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CLIENT: BLUESKY STUDENT LADYBARN HOUSE LIMITED

REPORT NO: P2024-075

FLOOD RISK ASSESSMENT

LADYBARN HOUSE, MANCHESTER

MORAN STRUCTURAL Consultants

CONSULTING CIVIL & STRUCTURAL ENGINEERS

Client	Bluesky Student Ladybarn House Limited
Project No.	P2024-075
Project Title	Ladybarn House, Manchester
Document Title	Flood Risk Assessment
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01	Site layout amended	CC	13/08/2024

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APPENDIX LIST

A. Proposed Drawings

1 Introduction

This Flood Risk Assessment (FRA) has been produced for the proposed redevelopment of Ladybarn House, Manchester.

This report is an assessment of all sources of flood risk associated with the proposed development. The information presented and conclusions drawn are based on statistical data and are for guidance purposes only.

This Flood Risk Assessment (FRA) has been carried put in accordance with the requirements of the National Planning Policy Framework (NPPF), the associated Planning Practice Guidance (PPG). This report is an assessment of all sources of flood risk associated with the proposed development.

This FRA is based on the following information:

- GOV UK online Flood Maps for Planning (Rivers and Sea),
- GOV UK online Flood Maps (Flood Risk from Surface Water),
- GOV UK online Risk of Flooding from Reservoirs,
- Cranfield University – Soilscapes,
- LiDAR data.

This report has been developed in conjunction with the MORAN Drainage Technical Note.

1.1 Site Location, Description and Development Details

Table 1 below summarises the sites salient features.

Site Address	Ladybarn House, Manchester
Approximate National Grid Reference (NGR)	SJ 85603 93972
Existing Development	Student Accommodation
Proposed Development	Student Accommodation
Flood Zone(s)	The site is wholly located within Flood Zone 1
Surface Water Flooding	There is an area of the site at high risk of pluvial flooding
Lead Local Flood Authority	Manchester City Council

Table 1 Site Summary

1.2 Site Description

This site is located at Ladybarn House, Moseley Road, Manchester approximately 5km southeast of Manchester City Centre.

A topographical survey was undertaken which shows the site at approximately 39.5mAOD to the east and 38.5mAOD to the west.

1.3 Development Proposals

The proposals entail the entail the erection of 1no student accommodation block. The site is bound by a mix of commercial and residential properties. A proposed site plan can be seen in Figure 1 below.



Figure 1 Proposed Site Plan c/o BAL Architecture

2 National Planning Policy Framework (NPPF)

The National Planning Policy Framework (NPPF) clearly identifies flood risk as a specific material consideration in the Planning Process and in the allocation and release of sites for development or re-development.

The NPPF expects the Local Planning Authority to adopt a risk-based approach at all levels of planning, through the application of the Sequential Test.

The aim of the sequential test is to steer new development to areas with the lowest probability of flooding. Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower probability of flooding.

The Strategic Flood Risk Assessment will provide the basis for applying this test. A sequential approach should be used in areas known to be at risk from any form of flooding.

2.1 Requirements of a Flood Risk Assessment

Paragraph 30 of the Planning Practice Guidance to the National Planning Policy Framework (PPG to the NPPF) states:

"A site-specific flood risk assessment is carried out by (or on behalf of) a developer to assess the flood risk to and from a development site. Where necessary (see footnote 20 in the National Planning Policy Framework), the assessment should accompany a planning application submitted to the local planning authority. The assessment should demonstrate to the decision-maker how flood risk will be managed now and over the development's lifetime, taking climate change into account, and with regard to the vulnerability of its users (see Table 2 – Flood Risk Vulnerability)."

Footnote 20 of the National Planning Policy Framework (NPPF) states:

"A site-specific flood risk assessment is required for proposals of 1 hectare or greater in Flood Zone 1; all proposals for new development (including minor development and change of use) in Flood Zones 2 and 3, or in an area within Flood Zone 1 which has critical drainage problems (as notified to the local planning authority by the Environment Agency); and where proposed development or a change of use to a more vulnerable class may be subject to other sources of flooding."

2.2 Objectives of a Flood Risk Assessment

The objectives of a site-specific flood risk assessment are to establish:

- whether a proposed development is likely to be affected by current or future flooding from any source;
- whether it will increase flood risk elsewhere;
- whether the measures proposed to deal with these effects and risks are appropriate; the evidence for the local planning authority to apply (if necessary) the Sequential Test, and,
- whether the development will be safe and pass the Exception Test, if applicable."

Paragraph 31of the PPG to the NPPF states:

"The information provided in the flood risk assessment should be credible and fit for purpose. Site- specific flood risk assessments should always be proportionate to the degree of flood risk and make optimum use of information already available, including information in a Strategic Flood Risk Assessment for the area, and the interactive flood risk maps available on the Environment Agency's web site. A flood risk assessment should also be appropriate to the scale, nature and location of the development. For example, where the development is an extension to an existing house (for which planning permission is required) which would not significantly increase the number of people present in an area at risk of flooding, the local planning authority would generally need a less detailed assessment to be able to reach an informed decision on the planning application. For a new development comprising a greater number of houses in a similar location, or one where the flood risk is greater, the local planning authority would need a more detailed assessment."

Table 2 on the following page is a copy of Table 2: 'Flood Risk Vulnerability Classification' taken from of the PPG to the NPPF.

ESSENTIAL INFRASTRUCTURE
• Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk. • Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations; and water treatment works that need to remain operational in times of flood. • Wind turbines.
HIGHLY VULNERABLE
• Police and ambulance stations; fire stations and command centres; telecommunications installations required to be operational during flooding. • Emergency dispersal points. • Basement dwellings. • Caravans, mobile homes, and park homes intended for permanent residential use. • Installations requiring hazardous substances consent.
MORE VULNERABLE
• Hospitals, residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels. • Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels. • Non–residential uses for health services, nurseries and educational establishments. • Landfill* and sites used for waste management facilities for hazardous waste. • Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.
LESS VULNERABLE
• Police, ambulance and fire stations which are not required to be operational during flooding. • Buildings used for shops; financial, professional and other services; restaurants, cafes and hot food takeaways; offices; general industry, storage and distribution; non-residential institutions not included in the 'More Vulnerable' class; and assembly and leisure. • Land and buildings used for agriculture and forestry. • Waste treatment (except landfill* and hazardous waste facilities). • Minerals working and processing (except for sand and gravel working). • Water treatment works which do not need to remain operational during times of flood. • Sewage treatment works, if adequate measures to control pollution and manage sewage during flooding events are in place.
WATER-COMPATIBLE DEVELOPMENT
• Flood control infrastructure. • Water transmission infrastructure and pumping stations. • Sewage transmission infrastructure and pumping stations. • Sand and gravel working. • Docks, marinas and wharves. • Navigation facilities. • Ministry of Defence installations. • Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location. • Water-based recreation (excluding sleeping accommodation). • Lifeguard and coastguard stations. • Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms. • Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.

Table 2 Flood Risk Vulnerability Classification

With reference to Table 2, it is evident that the proposed development is classified as a 'More Vulnerable' development.

With reference to Table 3 below which is a copy of Table 3: 'Flood Risk Vulnerability and flood zone compatibility' taken from of the PPG to the NPPF. It is evident that the proposed 'More Vulnerable' development ,is compatible with the Flood Zone 1 site.

Flood Zones	Flood Risk Vulnerability Classification				
	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
Zone 1	✔	✔	✔	✔	✔
Zone 2	✔	Exception test required	✔	✔	✔
Zone 3a	Exception test required	✕	Exception test required	✔	✔
Zone 3b	Exception test required	✕	✕	✕	✔

Table 3 Flood Risk Vulnerability and flood zone compatibility

Key:

- ✔ Development is appropriate.
- ✕ Development should not be permitted.

From Table 3 above, it is evident that the development type is compatible with the site location in terms of Flood Risk classification. No additional tests are necessary.

3 Potential Sources of Flood Risk

This flood risk assessment will assess the following sources of flooding in turn;

- Fluvial – Main River
- Pluvial – Surface Water
- Reservoirs and Artificial Water Bodies
- Sewers
- Groundwater
- Tidal/Coastal Flooding

3.1 Fluvial Flood Risk

Fluvial flooding occurs when the flows exceed the capacity of the channel, or where a restrictive structure is encountered, which leads to water overtopping the banks into the floodplain. This process can be exacerbated when debris is mobilised by high flows and accumulates at structures.

The Environment Agency Flood Maps for Planning refer to 'Flood Zones' which show the extent of the natural floodplain and ignores the presence of flood defences, man-made structures and channel improvements.

Table 4 details the Environment Agency Flood Map Descriptions:

Annotation	Description
Flood Zone 3	Flood Zone 3 comprises of two elements; Flood Zone 3A and Flood Zone 3B where: Flood Zone3A shows the area of land that could be affected by flooding from rivers during a 1.0 percent (1 in 100 year event) and from the sea during a 0.5 percent (1 in 200 year event). Flood Zone 3B denotes the area of land where water has to flow or be stored in times of a flood. It is typically defined as an area of land that has a 5.0 percent (1 in 20 year) or greater chance of occurring each year.
Flood Zone 2	Flood Zone 2 Shows the areas which are likely to be affected by a major flood, with up to a 0.1 per cent (1 in 1000 year) chance of occurring each year.
Flood Zone 1	Flood Zone 1 Shows the area of land where flooding from rivers and the sea is extremely unlikely and is defined as land having a less than 0.1 percent (1 in 1,000 year) chance of occurring each year.

Table 4 GOV UK Flood Map for Planning Description

The main source of fluvial flood risk within the vicinity of the site is the Black Brook located approximately 500m south of the site. The topography of the local catchment is shown to fall significantly north to south. The site is therefore situated higher than the Black Brook meaning there is low risk of fluvial flooding, as indicated by Figure 2 below which shows the site to be located in Flood Zone 1.



Figure 2 GOV UK Flood Map for Planning (Rivers and Sea)

3.2 Pluvial Flood Risk

The EA website states:

"Flooding from surface water is difficult to predict as rainfall location and volume are difficult to forecast. In addition, local features can greatly affect the chance and severity of flooding. Because of this, we report the highest risk within 20m of a specific location, such as an individual property. This means reports for neighbouring properties may show different levels of risk."

Table 5 identifies the risk of surface water flooding throughout England as defined by the GOV UK online Surface Water Flood Maps.

Scenario / Annotation	Description
High Risk – Dark blue shading	High risk means that each year this area has a chance of flooding of greater than 3.3%. Flooding from surface water is difficult to predict as rainfall location and volume are difficult to forecast. In addition, local features can greatly affect the chance and severity of flooding.
Medium Risk – Blue shading	Medium risk means that each year this area has a chance of flooding of between1% and 3.3%. Flooding from surface water is difficult to predict as rainfall locationand volume are difficult to forecast. In addition, local features can greatly affect the chance and severity of flooding.
Low Risk – Light blue shading	Low risk means that each year this area has a chance of flooding of between 0.1% and 1%. Flooding from surface water is difficult to predict as rainfall location and volume are difficult to forecast. In addition, local features can greatly affect the chance and severity of flooding.
Very Low Risk – No shading	Very low risk means that each year this area has a chance of flooding of less than 0.1%. Flooding from surface water is difficult to predict as rainfall location and volume are difficult to forecast. In addition, local features can greatly affect the chance and severity of flooding.

Table 5 GOV UK Surface Water Flood Map descriptions.

The GOV UK Flood Risk from Surface Water – Flood Maps (Figure 3), shows that there is an area of the site at high risk of pluvial flooding, however the area of the site where the student accommodation building is proposed is located in an area shown to be low risk. The areas identified as being at high risk are not subject to any proposed structures or changes to existing levels, therefore the risk is not being increased. There is a fall of approximately 1m across the site, from east to west.



Figure 3 GOV UK Flood Risk from Surface Water Flood Maps

The site falls within Lead Local Flood Authority area for Manchester City Council. Manchester City Council's LLFA requirements have been incorporated into the drainage strategy (MORAN Drainage Technical Note) developed for the site.

3.3 Reservoir and Artificial Water Bodies

The Environment Agency 'Risk of Flooding from Reservoirs' maps indicate areas where peoples' lives would be in danger as a result of an uncontrolled release of water from a reservoir.

Dams in England are regulated by the Reservoirs Act 1975, which sets out stringent conditions and requires the inspection and maintenance of reservoirs capable of holding over 25,000 m3 of water above natural ground level. The Environment Agency monitor compliance at such reservoirs and employ a range of enforcement options where necessary. As such the probability of a reservoir breach is deemed to be very low.

With reference to the below online Environment Agency Risk of Flooding from Reservoir Failure Flood Maps, it is evident that the site is not indicated at risk of reservoir flooding.

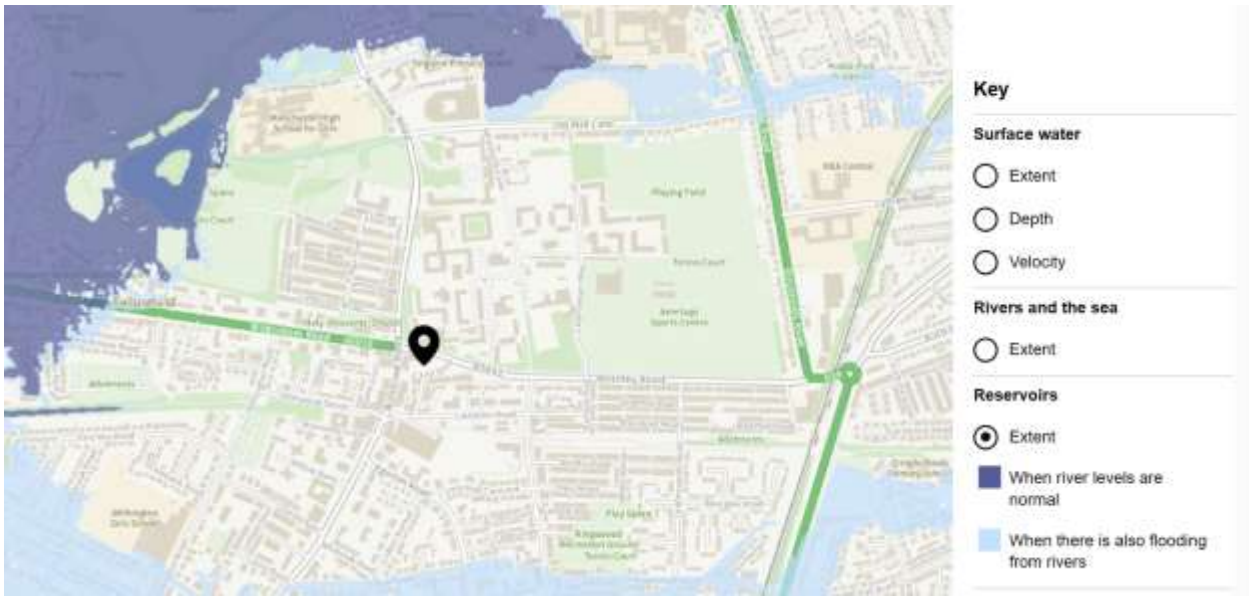


Figure 4 GOV UK Flood Risk from Reservoir Flood Maps

3.4 Sewer Flooding

Sewer flooding can occur when either;

- the capacity of the sewer system is overwhelmed by heavy rainfall and / or,
- the sewer network becomes blocked or is of inadequate capacity, resulting in flooding of landand/or property.

There is a 1200mm diameter culvert and 300mm diameter combined sewer located to the south of the site. These are thought to receive surface and foul water flows, respectively, from the site and neighbouring properties.



Figure 5 United Utilities Sewer Asset Maps

The site is not known to be susceptible to sewer flooding, however, should any sewers, drains or gullies within vicinity of the site, the topographic survey indicates that flow routes would not pose a risk to the site.

3.5 Groundwater Flood Risk

Groundwater flooding generally occurs during intense and/or long-duration rainfall events which is sometimes referred to as antecedent conditions. Groundwater flooding is most common in low-lying areas overlain by permeable soils and permeable geology, or in areas with a naturally high-water table.

The GOV UK website suggests that flooding from groundwater is “unlikely” in the area. According to the LandIS Soilscapes viewer, (Figure 5), The site soils characteristics are described as slowly permeable wet very acid upland soils with a peaty surface. The site is therefore considered to be at low risk of ground water flooding.

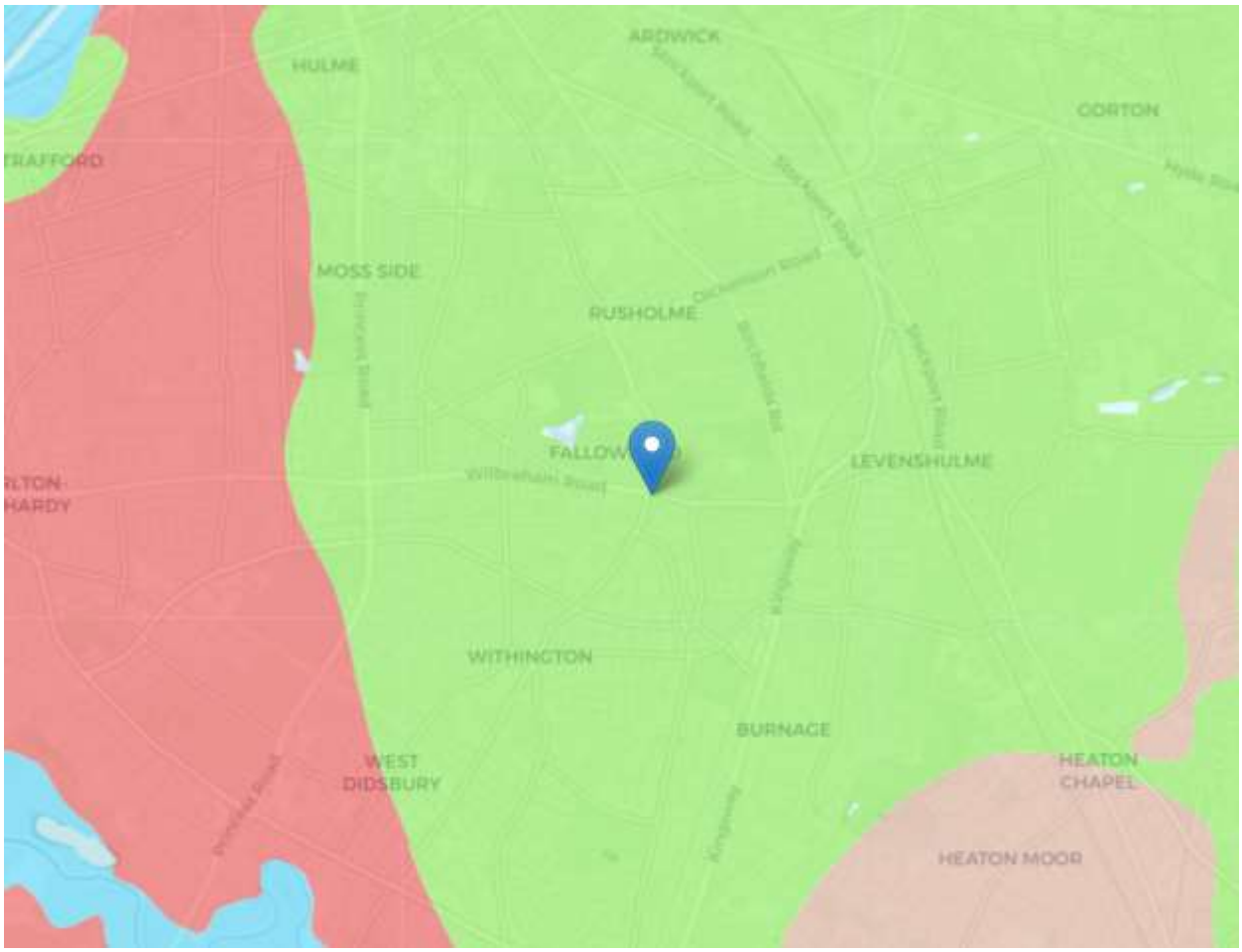


Figure 6 Soilscapes Map

4 Flood Risk Assessment Summary

Table 6 below provides a summary of each potential sources of flood risk.

Source of Flood Risk	Risk Potential					Justification
	High	Medium	Low	V. Low	None	
Fluvial – Main River			✓			The site is located wholly in Flood Zone 1
Pluvial – Surface Water	✓					Generally at low risk, however arras of medium-high risk are not subject to development or change to existing ground levels
Reservoirs and Artificial Water Bodies				✓		Indicated at no risk of reservoir flooding.
Sewers			✓			The site is not considered to be at risk of flooding from sewers although sewers are present.
Groundwater			✓			The site is not known to be susceptible to ground water.
Tidal/Coastal Flooding					✓	There are no rivers influenced by tide in this location

Table 6 Sources of Flood Risk

The flood resilient measures recommended within this report will further reduce the likelihood and consequence of internal flooding and will facilitate a quicker recovery in the unlikely event of a flood.

5 Flood Risk Mitigation

5.1 External Works

Appropriate mitigation should include:

- Ensuring Finished Floor Levels are situated 300mm above existing ground level where possible to reduce the likelihood of property flooding from local surface water and ground water flood risks. A Finished Floor Level of 38.8mAOD is proposed.
- A site SuDS system should be
    - Designed and implemented to ensure that runoff from proposed impermeable areas is safely managed within the site boundary without posing a risk to the proposed dwellings and surrounding areas.
    - Restrict post development runoff to equivalent greenfield rates so far as is reasonably practicable.
    - Be developed in accordance with Manchester City Council's LFRMS and PFRA.
- Install non-return valves in all lateral drains discharging to sewers,
- Raise airbricks as high as practical and consider installing airbrick covers

6 Conclusion

This FRA is fully compliant with the requirements set out in both the National Planning Policy Framework (NPPF) and the Planning Practice Guidance (PPG) to the NPPF.

- This FRA has considered all source of flood risk and has demonstrated that:
    - The site is located within Fluvial Flood Zone 1 and therefore at low risk of fluvial flooding.
    - The site is considered generally at low risk of flooding from surface water and ground water sources.
- Potential flood risks can be further mitigated through external works level design and the development of a site SuDS strategy developed in accordance with national and Manchester City Council's LLFA guidance.

Appendix A. Proposed Drawings



General Notes

1.Dimensions are in millimetres unless stated otherwise.

2.Levels are in metres AOD unless stated otherwise.

3.Dimensions govern. Do not scale off drawing.

4.All dimensions to be verified on site before proceeding.

5.All discrepancies to be notified in writing to BAL Architecture Ltd.

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Note:
Drawing based on latest available OS survey information and site survey information produced and compiled by others

Key:

Site Boundary

REV	Date	Reason For Issue	Chk
00	09/08/24	For Planning	

Planning

DRAWING STATUS

BAL Architecture

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Client

Bluesky Student Ladybarn House Limited

Keyplan

Project

Ladybarn House

Drawing Title

Site Location Plan

Scale at A1	Date
1 : 1250	09/08/24
Project No.	Rev No.
028	00

Drawing No.
P0010



General Notes

1.Dimensions are in millimetres unless stated otherwise.

2.Levels are in metres AOD unless stated otherwise.

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Key:

Site Boundary

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Planning

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Client

Bluesky Student Ladybarn House Limited

Keyplan

Project

Ladybarn House

Drawing Title

Existing Site Plan

Scale at A1
1 : 200

Date
09/08/24

Project No.
028

Rev No.
00

Drawing No.
P0100



General Notes

1.Dimensions are in millimetres unless stated otherwise.

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Note:
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Key:

Site Boundary

Please refer to Landscape Architect's drawings for external landscaping design

REV	Date	Reason For Issue	Chk
00	09/08/24	For Planning	

Planning

DRAWING STATUS

BAL Architecture

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Client

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Keyplan

Project

Ladybarn House

Drawing Title

Proposed Site Plan

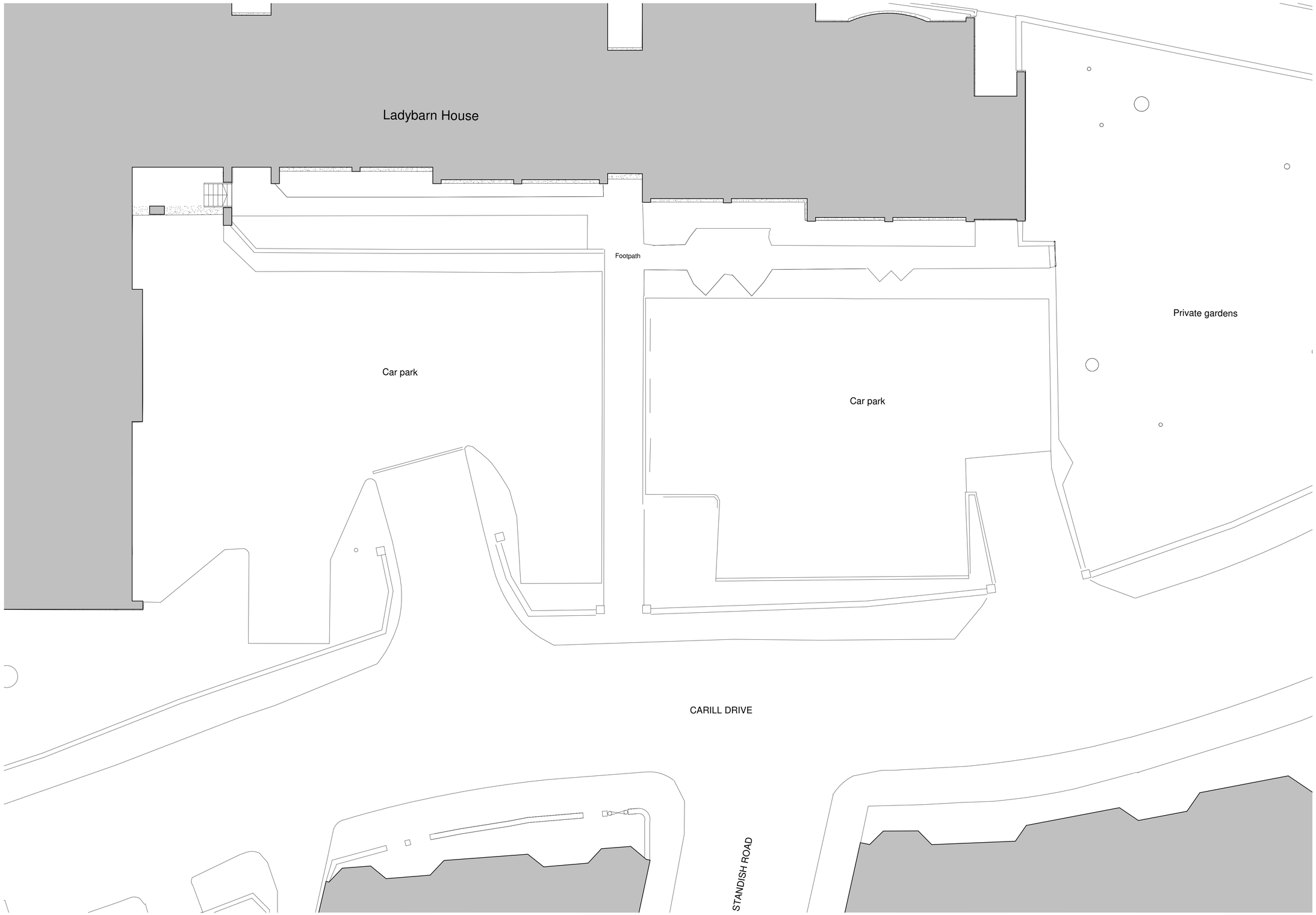
Scale at A1
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Date
09/08/24

Project No.
028

Rev No.
00

Drawing No.
P0200



General Notes

1.Dimensions are in millimetres unless stated otherwise.

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Note:
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- Any furniture shown is indicative and for illustrative purposes only
- Please refer to Landscape Architect's drawings for proposed exterior landscaping design and site levels

Scale 1 : 100 m
0m 1 2 5 10

REV	Date	Reason For Issue	Chk
00	09/08/24	For Planning	

Planning

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Client

Bluesky Student Ladybarn House Limited

Keyplan

Project

Ladybarn House

Drawing Title

Existing Ground Floor Plan

Scale at A1
1 : 100

Date
09/08/24

Project No.
028

Rev No.
00

Drawing No.
P1000



General Notes

1.Dimensions are in millimetres unless stated otherwise.

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REV	Date	Reason For Issue	Chk
00	09/08/24	For Planning	

Planning

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Keyplan

Project

Ladybarn House

Drawing Title

Proposed Ground Floor Plan

Scale at A1
1 : 100

Date
09/08/24

Project No.
028

Rev No.
00

Drawing No.
P2000



Scale 1 : 100

m

0m 1 2 5 10

General Notes

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REV	Date	Reason For Issue	Chk
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Planning

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Keyplan

Project

Ladybarn House

Drawing Title

Proposed Level 1 Plan

Scale at A1
1 : 100

Date
09/08/24

Project No.
028

Rev No.
00

Drawing No.
P2001



Scale 1 : 100

m

0m 1 2 5 10

General Notes

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REV	Date	Reason For Issue	Chk
00	09/08/24	For Planning	

Planning

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BAL Architecture

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Bluesky Student Ladybarn House Limited

Keyplan

Project

Ladybarn House

Drawing Title

Proposed Level 2 Plan

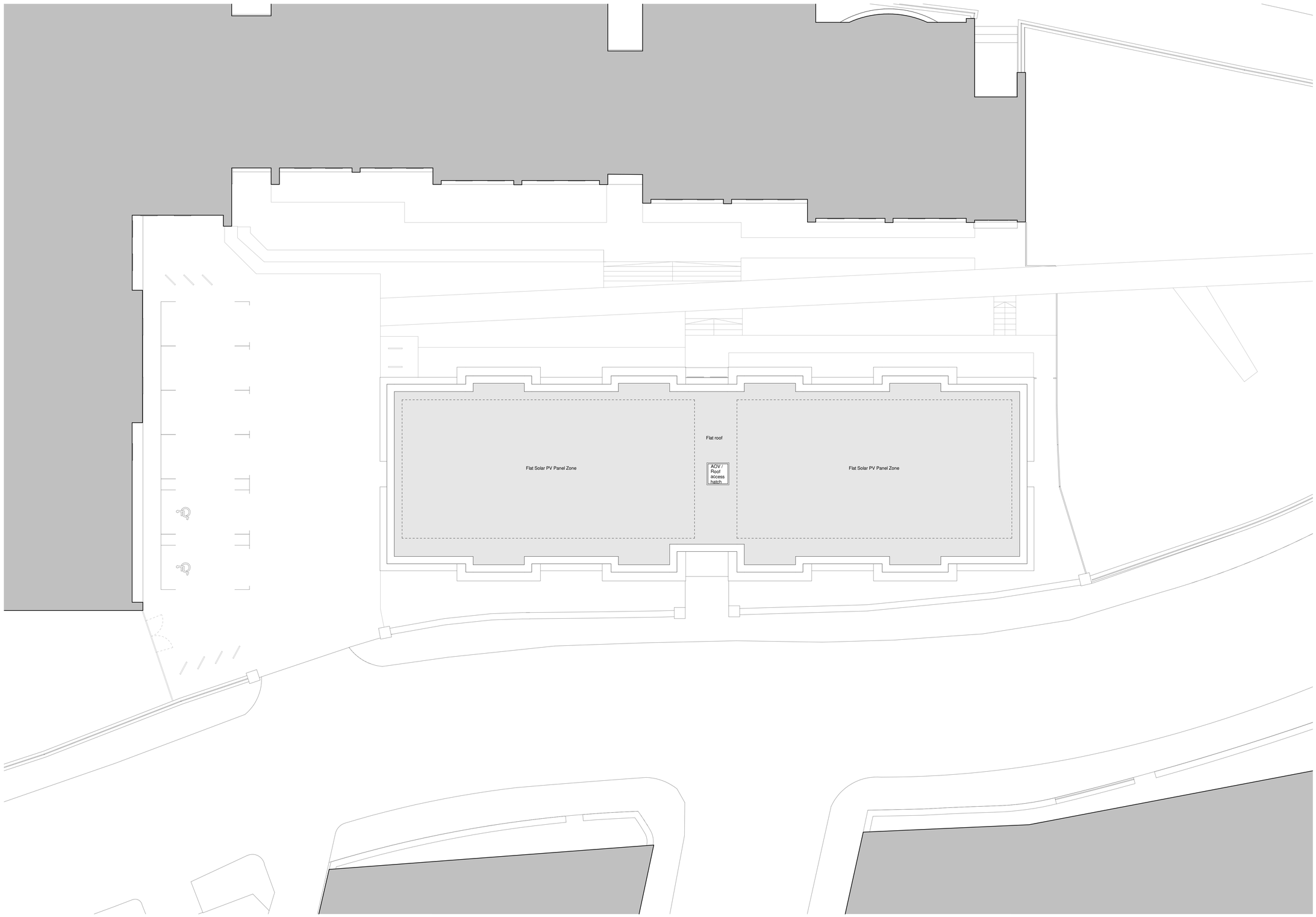
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1 : 100

Date
09/08/24

Project No.
028

Rev No.
00

Drawing No.
P2002



General Notes

1.Dimensions are in millimetres unless stated otherwise.

2.Levels are in metres AOD unless stated otherwise.

3.Dimensions govern. Do not scale off drawing.

4.All dimensions to be verified on site before proceeding.

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Note:
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REV	Date	Reason For Issue	Chk
00	09/08/24	For Planning	

Planning

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Client

Bluesky Student Ladybarn House Limited

Keyplan

Project

Ladybarn House

Drawing Title

Proposed Roof Plan

Scale at A1
1 : 100

Date
09/08/24

Project No.
028

Rev No.
00

Drawing No.
P2003



1 **Proposed Front (South) Street Elevation**
1 : 100



2 **Proposed Front (South) Elevation**
1 : 100



3 **Proposed Rear (North) Elevation**
1 : 100

Scale 1 : 100 m
0m 1 2 5 10

General Notes

1.Dimensions are in millimetres unless stated otherwise.

2.Levels are in metres AOD unless stated otherwise.

3.Dimensions govern. Do not scale off drawing.

4.All dimensions to be verified on site before proceeding.

5.All discrepancies to be notified in writing to BAL Architecture Ltd.

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- Please refer to Landscape Architect's drawings for proposed exterior landscaping design and site levels

Proposed Materials Key:

1. Brick
2. Zinc Shingles
3. Clear glazed, aluminium framed windows
4. Clear glazed, aluminium framed doors
5. Metal canopy
6. Metal louvres

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Planning

DRAWING STATUS

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Client

Bluesky Student Ladybarn House Limited

Keyplan

Project

Ladybarn House

Drawing Title

Proposed Front and Rear Elevations

Scale at A1
1 : 100

Date
09/08/24

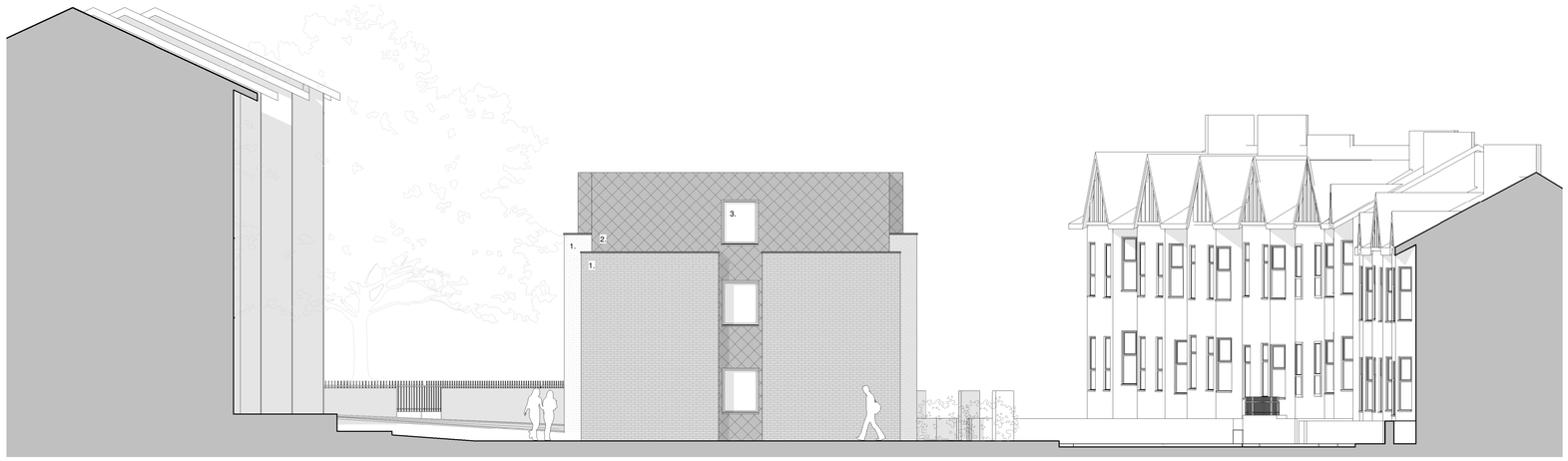
Project No.
028

Rev No.
00

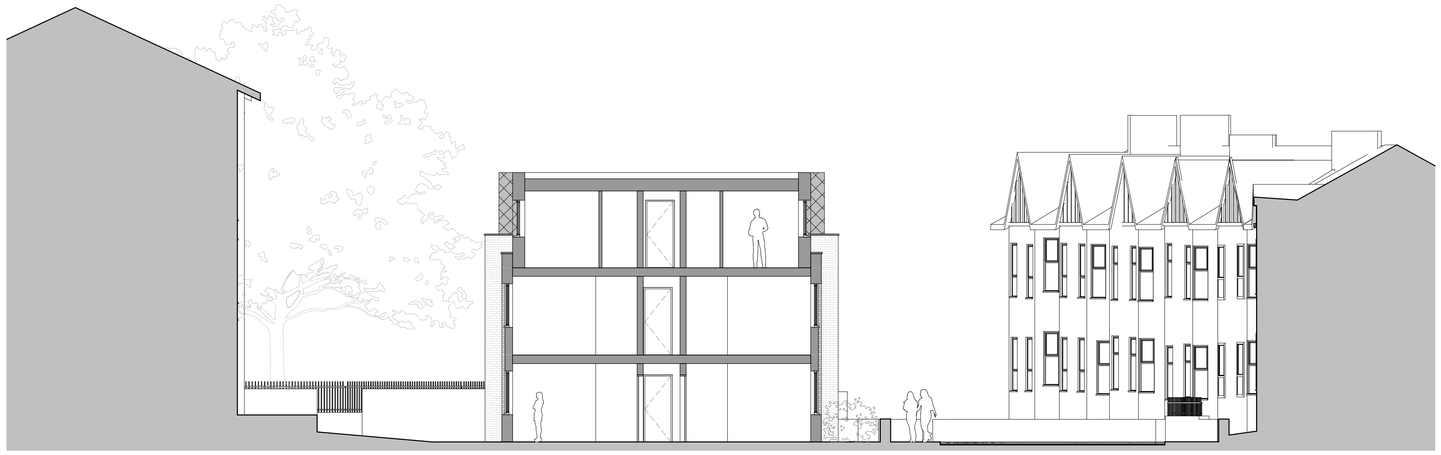
Drawing No.
P2100



1 **Proposed Side (East) Elevation**
1 : 100



2 **Proposed Side (West) Elevation**
1 : 100



3 **Proposed Section**
1 : 100

Scale 1 : 100 m
0m 1 2 5 10

General Notes

1.Dimensions are in millimetres unless stated otherwise.

2.Levels are in metres AOD unless stated otherwise.

3.Dimensions govern. Do not scale off drawing.

4.All dimensions to be verified on site before proceeding.

5.All discrepancies to be notified in writing to BAL Architecture Ltd.

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Note:
- Drawing based on latest available OS survey information and site survey information produced and compiled by others.
- Any furniture shown is indicative and for illustrative purposes only
- Please refer to Landscape Architect's drawings for proposed exterior landscaping design and site levels

Proposed Materials Key:

1. Brick
2. Zinc Shingles
3. Clear glazed, aluminium framed windows
4. Clear glazed, aluminium framed doors
5. Metal canopy
6. Metal louvres

REV	Date	Reason For Issue	Chk
00	09/08/24	For Planning	

Planning

DRAWING STATUS

BAL Architecture

www.balarchitecture.com

Client

Bluesky Student Ladybarn House Limited

Keyplan

Project
Ladybarn House

Drawing Title
Proposed Side Elevations and Section

Scale at A1
1 : 100

Date
09/08/24

Project No.
028

Rev No.
00

Drawing No.
P2101