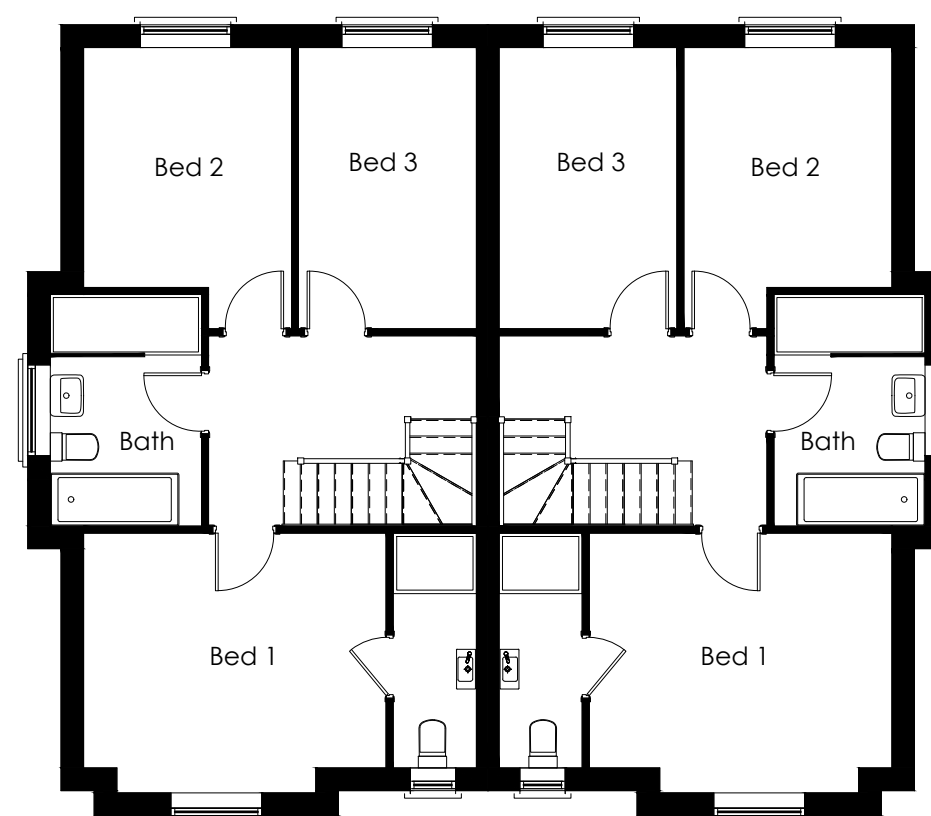
job Station Road, Ashwell			
drawing PLOT 26 ELEVATIONS			
drawn JS	status Planning		
date AUG 2025	scale 1:100 @ A3	dag no. 25-167-P000 -	rev



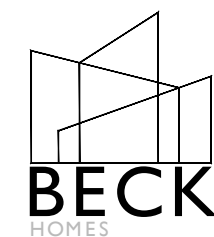
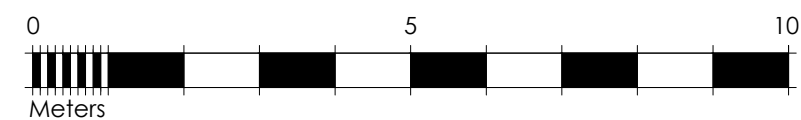
date	revision	by	no.



Ground floor plan



First floor plan



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job Station Road, Ashwell			
drawing PLOTS 27 AND 28 FLOOR PLANS			
drawn JS	status Planning	scale 1:100 @ A3	date AUG 2025
deg no. 25-167-P000		rev -	



West elevation



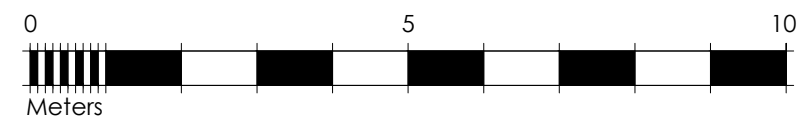
South elevation



East elevation



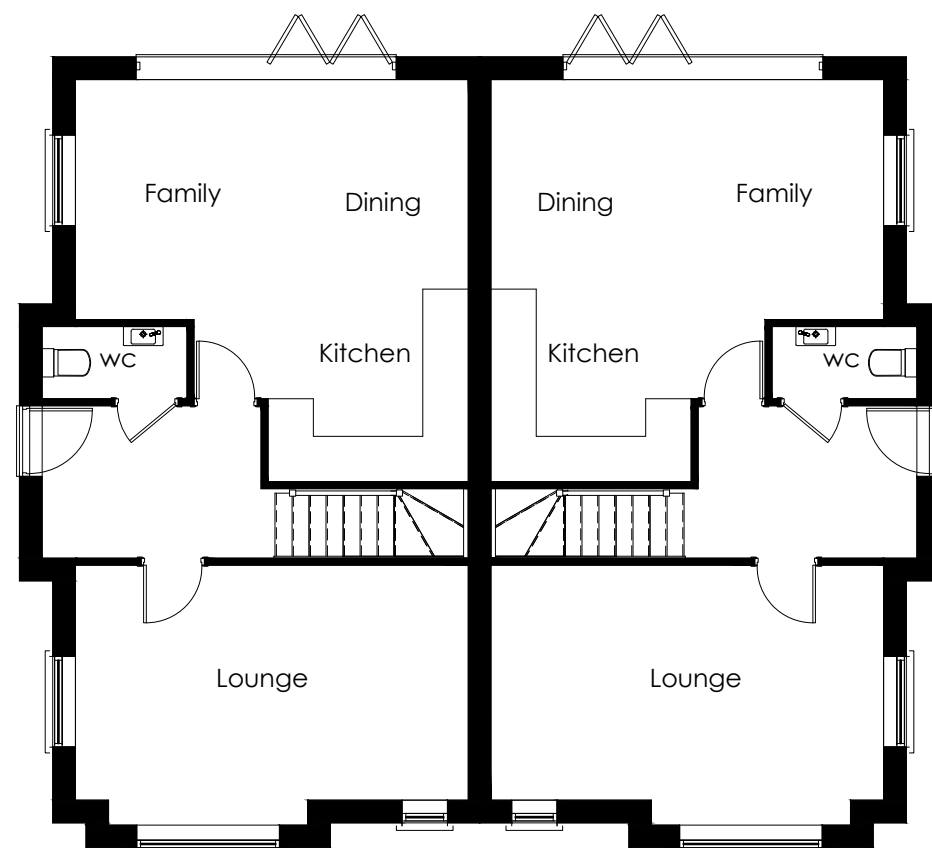
North elevation



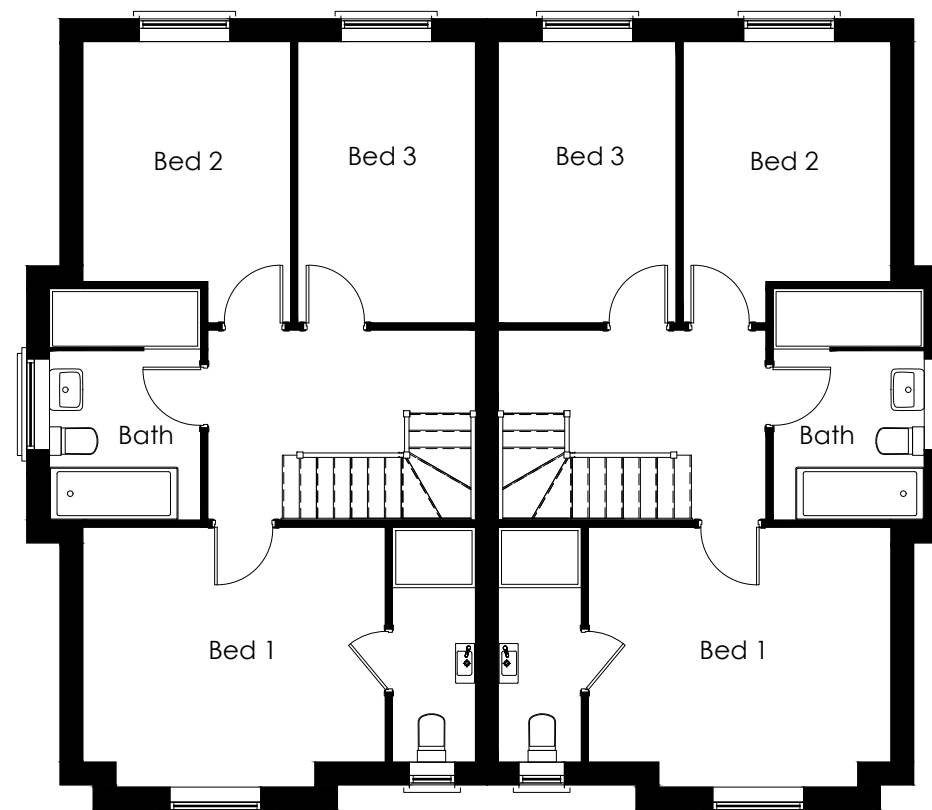
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job			
Station Road, Ashwell			
drawing			
PLOTS 27 AND 28 ELEVATIONS			
drawn	status		
JS	Planning		
date	scale	deg no.	rev
AUG 2025	1:100 @ A3	25-167-P000 -	

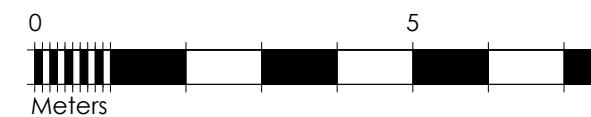
date	revision	by	no.



Ground floor plan



First floor plan



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job Station Road, Ashwell			
drawing PLOTS 29 AND 30 FLOOR PLANS			
drawn JS	status Planning		
date AUG 2025	scale 1:100 @ A3	dag no. 25-167-P000	rev -

date	revision	by	no.



West elevation



South elevation



East elevation



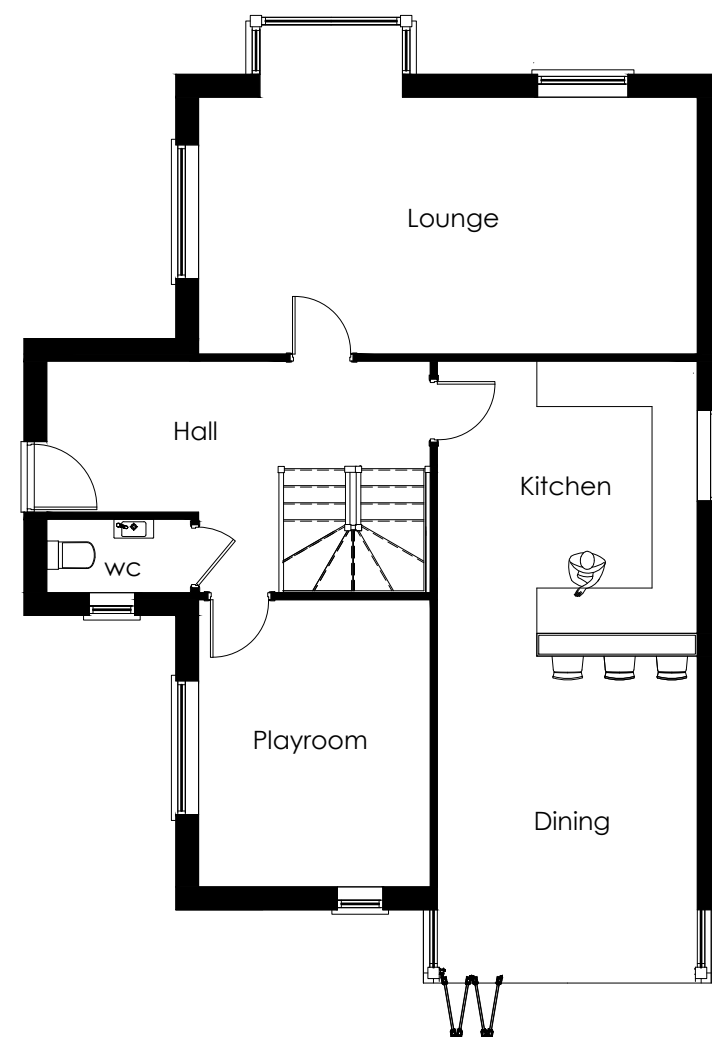
North elevation



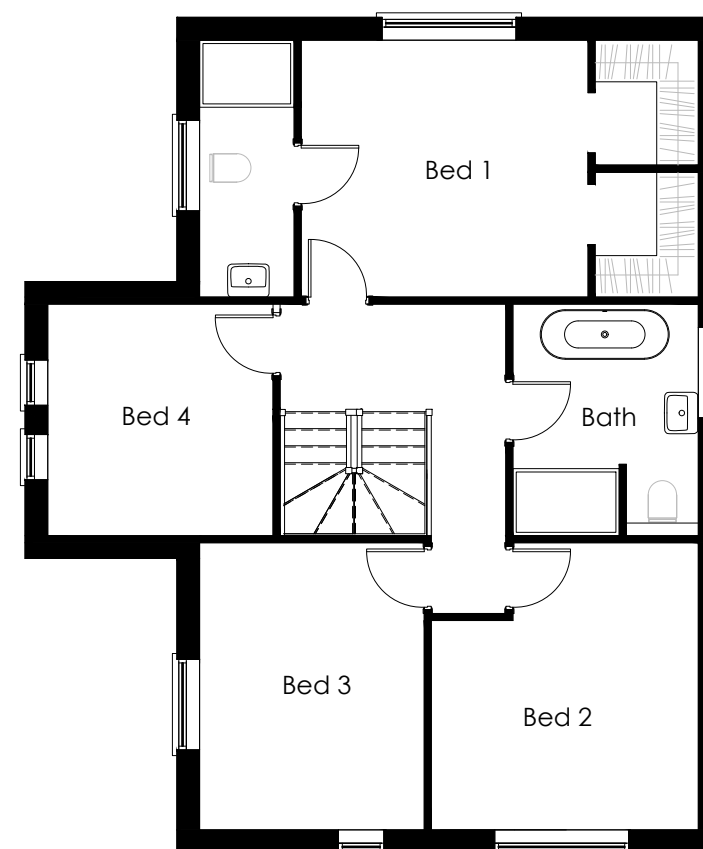
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job Station Road, Ashwell			
drawing PLOTS 29 AND 30 ELEVATIONS			
drawn JS	status Planning		
date AUG 2025	scale 1:100 @ A3	dg no. 25-167-P000 -	rev

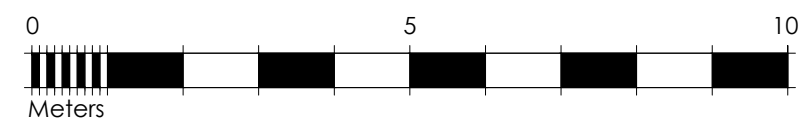
date	revision	by	no.



Ground floor plan



First floor plan



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job Station Road, Ashwell			
drawing PLOT 31 FLOOR PLANS			
drawn JS	status Planning		
date AUG 2025	scale 1:100 @ A3	dag no. 25-167-P000 -	rev

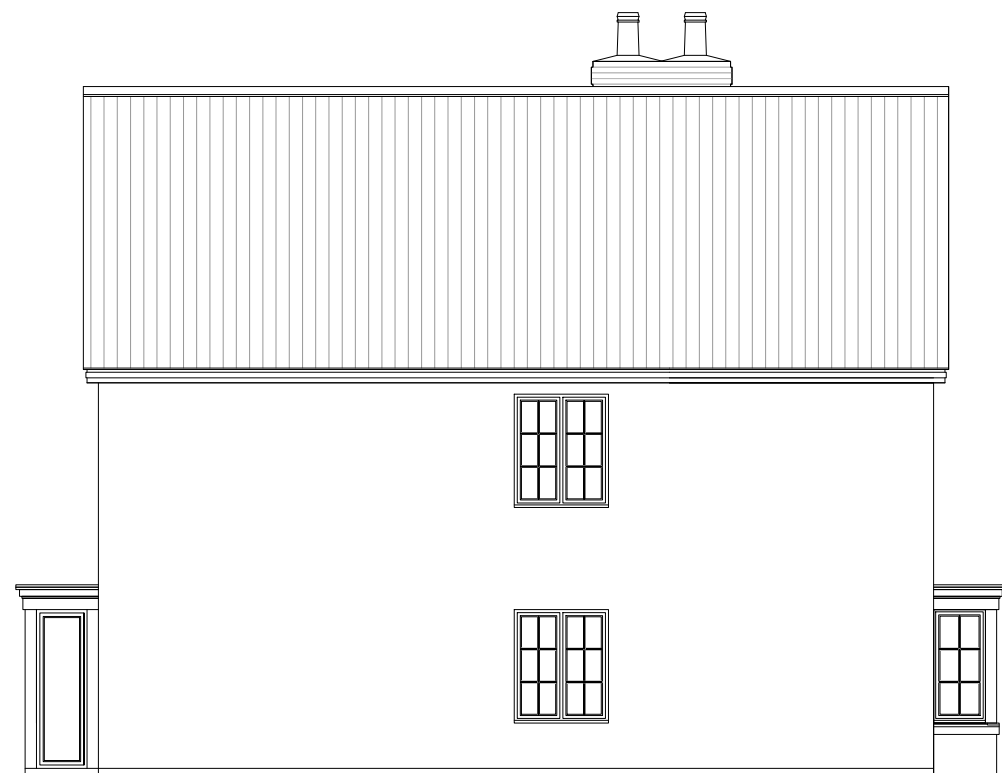
date	revision	by	no.



South elevation



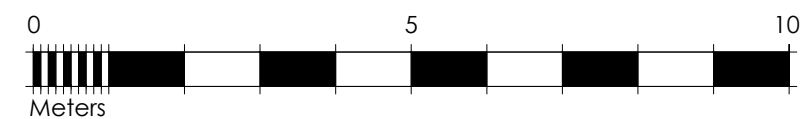
East elevation



North elevation

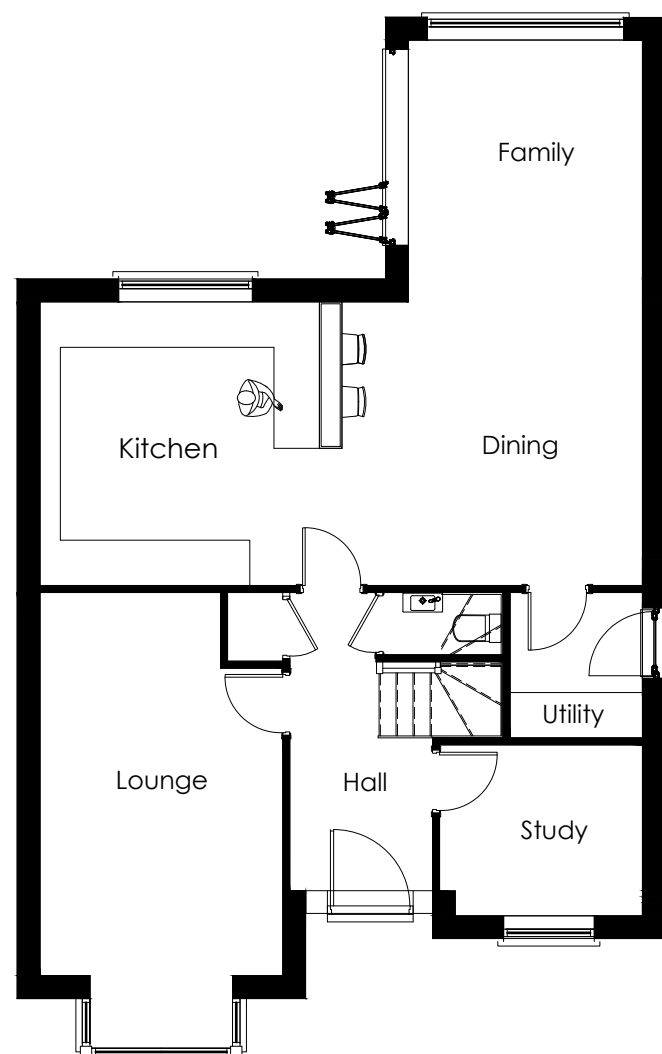


West elevation

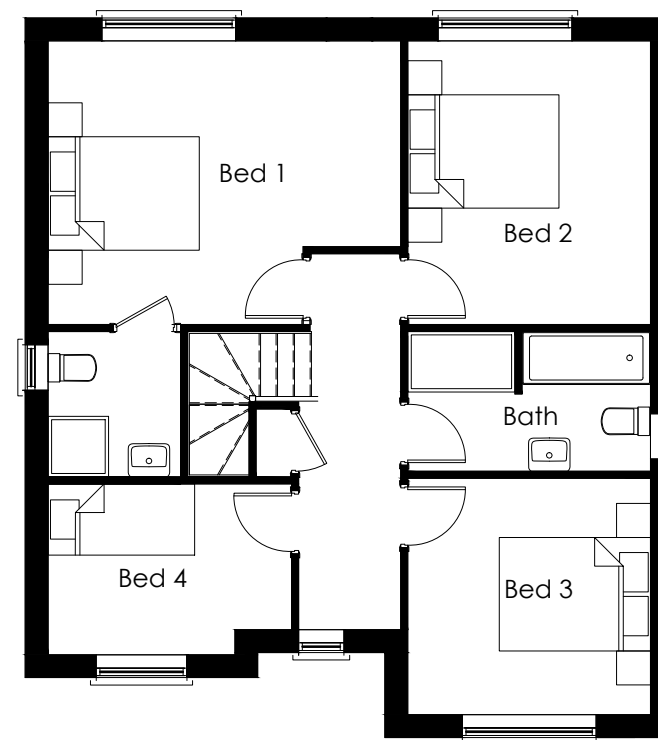


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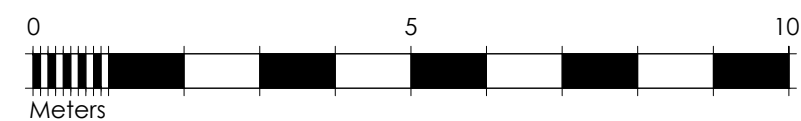
job Station Road, Ashwell			
drawing PLOT 31 ELEVATIONS			
drawn JS	status Planning	scale 1:100 @ A3	deg no. 25-167-P000 -
date AUG 2025			rev



Ground floor plan



First floor plan



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job
Station Road, Ashwell

drawing
PLOT 32 FLOOR PLANS

drawn	status
JS	Planning

date
AUG 2025

scale	1:100 @ A3
-------	------------

25-167-P000

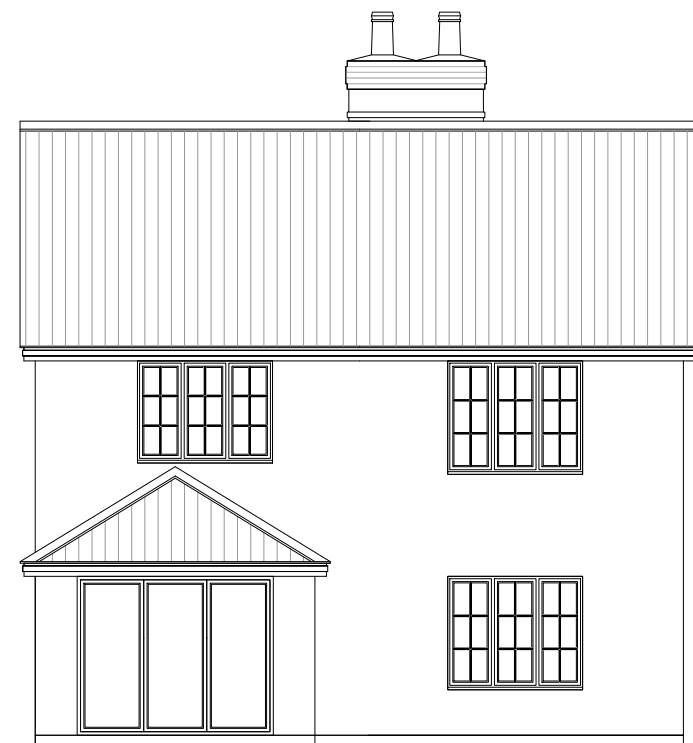
date	revision	by	no.



South elevation



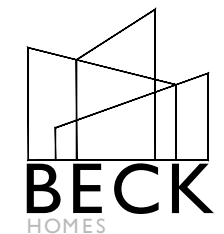
West elevation



North elevation

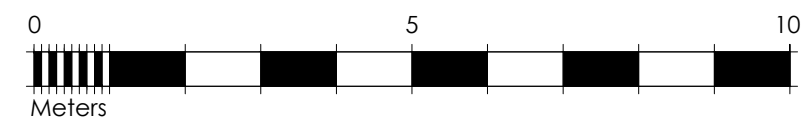


East elevation

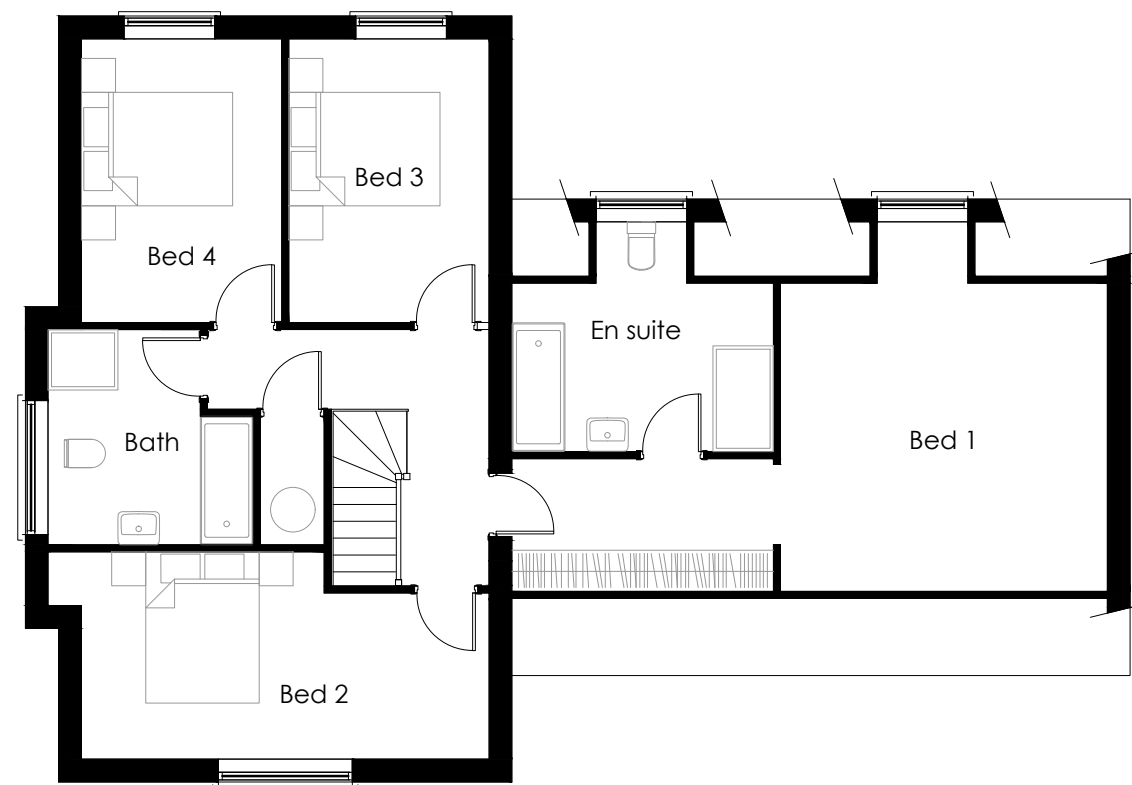


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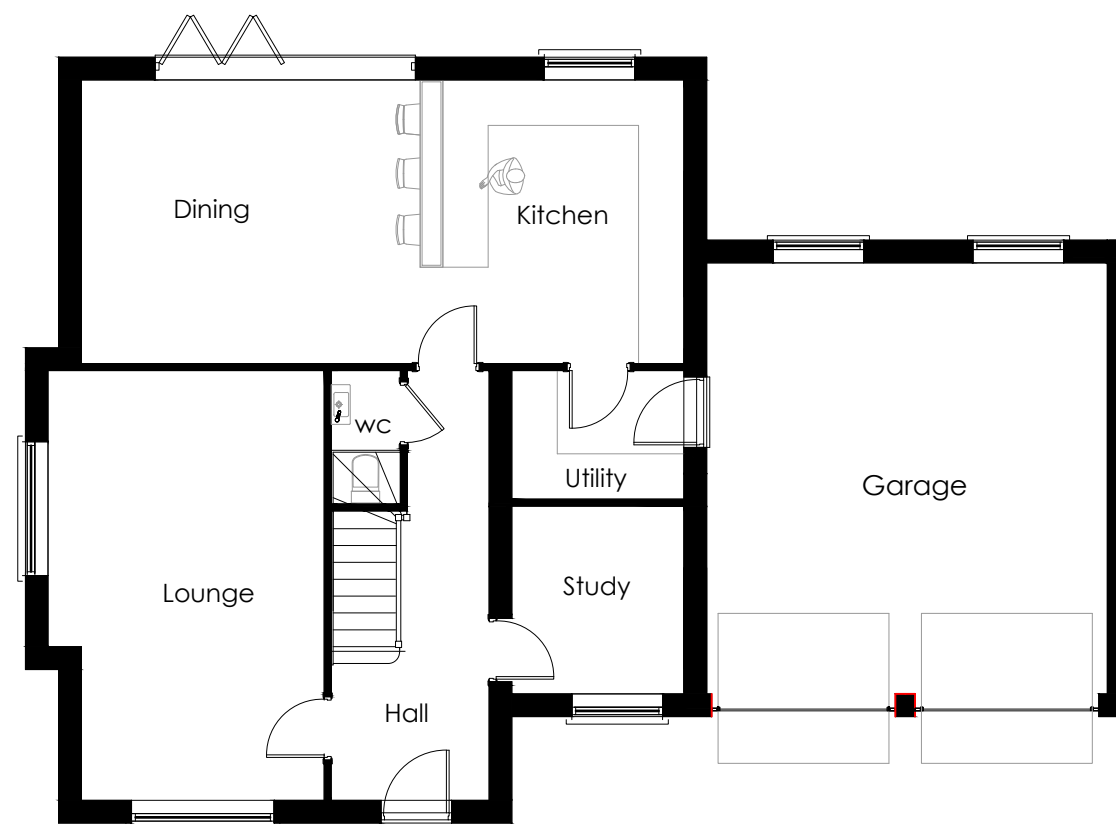
job Station Road, Ashwell			
drawing PLOT 32 ELEVATIONS			
drawn JS	status Planning		
date AUG 2025	scale 1:100 @ A3	dag no. 25-167-P000	rev -



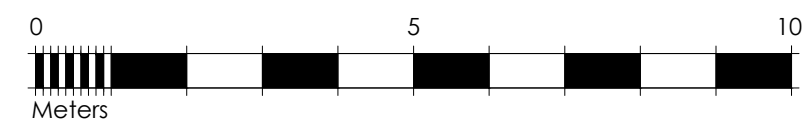
date	revision	by	no.



First floor plan



Ground floor plan



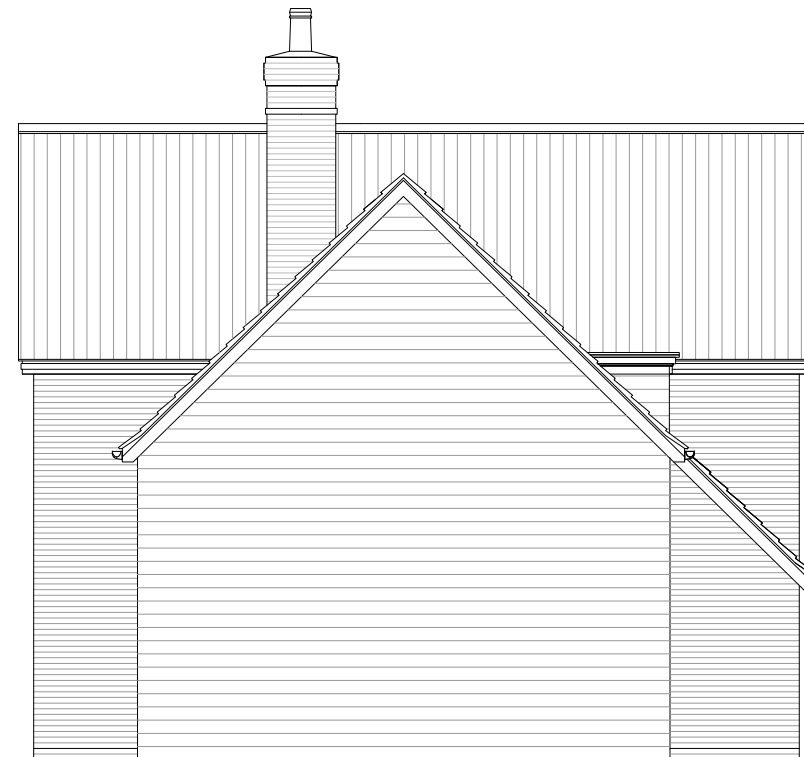
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job Station Road, Ashwell			
drawing PLOT 33 FLOOR PLANS			
drawn JS	status Planning		
date AUG 2025	scale 1:100 @ A3	dag no. 25-167-P000	rev -

date	revision	by	no.



South elevation



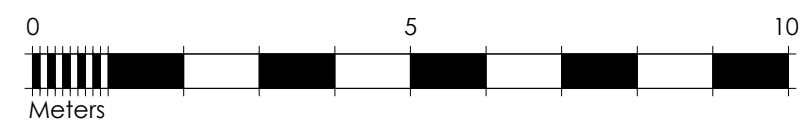
East elevation



North elevation



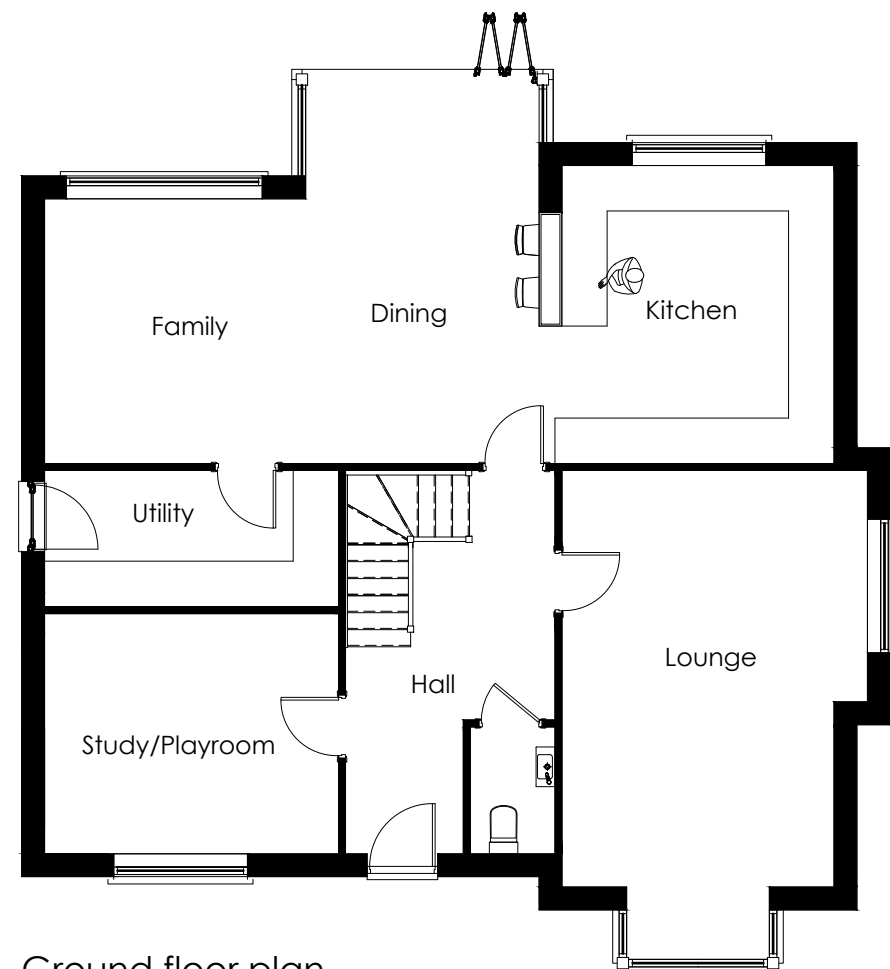
West elevation



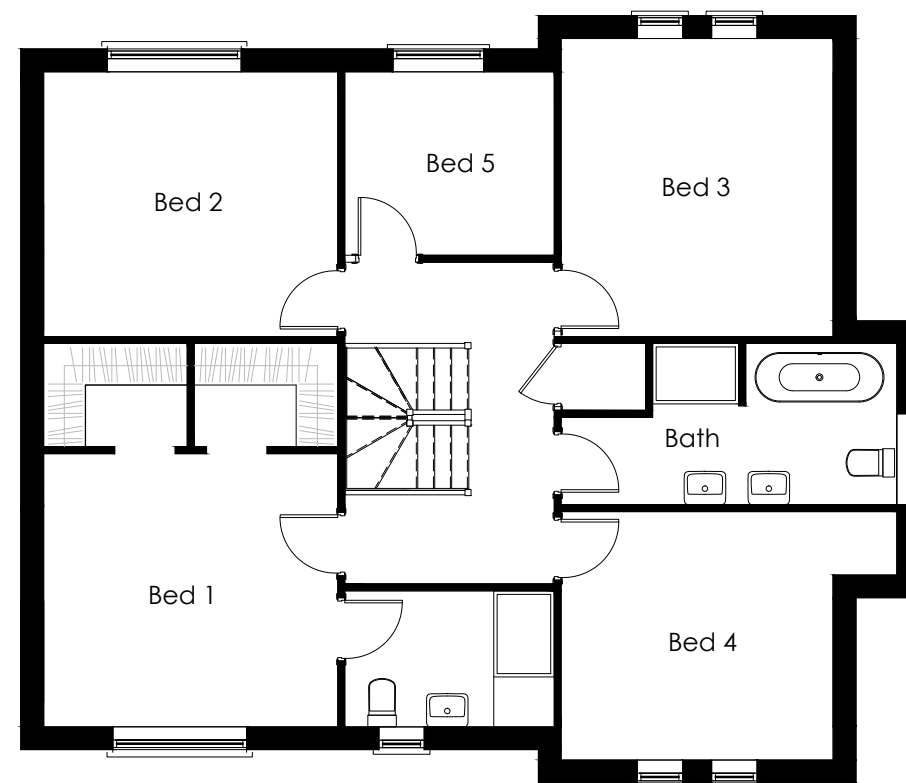
BECK HOMES LTD
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ALDERLEY EDGE, CHESHIRE SK9 7LA
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job			
Station Road, Ashwell			
drawing			
PLOT 33 ELEVATIONS			
drawn	status		
JS	Planning		
date	scale	dag no.	rev
AUG 2025	1:100 @ A3	25-167-P000 -	

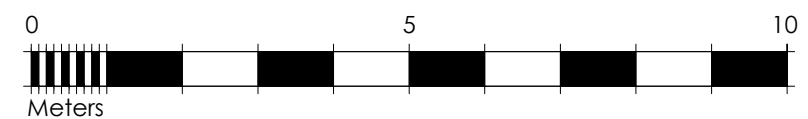
date	revision	by	no.



Ground floor plan



First floor plan



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job Station Road, Ashwell			
drawing PLOT 34 FLOOR PLANS			
drawn JS	status Planning		
date AUG 2025	scale 1:100 @ A3	dag no. 25-167-P000 -	rev

date	revision	by	no.



North elevation



West elevation



South elevation

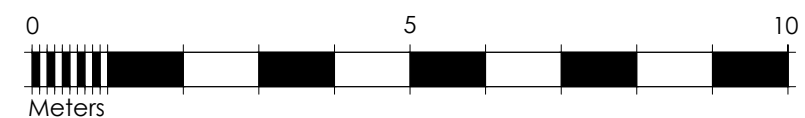


East elevation

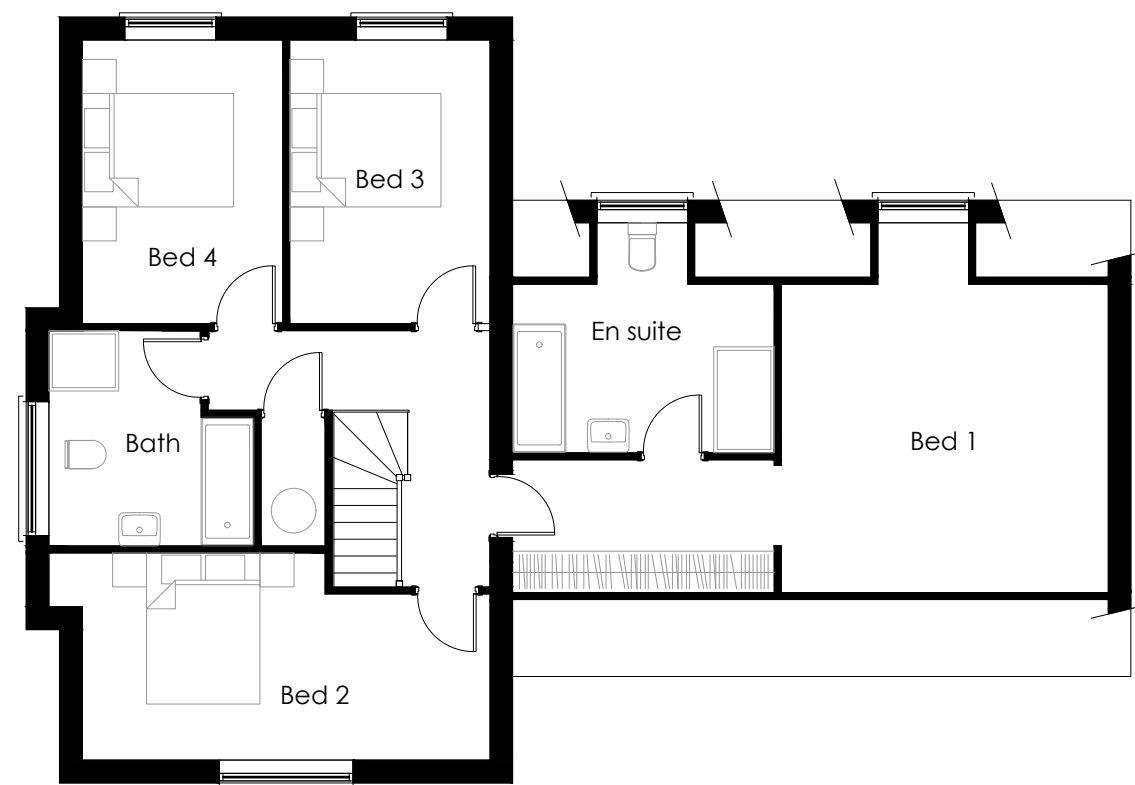


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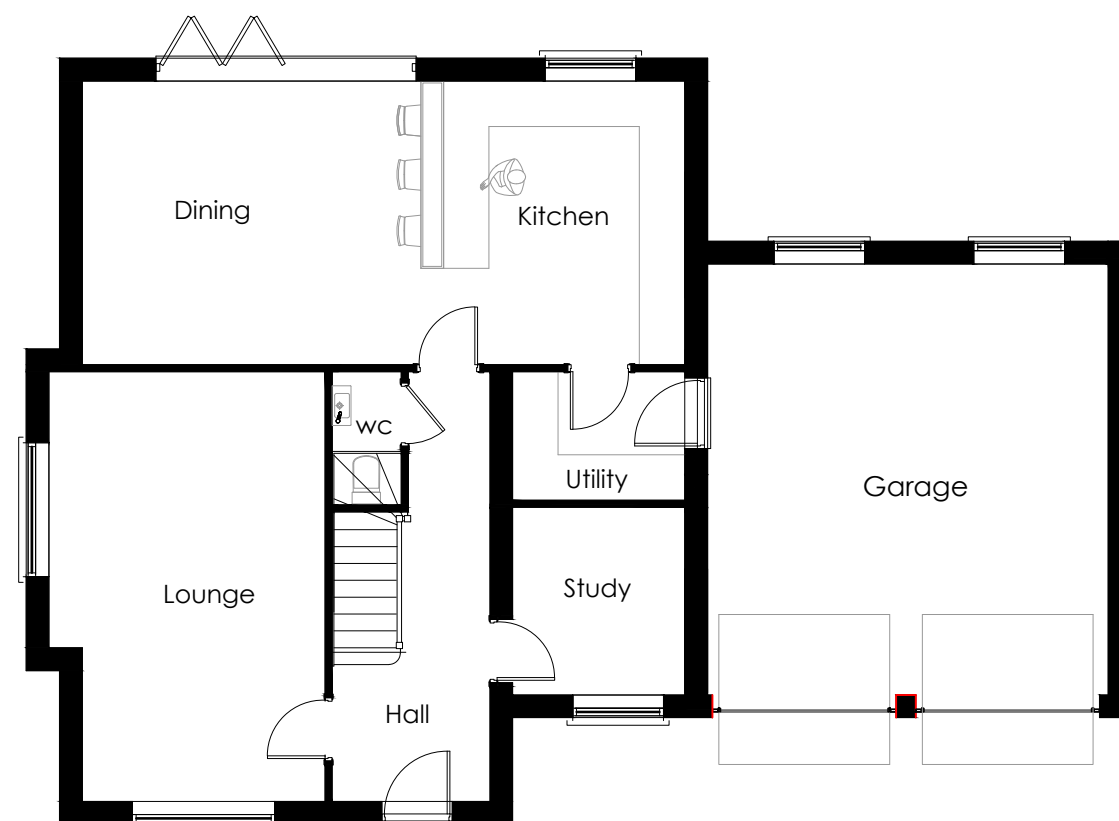
job Station Road, Ashwell			
drawing PLOT 34 ELEVATIONS			
drawn JS	status Planning		
date AUG 2025	scale 1:100 @ A3	dwg no. 25-167-P000	rev -



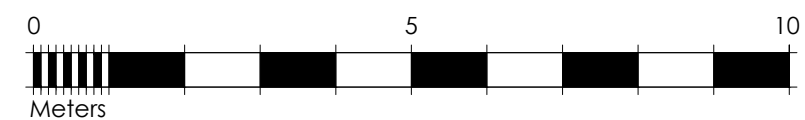
date	revision	by	no.



First floor plan



Ground floor plan



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HOMES

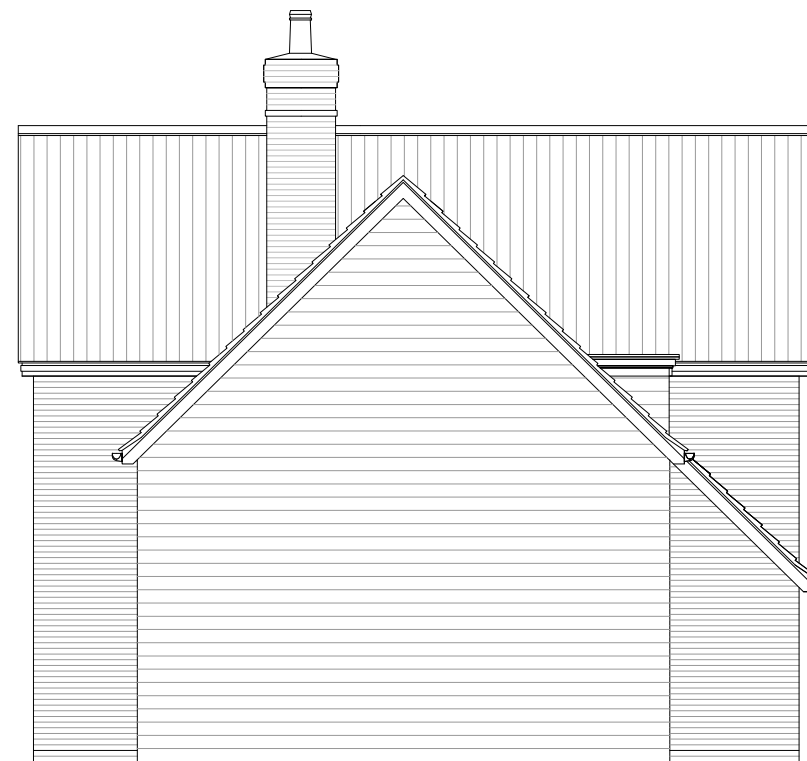
BECK HOMES LTD
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ALDERLEY EDGE, CHESHIRE SK9 7LA
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job Station Road, Ashwell			
drawing PLOT 35 FLOOR PLANS			
drawn JS	status Planning		
date AUG 2025	scale 1:100 @ A3	deg no. 25-167-P000	rev -

date	revision	by	no.



North elevation



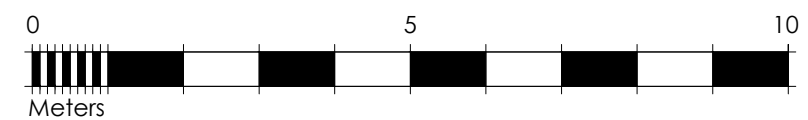
West elevation



South elevation



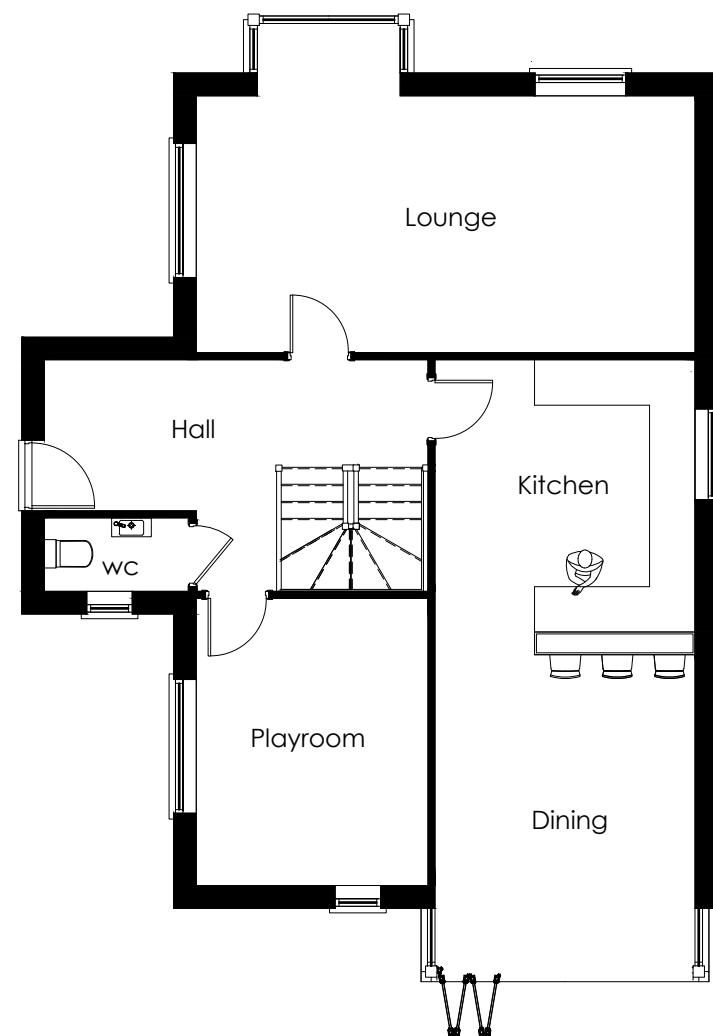
East elevation



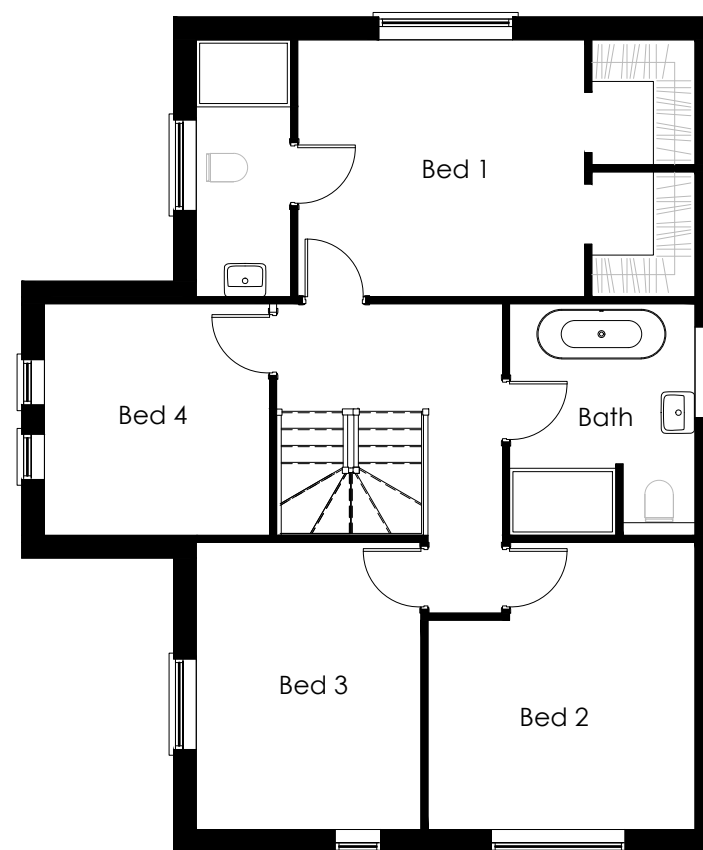
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job Station Road, Ashwell			
drawing PLOT 35 ELEVATIONS			
drawn JS	status Planning	scale 1:100 @ A3	date AUG 2025
diag no. 25-167-P000		rev -	

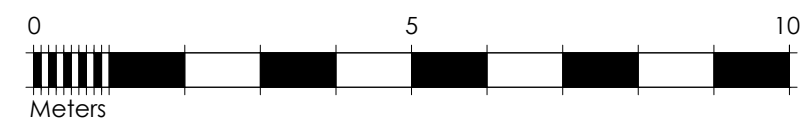
date	revision	by	no.



Ground floor plan



First floor plan



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job Station Road, Ashwell			
drawing PLOT 36 FLOOR PLANS			
drawn JS	status Planning		
date AUG 2025	scale 1:100 @ A3	dag no. 25-167-P000 -	rev

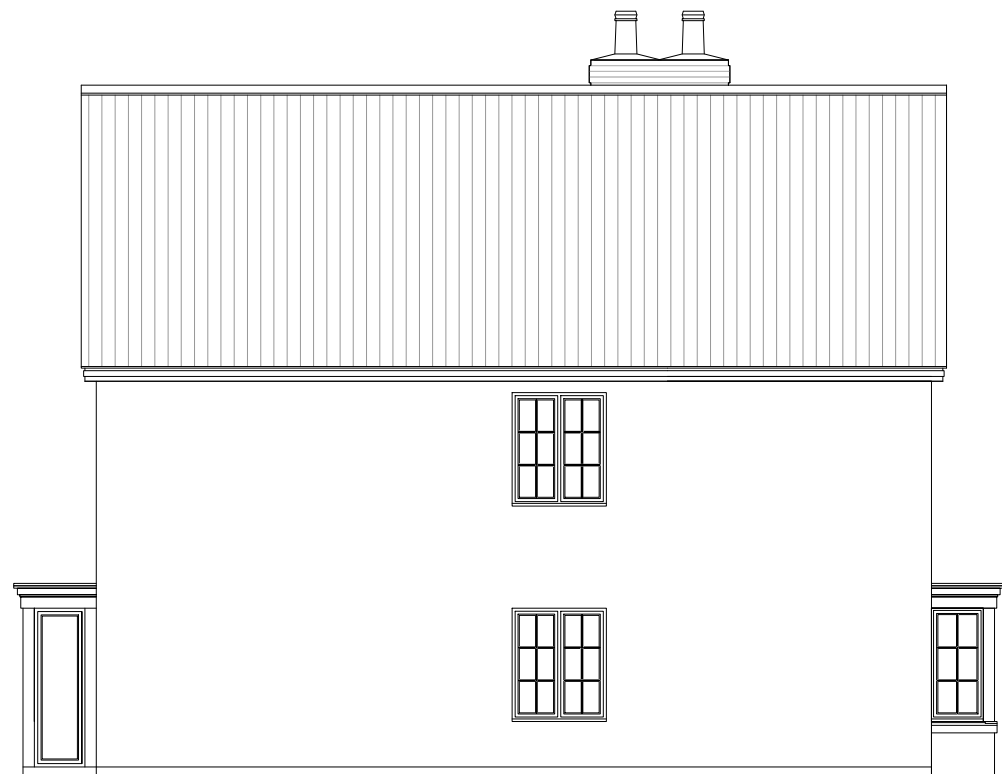
date	revision	by	no.



West elevation



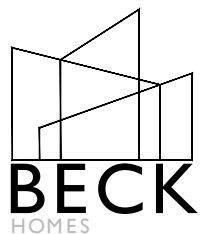
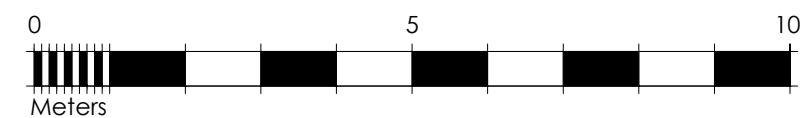
South elevation



East elevation



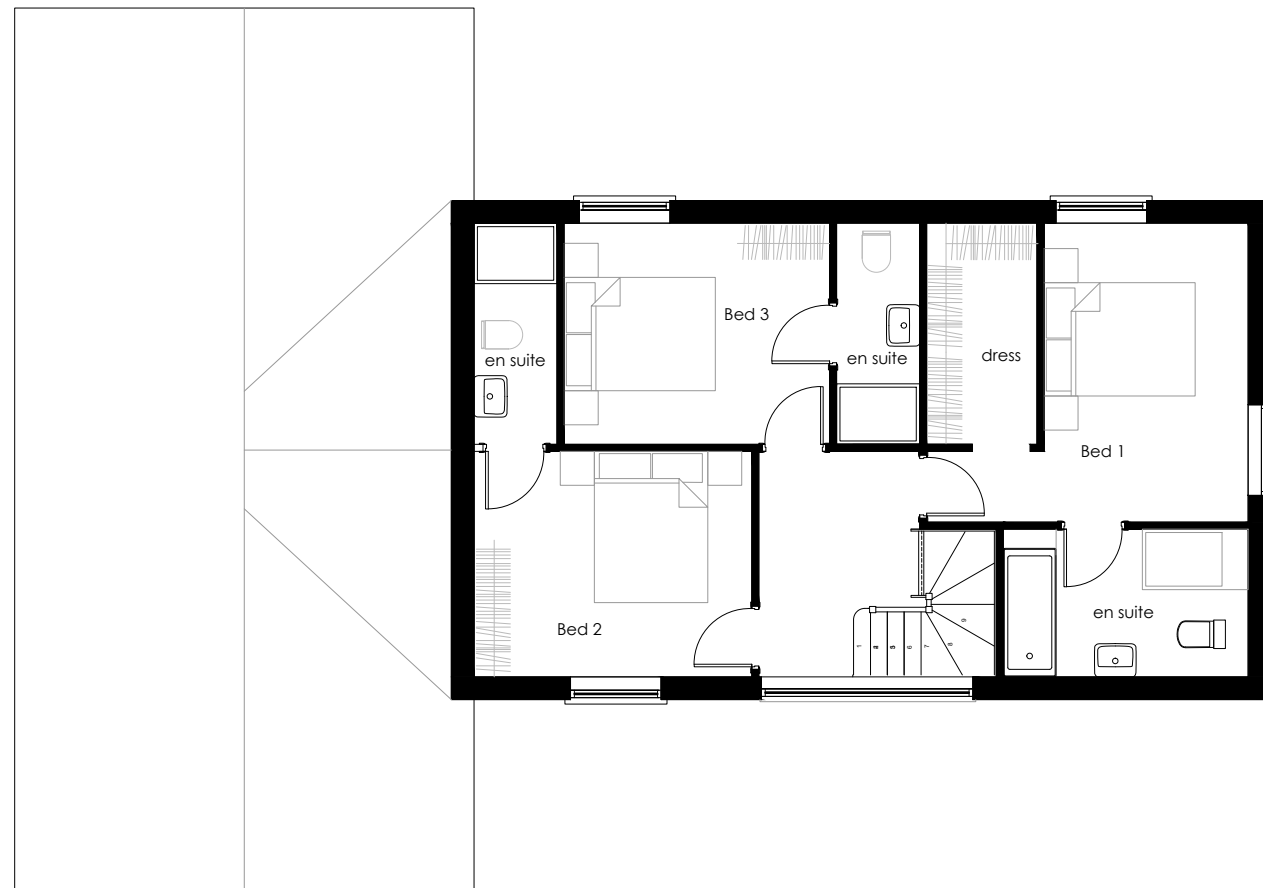
North elevation



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job Station Road, Ashwell			
drawing PLOT 36 ELEVATIONS			
drawn JS	status Planning	scale 1:100 @ A3	date AUG 2025
deg no. 25-167-P000		rev -	

date	revision	by	no.



First floor plan



Ground floor plan



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job Station Road, Ashwell			
drawing PLOTS 37 AND 38 FLOOR PLANS			
drawn JS	status Planning		
date AUG 2025	scale 1:100 @ A3	dag no. 25-167-P000	rev -

date	revision	by	no.



North elevation



West elevation



South elevation



East elevation



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job Station Road, Ashwell			
drawing PLOTS 37 AND 38 ELEVATIONS			
drawn JS	status Planning		
date AUG 2025	scale 1:100 @ A3	dwg no. 25-167-P000	rev -

