



Land adjacent to Greenmoor Nurseries - Flood Consequences Assessment

Version 2

Prepared for
Geraint John Planning Ltd

Date
March 2026



Document Status

Issue date	March 2026
Issued to	Geraint John Planning Ltd
BIM reference	RTP-JBA-XX-XX-RP-Z-0001-S3-P02-Greenmoor_Nurseries_FCA
Revision	Version 2
Prepared by	Bethany Adams BSc (Hons) Assistant Analyst
Reviewed by	George Baker BEng, FCIWEM, C.WEM, CEnv, IEng, AIEMA Associate Director
Authorised by	Charlotte Lickman BSc (Hons) PG Cert Project Manager

Carbon Footprint

The format of this report is optimised for reading digitally in pdf format. Paper consumption produces substantial carbon emissions and other environmental impacts through the extraction, production and transportation of paper. Printing also generates emissions and impacts from the manufacture of printers and inks and from the energy used to power a printer. Please consider the environment before printing.

Contract

JBA Project Manager	Charlotte Lickman BSc (Hons) PG Cert
Address	Kings Chambers, 7-8 High Street, NEWPORT, NP20 1FQ
JBA Project Code	2026s0081

This report describes work commissioned by Geraint John Planning Ltd by an instruction dated January 2026. The Client's representative for the contract was Geraint John of Geraint John Planning Ltd. Bethany Adams of JBA Consulting carried out this work.

Purpose and Disclaimer

Jeremy Benn Associates Limited ("JBA") has prepared this Report for the sole use of Geraint John Planning Ltd and its appointed agents in accordance with the Agreement under which our services were performed.

JBA has no liability for any use that is made of this Report except to Geraint John Planning Ltd for the purposes for which it was originally commissioned and prepared.

No other warranty, expressed or implied, is made as to the professional advice included in this Report or any other services provided by JBA. This Report cannot be relied upon by any other party without the prior and express written agreement of JBA.

JBA disclaims any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to JBA's attention after the date of the Report.

The methodology adopted and the sources of information used by JBA in providing its services are outlined in this Report. The work described in this Report was undertaken between January and March 2026 and is based on the conditions encountered and the information available during the said period. The scope of this Report and the services are accordingly factually limited by these circumstances.

The conclusions and recommendations contained in this Report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate. Information obtained by JBA has not been independently verified by JBA, unless otherwise stated in the Report.

Copyright

© Jeremy Benn Associates Limited 2026

Contents

1	Introduction	1
1.1	Terms of reference	1
1.2	FCA Requirements	1
2	Site Description	2
2.1	Site summary	2
2.2	Site topography	3
2.3	Watercourses and Flood Defences	4
2.4	Soils and geology	5
2.5	Proposed Development	5
3	Planning Policy and Flood Risk	7
3.1	Planning Context	7
3.2	Form of Development	7
3.3	Vulnerability Classification	7
3.4	Lifetime of development	8
3.5	Flood Map for Planning	9
3.6	Newport Council Local Development Plan	11
3.7	Shoreline Management Plan and Severn Estuary Flood Risk Management Strategy	12
4	Flood Risk Assessment	14
4.1	Review of existing flood risk data	14
4.2	Historical Flooding	14
4.3	Flood Risk from Rivers	15
4.4	Flood Risk from Surface Water and Small Watercourses	15
4.5	Flood Risk from Groundwater	15
4.6	Flood Risk from Reservoirs	15
4.7	Flood Risk from Sewers	15
5	Detailed Tidal Flood Risk Assessment	17
5.1	Hydraulic modelling availability	17
5.2	Detailed tidal flood risk results	18
5.3	Breach Analysis	20

6	Flooding and the Plan Led System	24
6.1	Application of Flood Zones to Development Management Decisions	24
6.2	Acceptability of Flood Consequences	24
7	Conclusions	27
A	Development Proposals	28

List of Figures

Figure 2-1 Site Location	2
Figure 2-2 Site topography	4
Figure 2-3: Watercourses and Flood Defences	5
Figure 3-1: Flood Map for Planning - Rivers	9
Figure 3-2: Flood Map for Planning - Sea	10
Figure 3-3: Flood Map for Planning - Surface Water and Small Watercourses	11
Figure 5-1: 0.5% AEP Tidal Event plus climate change flood depths	19
Figure 5-2: 0.1% AEP Tidal Event plus climate change flood depths	20
Figure 5-3: Modelled breach locations	21
Figure 5-4: Breach analysis 0.5% AEP Tidal Event plus climate change peak flood depths	22
Figure 5-5: Breach analysis 0.1% AEP Tidal Event plus climate change peak flood depths	23

List of Tables

Table 2-1: Site summary	3
Table 3-1 Form of Development	7
Table 3-2 TAN-15 Vulnerability Classification	8
Table 4-1: Flood Risk Assessment	14
Table 5-1: CFB sea level projections	18
Table 6-1 Assessment of Acceptability Criteria	24

1 Introduction

1.1 Terms of reference

JBA Consulting were commissioned by Geraint John Planning Ltd to prepare a Flood Consequences Assessment (FCA) to support a planning application for the redevelopment of land adjacent to Greenmoor Nurseries, St Brides. This FCA assesses and demonstrates the suitability of the proposed development in terms of flood risk.

1.2 FCA Requirements

This FCA follows the Welsh Government guidance on development and flood risk set out in the Technical Advice Note 15: Development, Flood Risk and Coastal Erosion (TAN-15). TAN-15 states that:

'The prime objective of a Flood Consequences Assessment is to develop a full appreciation of:

- The risks and consequences of flooding on the development; and*
- The risk and consequences (i.e. the overall impacts) of the development on flood risk elsewhere.'*

To achieve this, the FCA should establish if suitable avoidance and mitigation measures can be incorporated, in a manner compatible with the placemaking aims of Planning Policy Wales, within the site design to ensure that development is safe and there is:

- Minimal risk to life;
- Minimal disruption to people living and working in the area;
- Minimal potential damage to property;
- Minimal impact of the proposed development on flood risk generally; and
- Minimal disruption to the sustainable management of natural resources.

2 Site Description

2.1 Site summary

The proposed development site is located within Greenmoor Farm, St Brides, as shown in Figure 2-1 below. Greenmoor Farm is comprised of a number of businesses, including a farm, plant nursery, shop and Home and Away Boarding Kennels.

The B4239 forms the southern boundary, and Hawse Lane the western boundary of Greenmoor Farm, with agricultural land surrounding the site in all other directions. The site is situated approximately 1km north of the Gwent coast. The proposed development, shown by the red line boundary, is located on brownfield land, currently used for storage. The green boundary represents the indicative wider site ownership; this FCA will focus on the proposed site boundary shown in red.

Further information on the site is provided in Table 2-1.

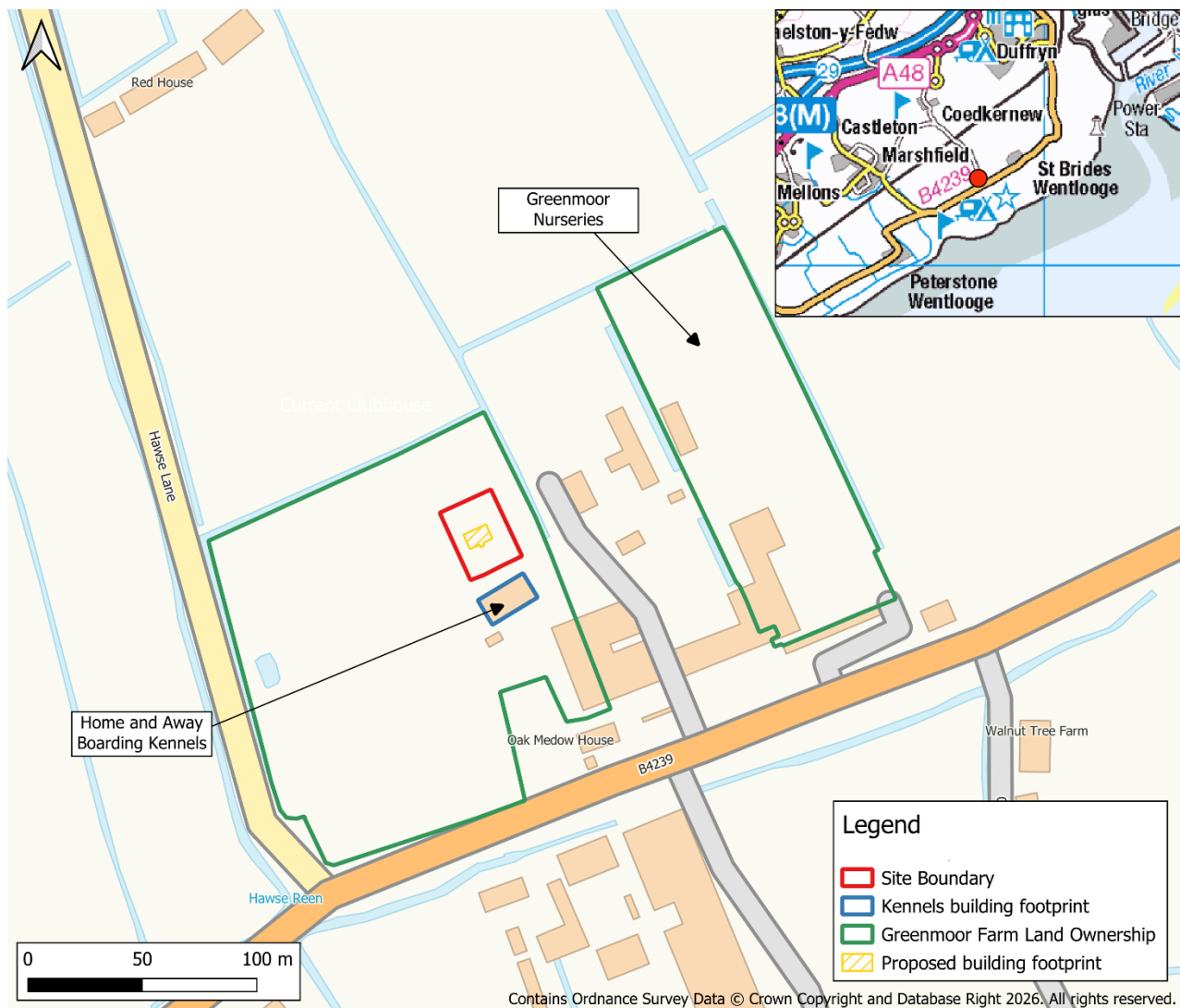


Figure 2-1 Site Location

Table 2-1: Site summary

Site Name	Land adjacent to Greenmoor Nurseries
Site area (ha)	0.08ha
Existing land use	Brownfield land - Commercial
Purpose of development	Residential
OS NGR	ST 28643 81823
Local Planning Authority	Newport City Council
Lead Local Flood Authority	Newport City Council

2.2 Site topography

In the absence of a site-specific topographic survey, Natural Resources Wales (NRW) Open Source 1m Light Detection and Ranging (LiDAR) data has been used to assess the site topography, as shown in Figure 2-2.

The site is located within the Wentloog Levels and ground levels are generally flat with an average elevation of approximately 5.95mAOD across the site. Highest elevations of 8.21mAOD are found along an embankment in the eastern part of the site. The lowest ground level is 5.43mAOD, located along the eastern boundary where ground levels start to decrease at the bank of an ordinary watercourse that borders the site.

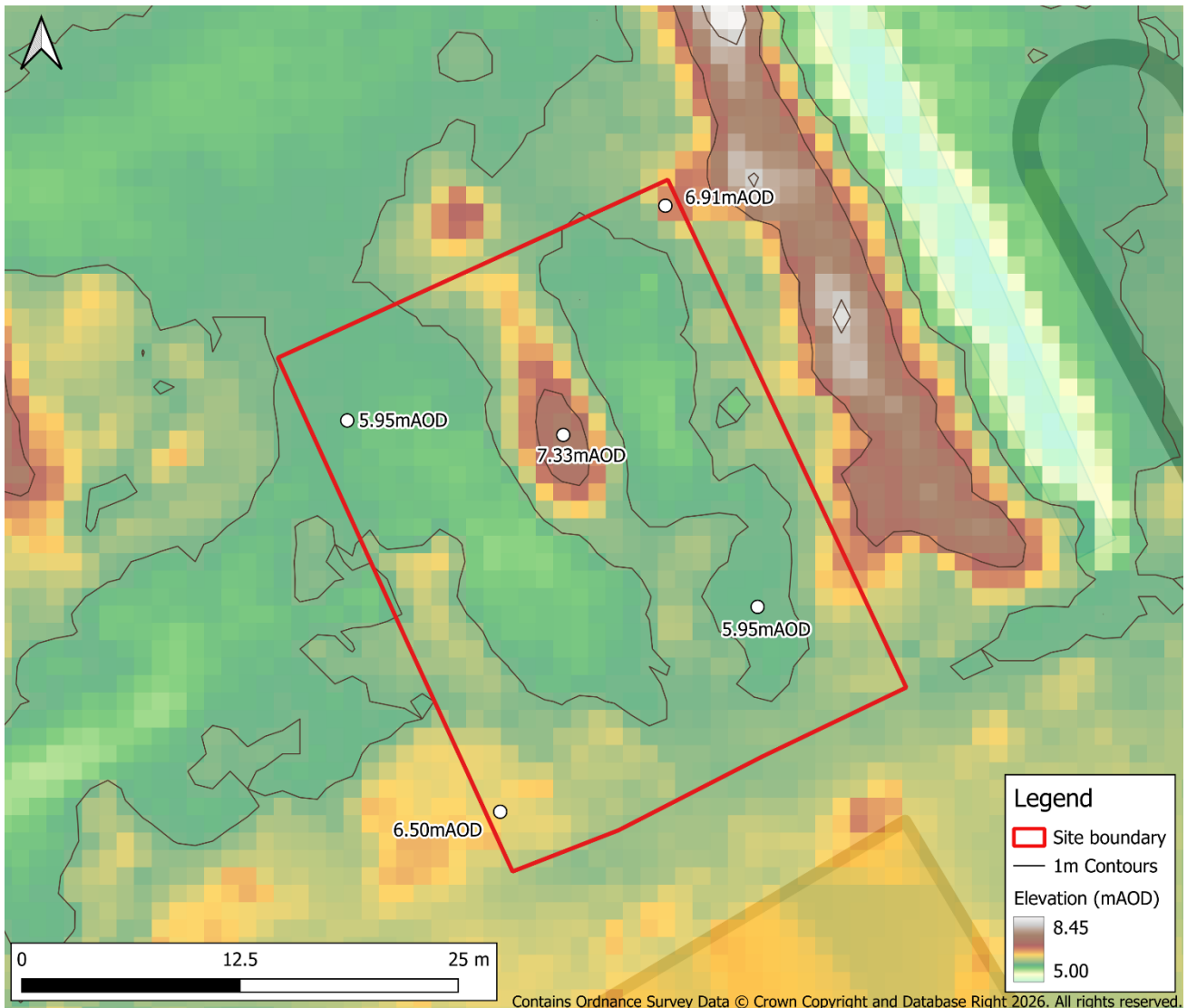


Figure 2-2 Site topography

2.3 Watercourses and Flood Defences

The site is situated in the Wentlooge Levels, part of the Caldicot & Wentlooge Drainage District, which is made up of an extensive network of reens and main rivers as classified by NRW. Consequently, land drainage is actively managed by NRW in their function as the Internal Drainage Board.

The eastern boundary of the proposed development site is bordered by an unnamed reen. The flow direction of the reens in the vicinity of the site is unclear due to the flat nature of the topography, although flow is likely to be towards the main rivers shown in Figure 2-3, identified as the Hawse Reen and Broadway Reen. These watercourses discharge into the Severn Estuary.

The site is located approximately 990m from the coastline and the Severn Estuary. An NRW flood defence is located along the Gwent coastline in the form of an earth embankment, as presented in Figure 2-3. The embankment aims to mitigate the risk of tidal

flooding to the Caldicot and Wentlooge Levels and is managed by NRW. The site is located within an area benefiting from this defence.

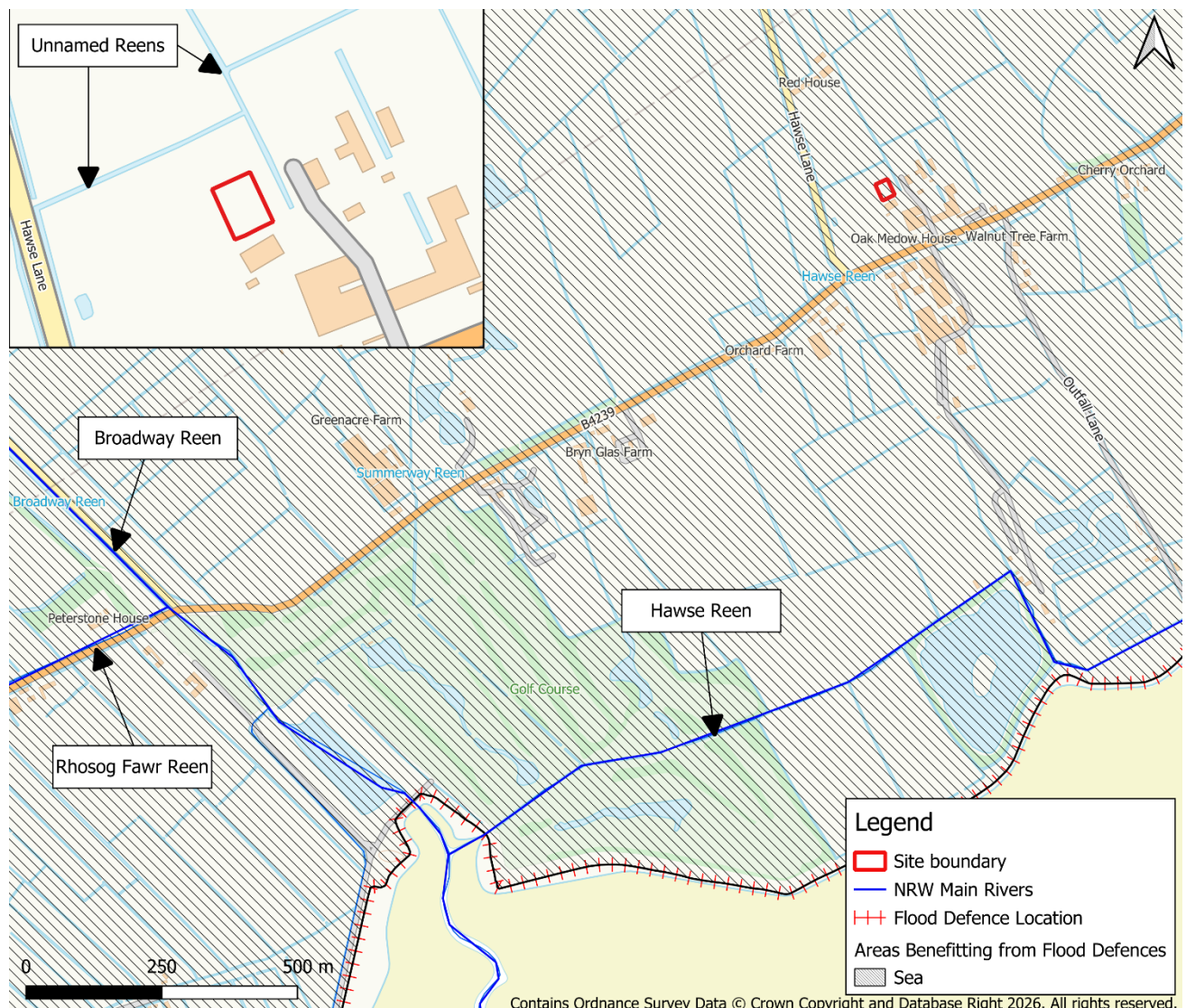


Figure 2-3: Watercourses and Flood Defences

2.4 Soils and geology

The geology of the site has been assessed using the BGS GeoIndex¹. The bedrock geology is shown to comprise of Mercia Mudstone Formation, made up of siltstone, mudstone and sandstone. Superficial geology at the site is comprised of clay and silt forming tidal flat deposits.

The soils on site have been assessed on the Cranfield University Soilscales Viewer² and are shown to be loamy and clayey soils of coastal flats with naturally high groundwater.

2.5 Proposed Development

¹ BSG Geoindex: <https://www.bgs.ac.uk/map-viewers/geoindex-onshore/>

² Cranfield University Soilscales Viewer: <https://www.landis.org.uk/soilscales/>

The proposed development is a rural enterprise dwelling with associated parking and landscaping, to house the owner and a full-time worker of the associated kennels business. The proposed development consists of a two-bedroom dwelling with an approximate internal floorspace of 74m². The Finished Floor Level (FFL) of the building will be set to a level of 6.14mAOD.

The primary access to the residential dwelling will be from the doorway on the south elevation of the building, located north of the proposed driveway and turning area.

Development proposals also include raingardens, located in the north-eastern and south-western parts of the site boundary.

The proposed development plans are contained in Appendix A.

3 Planning Policy and Flood Risk

3.1 Planning Context

Planning Policy Wales (PPW) sets out the land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes (TANs), Welsh Government Circulars, and policy clarification letters, which, together with PPW, provide the national planning policy framework for Wales. These policies aim to make all development in Wales sustainable and improve the social, economic, environmental, and cultural wellbeing of Wales as set out in the Wellbeing of Future Generations Act 2015.

Technical Advice Note 15 (TAN-15), originally introduced by the Welsh Government in 2004 and most recently updated in March 2025, provides technical guidance relating to development planning and flood risk in Wales. TAN-15 provides a framework within which the flood risks arising from rivers, the sea and surface water, and the associated risk of coastal erosion can be assessed. The approach set out in the most recent update to TAN-15 ensures flooding and coastal erosion are accorded appropriate consideration in plan-making and development management decisions.

3.2 Form of Development

"The National Strategy is clear that risk needs to be managed appropriately, and the TAN requires a proportionate response depending upon that risk. It is evident that many communities are located in areas at higher risk from flooding, but these communities must be allowed to adapt, change, and regenerate in the knowledge of what the science is showing." TAN-15, Section 8.3

Consequently, TAN-15 recognises two key forms of development; New Development and Redevelopment. The definition of both terms is provided in Table 3-1.

Table 3-1 Form of Development

Form of Development	Definition
New Development	Any Development on greenfield land
Redevelopment	Any Development on previously developed land as defined in Planning Policy Wales

As detailed in Section 2.1, development proposals are for the redevelopment of land previously used for commercial purposes, for a residential dwelling. As such, the proposals are classified as **Redevelopment**.

3.3 Vulnerability Classification

TAN-15 assigns one of three flood risk vulnerability classifications to developments, as shown in Table 3-2. The proposed development is for residential use and is consequently classified as a **Highly vulnerable development**.

Table 3-2 TAN-15 Vulnerability Classification

Development category	
Highly vulnerable development	All residential premises (including hotels, Gypsy and Traveller sites, caravan parks and camping sites). Schools and childcare establishments, colleges and universities. Hospitals and GP surgeries. Especially vulnerable industrial development (e.g. power generating and distribution elements of power stations, transformers, chemical plants, incinerators), and waste disposal sites. Emergency services, including ambulance stations, fire stations, police stations, command centres, and emergency depots. Buildings used to provide emergency shelter in time of flood.
Less vulnerable development	General industrial, employment, commercial and retail development. Transport and utilities infrastructure. Car parks. Mineral extraction sites and associated processing facilities (excluding waste disposal sites). Public buildings including libraries, community centres and leisure centres (excluding those identified as in Highly Vulnerable category and emergency shelters). Places of worship. Cemeteries. Equipped play areas. Renewable energy generation facilities (excluding hydro generation).
Water Compatible Development	Boatyards, marinas and essential works required at mooring basins. Development associated with canals. Flood defences and management infrastructure. Open spaces (excluding equipped play areas). Hydro renewable energy generation.

3.4 Lifetime of development

An FCA should help the planning authority determine whether the risk and consequences of flooding are acceptable over the lifetime of development. TAN-15 states:

'Generally, it is appropriate to think of new dwellings as having a lifetime of 100 years. Lifetimes for other types of development will vary, but 75 years is considered a reasonable rule of thumb'.

As the proposals are for residential development, a 100-year lifetime of development has been considered in this assessment.

3.5 Flood Map for Planning

The Flood Map for Planning (FMfP) is the starting point for consideration of flood risk. The map uses flood zones to indicate the degree to which land is at risk of flooding from rivers, the sea, surface water and small watercourses. The zones are Zone 1, Zone 2, Zone 3 and the Defended Zone. The FMfP displays predicted future flood risk with an allowance made for climate change over a 100-year lifetime of development.

Proposals for development located partially or wholly in Flood Zone 2 or 3 must be supported by a Flood Consequences Assessment (FCA).

3.5.1 Flood Map for Planning - Rivers

The Flood Map for Planning - Flood Risk for Rivers shows that the site lies entirely within Flood Zone 1, as presented in Figure 3-1. Flood Zone 1 represents areas that have a less than 0.1% AEP (1 in 1000 year) chance of flooding in any given year, including the effects of climate change.

All forms of development are suitable within Flood Zone 1.

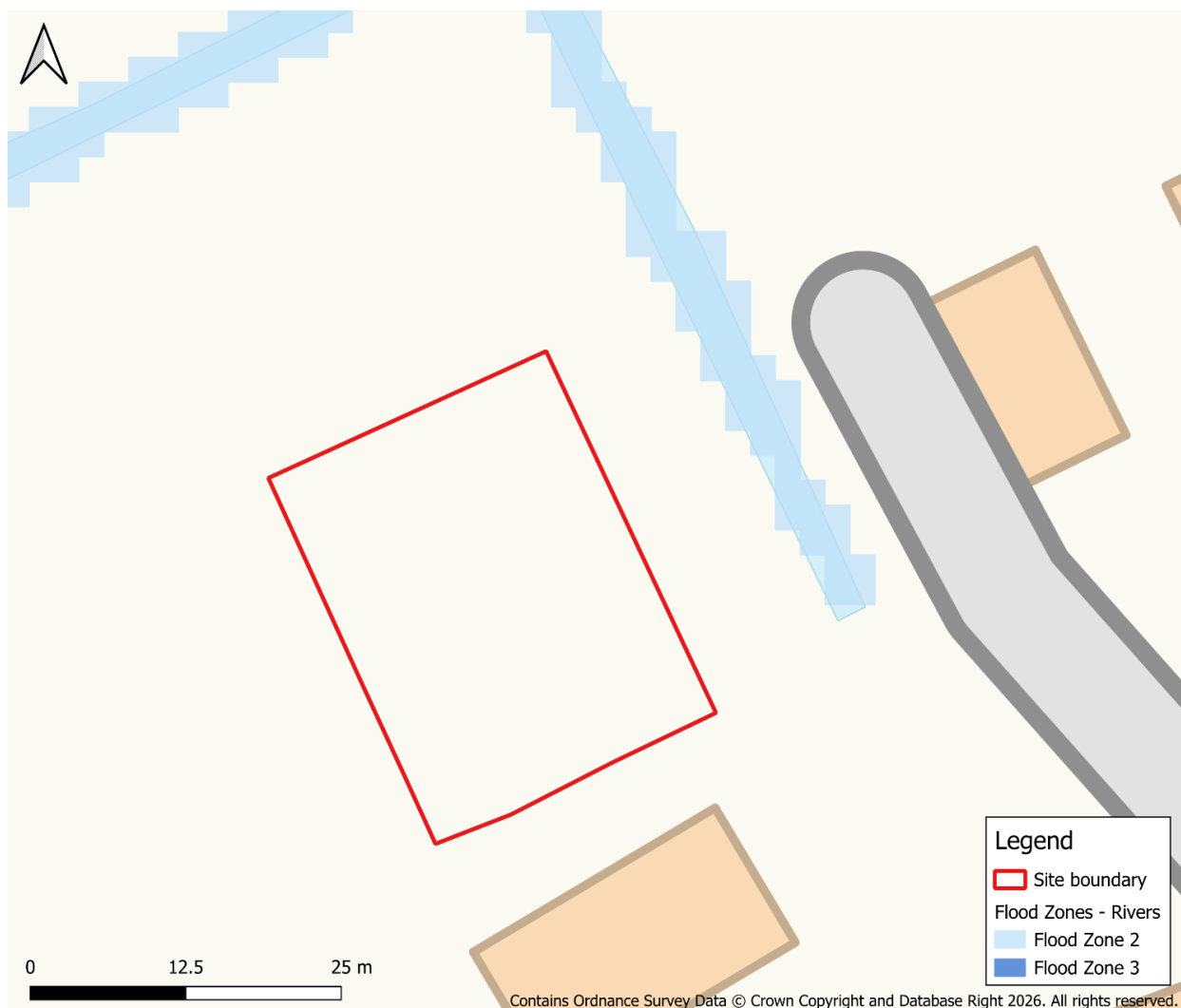


Figure 3-1: Flood Map for Planning - Rivers

3.5.2 Flood Map for Planning - Sea

The site is shown to be in a TAN-15 Defended Zone of the Flood Map for Planning - Flood Risk from the Sea, as shown in Figure 3-2. TAN-15 Defended Zones are areas that benefit from Risk Management Authority flood defences, which provide a minimum standard of protection against flooding from the sea of 1:200 (plus climate change). The site benefits from robust, coastal embankments that are maintained by NRW, and can be seen on Figure 2-3 in Section 2 above.



Figure 3-2: Flood Map for Planning - Sea

3.5.3 Flood Map for Planning - Flood Risk from Surface Water and Small Watercourses

The Flood Map for Planning - Flood Risk from Surface Water and Small Watercourses map shows that the site lies entirely within Flood Zone 1, as presented in Figure 3-3. Flood Zone 1 represents areas that have a less than 0.1% AEP (1 in 1000 year) chance of flooding in any given year, including the effects of climate change.

All forms of development are suitable within Flood Zone 1.

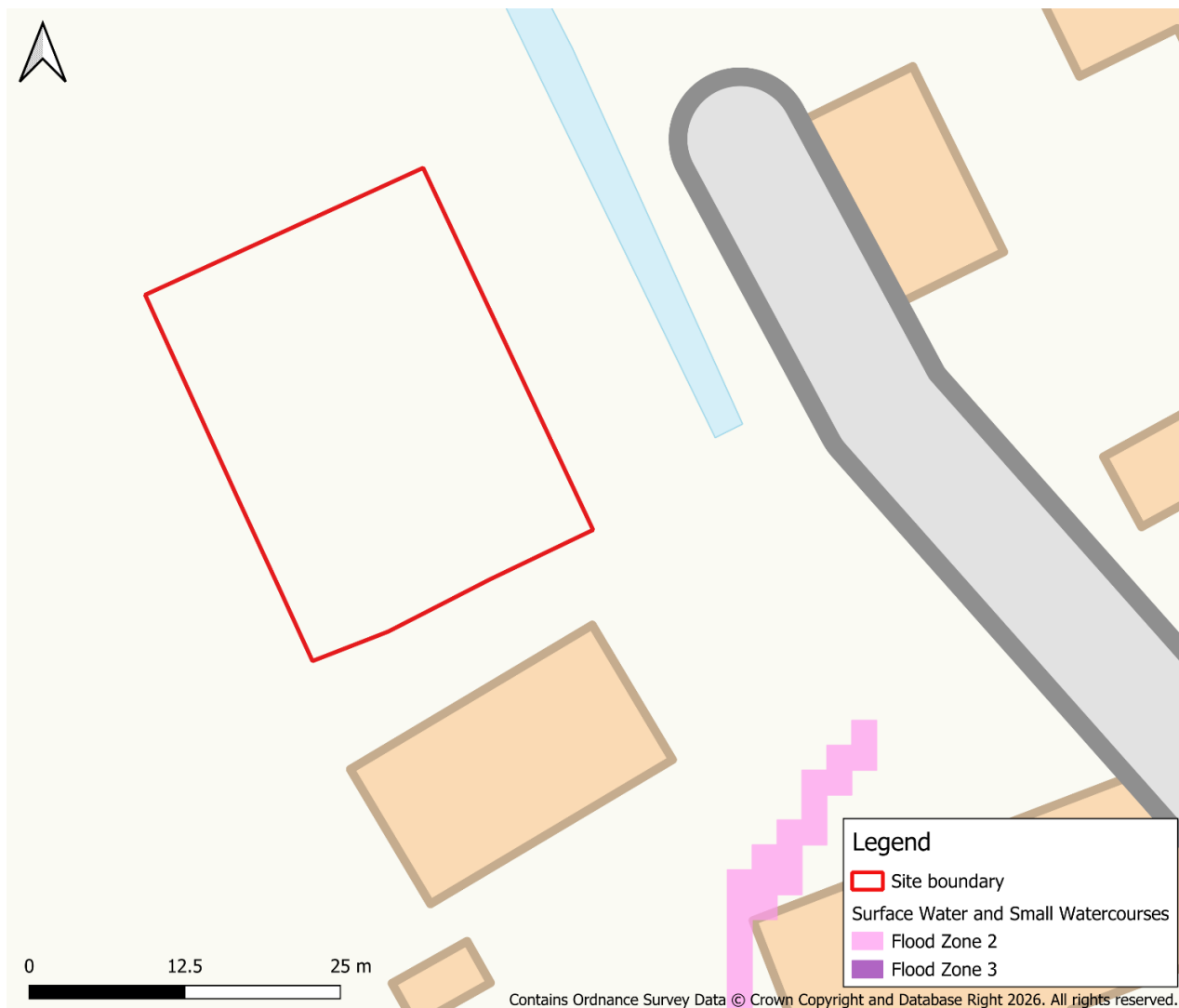


Figure 3-3: Flood Map for Planning - Surface Water and Small Watercourses

3.6 Newport Council Local Development Plan

The Newport City Council Local Development Plan (LDP)³ adopted in 2015 sets out how new development will be managed and how land will be used in Newport until 2026. The current LDP will remain in place until the new LDP for the period 2021-2036 is in force, entitled 'Newport Replacement Development Plan 2021-2036'.

The vision of the LDP is -

"As a gateway to Wales, Newport will be a centre of regeneration that celebrates its culture and heritage, while being a focus for varied economic growth that will strengthen its contribution to the region. It will be a place that people recognise as a lively, dynamic, growing City, with communities living in harmony in a unique natural environment."

³ <https://www.newport.gov.uk/documents/Planning-Documents/LDP-2011-2026/LDP-Adopted-Plan-January-2015.pdf>

To achieve this, the LDP has ten key objectives, of which, the development site will help to meet the following objectives and strategic policies:

- **Objective 1 - Sustainable Use of Land:** "To ensure that all development makes the most efficient use of natural resources by seeking to locate development in the most sustainable locations, minimise the impact on the environment and make a positive contribution to local communitiesA key way in which the Plan will seek to meet this objective is by focusing development on previously used, brownfield sites."
- **Objective 2 - Climate Change:** "To ensure that development and land uses in Newport make a positive contribution to minimising, adapting to or mitigating against the causes and impacts of climate change, by incorporating the principles of sustainable design, changes to travel behaviour, managing the risks and consequences of flooding, and improving efficiency in the use of energy, waste and water."
- **SP1 Sustainability:** "Proposals will be required to make a positive contribution to sustainable development by concentrating development in sustainable locations on brownfield land."
- **SP3 Flood Risk:** "Development be directed away from areas where flood risk is identified as a constraint and ensure that the risk of flooding is not increased elsewhere. Development will only be permitted in flood risk areas in accordance with national guidance. Where appropriate a detailed technical assessment will be required to ensure that the development is designed to cope with the threat and consequences of flooding over its lifetime. Sustainable solutions to management flood risk should be prioritised."

The proposed development will provide accommodation for the kennels' employees which will enhance the safety of the kennels, improve reputation and enable expansion of the business as intended. Additionally, the proposed development is situated on previously used brownfield land and will therefore help meet these objectives of the LDP.

In accordance with the Strategic Policy SP5, the LDP states "new dwellings in the countryside will be permitted only when it is essential for them to be on the site of a rural enterprise or when they will provide affordable housing for which there is a demonstrable local need". The proposed development is essential to be on the site of the kennels as there is an operational requirement for someone to be onsite 24/7 to ensure the safety, security and health of the dogs. This will also provide more affordable housing for the employees due to the greater financial challenge of converting other buildings on the site.

3.7 Shoreline Management Plan and Severn Estuary Flood Risk Management Strategy

The proposed site and all the Caldicot and Wentlooge Levels are protected by significant and extensive coastal flood defences that protect large areas of existing development (inc. Newport, Magor, Undy, Caldicot) and national infrastructure (rail mainline, Severn Tunnel, national grid power infrastructure, M4 motorway).

The Severn Estuary Shoreline Management Plan⁴ recognised this and set a policy to 'Hold the Line', maintaining the flood defences for the long term.

The importance of defending the area from flood risk is further established in the Severn Estuary Flood Risk Management Strategy. The Strategy concluded that "There is a strong economic case to maintain and improve the existing defences due to the large number of properties and infrastructure that is protected." It also states "We will continue maintaining the line and level of defences over the next 100 years. After 2060 there will be improvements to keep pace with climate change. This is likely to involve rock armour or concrete protection where not already present and raising to ensure the risk of tidal flooding remains a 1 in 200 chance or less."

The significance and importance of the coastal defences and the need to maintain and upgrade them over time was also firmly established by the Welsh Government at the 'M4 corridor around Newport' enquiry.

⁴ <https://severnestuarycoastalgroup.org.uk/shoreline-management-plan/>

4 Flood Risk Assessment

This section assesses the risk to the proposed development from all sources of flooding, the risk of increased flooding to others, and how flood risks can be managed.

4.1 Review of existing flood risk data

The latest available information on flood risk at the site, published by NRW is summarised in Table 4-1 below.

Table 4-1: Flood Risk Assessment

Source of flooding	Onsite presence	Description
Flood Risk from Rivers	×	The site is at very low risk of flooding from fluvial sources.
Flood Risk from the Sea	✓	Refer to Chapter 5 for detailed assessment
Flood Risk from Surface Water and Small Watercourses	×	The site is at very low risk from flooding from Surface Water and Small Watercourses.
Flood Risk from Groundwater	×	The site is at very low risk from flooding from groundwater
Flood Risk from Reservoirs	×	The site is at low risk from flooding from reservoirs.
Flood Risk from Sewers	×	The site is at low risk of sewer flooding.

4.2 Historical Flooding

NRW's map of recorded flood extents does not present any historical flood outlines for the site. No other historic flooding records were identified at the site in the Newport City Council Preliminary Flood Risk Assessment⁵, Flood Risk Management Strategy⁶ and the Newport Council's Flood Risk Management Plan⁷.

5 Newport City Council: Preliminary Flood Risk Assessment (2011)
<https://www.newport.gov.uk/documents/Council-and-Democracy/Civil-Contingencies/Preliminary-Flood-Risk-Assessment-final-report-April-2011.pdf>

6 Newport City Council: Local Flood Risk Management Strategy (2014)
<https://www.newport.gov.uk/documents/Policies/Newport-LFRMS-Report-Issue-Rev.pdf>

7 Newport City Council: Flood Risk Management Plan (2015)
<https://www.newport.gov.uk/documents/Council-and-Democracy/Consultations/Newport-Flood-Risk-Management-Plan-Report-Issue-for-Consultation.pdf>

4.3 Flood Risk from Rivers

As outlined in Section 3.5.1 the FMfP for Rivers identifies that the site is located within Flood Zone 1, meaning that there is a less than 0.1% AEP chance of flooding in any given year, including an allowance for climate change. Therefore the site is considered to be at **very low** risk for fluvial flooding.

The proposed development site is surrounded by a number of reens. It is advisable that any proposed dwelling should be located away from the reen network.

4.4 Flood Risk from Surface Water and Small Watercourses

Section 3.5.3 identifies that the site is located within Flood Zone 1 of the FMfP flood risk for Surface Water and Small Watercourses. Therefore, the site is considered to be at **very low** risk of flooding from these sources.

4.5 Flood Risk from Groundwater

Groundwater flooding is caused by unusually high groundwater levels. It occurs as excess water emerges at the ground surface or within manmade structures such as basements. Groundwater flooding tends to be more persistent than surface water flooding, in some cases lasting for weeks or months, and can result in damage to property. This risk of groundwater flooding depends on the nature of the geological strata underlying the site and the local topography.

Groundwater flooding occurs when the level of water within the rock or soil underground rises, due to extended periods of heavy rainfall or already high groundwater levels. Water then begins to reach ground level, and seep through to the surface, saturating the soil and causing flooding of land areas or flooding within basements of properties which can cause significant damage over time. There are no site-specific recorded groundwater flood incidents in the Newport Flood Risk Management Plan⁶, and the plan states that *'groundwater is not considered to be a significant risk in Newport'* and *'there are no recorded groundwater flood incidents'* within Marshfield Ward, Newport. It can therefore be concluded that the risk of groundwater flooding at the site is **very low**.

4.6 Flood Risk from Reservoirs

The NRW FRAW flood risk from Reservoirs flood maps indicate that the proposed development site is at **very low** risk of flooding due to reservoir failure. Very low risk is shown as transparent on the NRW map and has not been represented graphically.

4.7 Flood Risk from Sewers

The Newport Flood Risk Management Plan states that there have been 71 reported incidents of DG5 sewer flooding within the Marshfield Ward area. The management plan states that the majority of these are in a cluster to the southwest of the ward. The development site is within the south of the Marshfield Ward area and there is no site-

specific mention of the development site. Therefore, it can be concluded that the risk of sewer flooding is **low**.

5 Detailed Tidal Flood Risk Assessment

Tidal flood risk has been identified as a significant source of flood risk to the site. To better understand the risk of tidal flooding posed to the site and the potential implications of climate change, further assessment using detailed hydraulic modelling is reported in this section.

5.1 Hydraulic modelling availability

The detailed assessment of tidal flood risk utilises the 2022 Wentlooge Tidal Flood Model. The Wentlooge model covers an area from the River Rhymney estuary in Cardiff to the River Usk estuary in Newport. JBA Consulting developed the model in 2019, and it has since been updated in 2022 to apply the latest climate change guidance, extreme sea level predictions, and utilise most recent software and modelling approaches.

The updated flood modelling has utilised the TUFLOW executable release of 2020-10-AC. This is considered an improvement on the previous modelling that had adopted the TUFLOW executable 2018-03-AE.

In addition, the tidal boundary conditions were updated in line with the latest (September 2021) Welsh Government climate change guidance for Flood Consequence Assessments⁸. The tidal boundary conditions were uplifted from the CFB dataset base year of 2017, using the Higher Central allowance (70th percentile) of the UK Climate Projections (UKCIP 18) for Representative Concentration Pathway 8.5 (RCP 8.5). Extreme sea level estimates were calculated for the CFB nodes 396 (River Usk) and 408 (River Rhymney), for the 2022, 2097, and 2122 epochs.

As residential development has a recommended lifetime of development of 100 years, the 2122 results have been used to inform the detailed assessment within this report. It is recognised that the 2022 update to the Wentlooge model is now four years old. Consequently, Table 5-1 provides a comparison of peak tide levels for 2022 and 2026 and 2122 and 2126. There is shown to be minimal difference in the peak tide levels for 2026 in comparison to 2022 and 2122 in comparison to 2126. Given the level of flood risk assessed, it is considered disproportionate to update the model to reflect the additional years of climate change from 2022 to 2026, as this would likely have a negligible impact on the results.

Table 5-1: CFB sea level projections

Scenario	Event	CFB_396	CFB_408
2022	T200	8.36	7.94
	T1000	8.70	8.30
2026	T200	8.38	7.96
	T1000	8.72	8.32
2122 (70th percentile)	T200	9.38	8.96
	T1000	9.72	9.32
2122 (95th percentile)	T200	9.75	9.33
	T1000	10.09	9.69
2126 (70th percentile)	T200	9.43	9.01
	T1000	9.77	9.37
2126 (95th percentile)	T200	9.82	9.40
	T1000	10.16	9.76

The previous Wentlooge tidal model assessed coastal risk from both still water flooding and from wave overtopping. It was decided not to update the wave overtopping discharge rates that are currently in the model. The process to calculate new wave overtopping discharge rates is complex and time consuming, and the impact on flood risk is typically contained to the area immediately adjacent to the inland side of the flood defence. Therefore, the use of the existing wave overtopping rates has been deemed to be an acceptable limitation.

The sea level estimates used within the previous modelling are slightly higher than the sea level estimates being used in the new flood modelling. Consequently, the wave overtopping discharge rates that have been retained for the new flood modelling are based on the higher water levels from the previous study and are therefore considered to be precautionary. If new wave overtopping discharge rates were to be calculated, this would be based on lower peak water levels and would inherently result in less wave overtopping.

It is important to note that within the bc_dbase, there are other Head-Time (HT) boundary conditions being applied to the River Usk and River Rhymney estuaries. The bc_dbase has applied additional sea level rise estimates above the base tide curves to represent the increase in levels as water propagates up these watercourses. The added values were calculated in 2015 as part of the original NRW flood mapping model study. These values have been retained for this model update as it was considered to be disproportionate and unnecessary to recalculate them for this flood modelling exercise.

5.2 Detailed tidal flood risk results

5.2.1 0.5% AEP plus climate change event with central estimate (70th percentile)

Figure 5-1 below indicates that the site is predicted to be entirely flood-free in the 2122 0.5% AEP event, with no flooding predicted within approximately 130m of the site. Flood

free access and egress is available along the southern boundary, connected to the unnamed road to the east of the site, which provides a direct connection to St Brides Road (B4239).

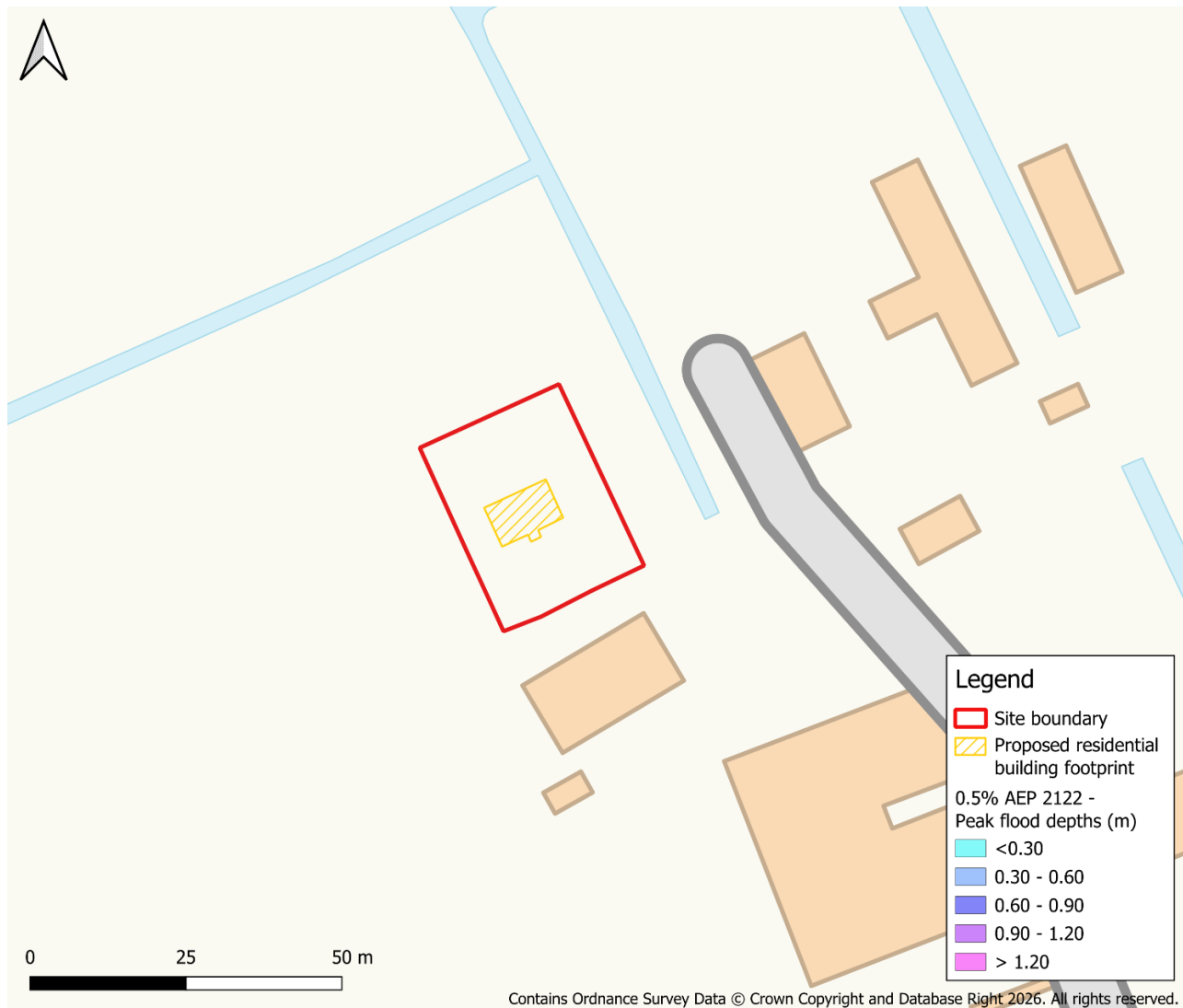


Figure 5-1: 0.5% AEP Tidal Event plus climate change flood depths

5.2.2 0.1% AEP plus climate change event

As shown in Figure 5-2, the proposed development site is shown to largely remain flood free during the 2122 0.1% AEP event. Flooding is shown in the western part of the site, associated with a topographic depression. Flood depths in this area are very shallow, reaching maximum depths of approximately 30mm.

The peak flood level in this Scenario is 5.79mAOD. However, the building footprint has a proposed FFL of 6.14mAOD, therefore shall remain flood free.

The site access road (unnamed road connected to St Brides Road) is predicted to experience flooding in the 0.1% AEP plus climate change event, as shown in Figure 5-3. Flood depths along the access road are expected to be predominantly below 300mm, viable for access for high-sided vehicles.

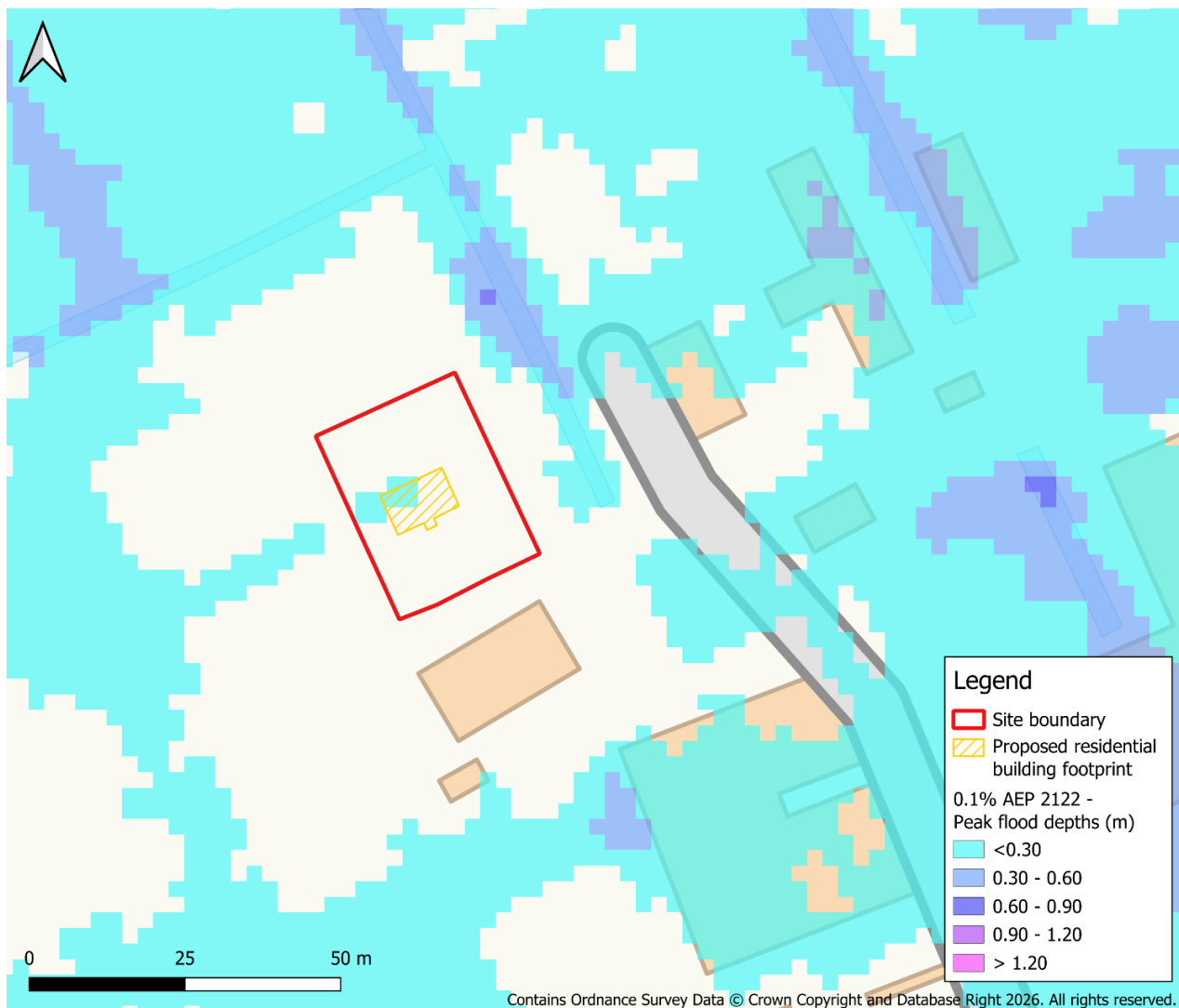


Figure 5-2: 0.1% AEP Tidal Event plus climate change flood depths

5.2.3 0.5% AEP plus climate change event with upper end estimate (95th percentile)

Section 4.3 of TAN-15 advises that an FCA is required to consider a range of climate change scenarios, including the upper end estimates, making reference to the Welsh Government guidance on climate change allowances for planning purposes. Although the upper end estimate event has not been simulated, the extreme sea level estimate has been calculated (Table 5-1). At CFB nodes 396 and 408, the sea level projection for the 0.5% AEP plus climate change event with the upper end estimate shows minimal difference to the 0.1% AEP plus climate change event with the central estimate. The proposed building is predicted to be flood-free during the 0.1% AEP plus climate change event with the central estimate. As such, it is considered disproportionate to model this event.

5.3 Breach Analysis

Breach analysis of the embankments which form the Wentlooge Levels coastal defences was undertaken to aid in the understanding of residual flood risk. The breach analysis was originally completed by JBA Consulting and HR Wallingford as part of the 2015 NRW flood

mapping study. The analysis used the EMBREA (Embankment BREAch) model to simulate the breaching process for 5 embankments. A total of 8 breach locations has been included and can be found in Figure 5-4.

The breach analysis produced the predicted breach widths and heights to be applied to the flood inundation modelling. The breach width was rounded to the nearest model cell size (5m in this case) to allow the defence to be lowered across the entire model cell. The defence crest level was lowered by the height calculated in the breach modelling.

Breach modelling was performed for the 0.5% and 0.1% AEP events, allowing for 100 years of climate change (2122). It was decided not to revisit the breach schematisation as the original modelling used detailed analysis to identify the locations most susceptible to breach.

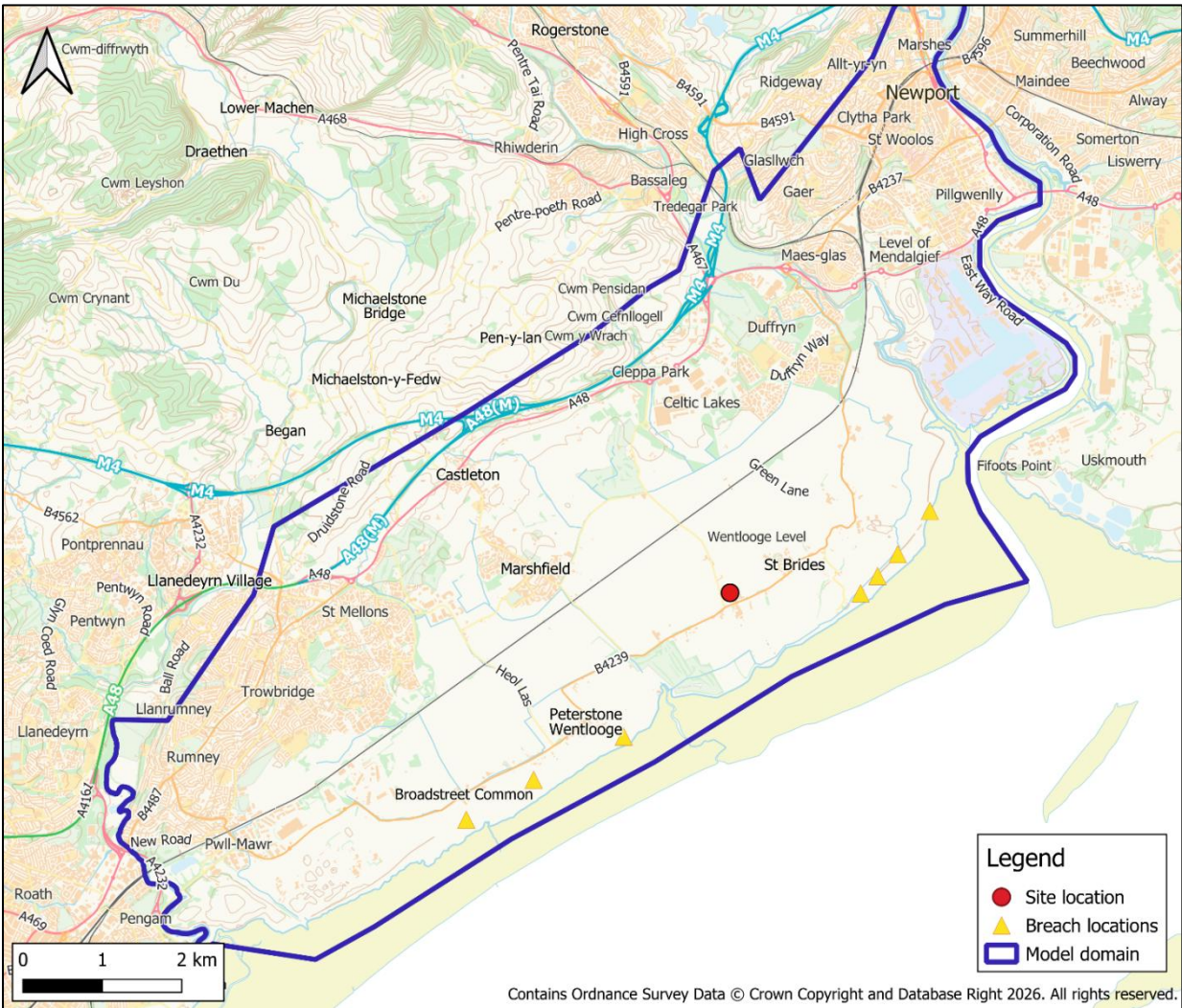


Figure 5-3: Modelled breach locations

5.3.1 Breach analysis: 0.5% AEP plus climate change event

The breach scenario has been simulated for the 0.5% AEP event for 100 years of climate change (2122). As shown in Figure 5-4, the entirety of the site is predicted to flood, with

maximum flood depths within the site reaching 710mm. These greatest flood depths are found within a topographic depression in the western part of the proposed building footprint.

The maximum predicted water level at the site during this scenario is 6.41mAOD. Within the building footprint, the water level reaches a maximum of 6.39mAOD. The proposed FFL of the residential building is 6.14mAOD, indicating that internal flooding of 0.25m is expected.

The NRW breach results are based on the simultaneous breach failure of 8 locations along the coast. These results can therefore be assumed to be precautionary, representing a highly unlikely worst-case scenario.

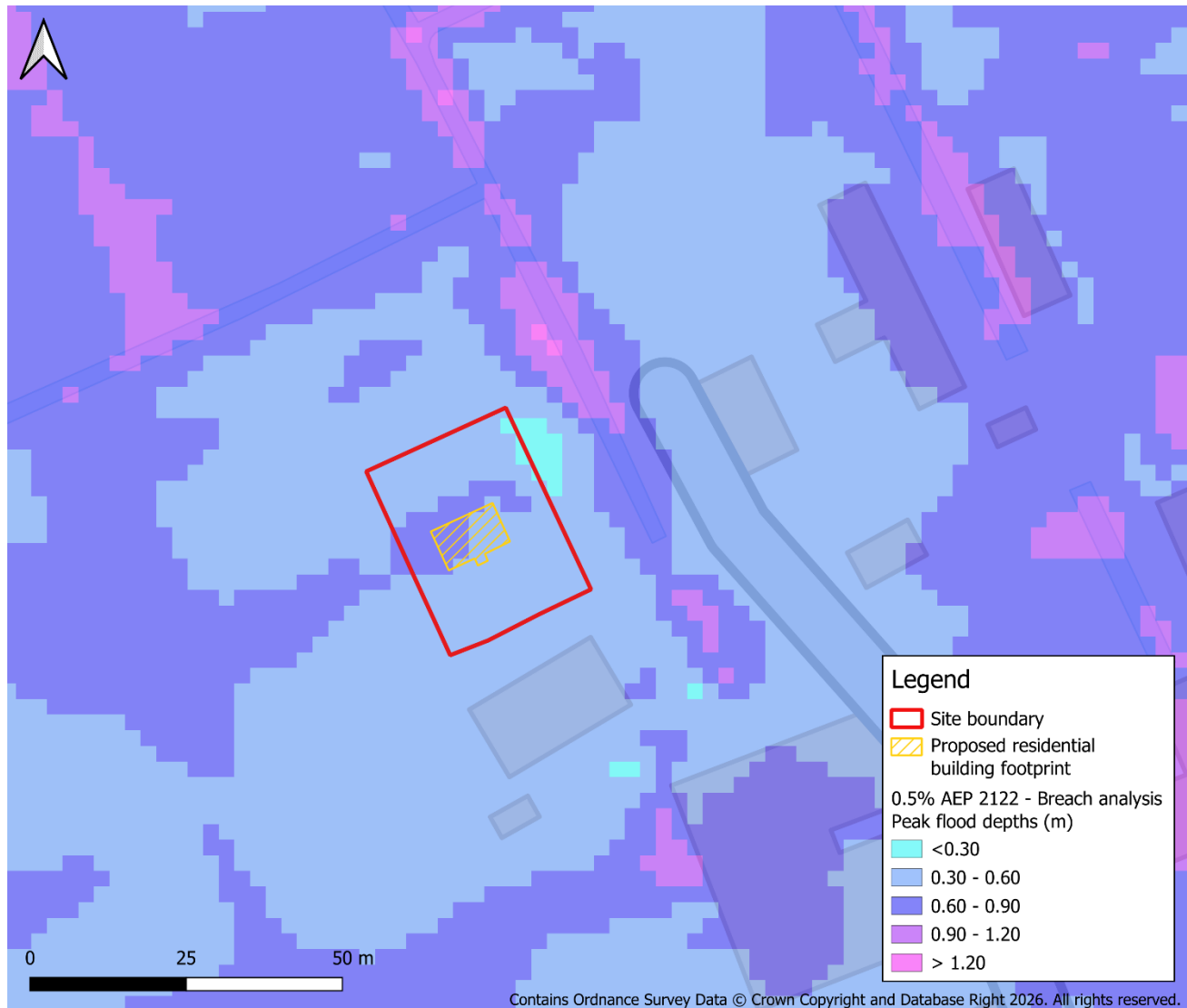


Figure 5-4: Breach analysis 0.5% AEP Tidal Event plus climate change peak flood depths

5.3.2 Breach analysis: 0.1% AEP plus climate change event

The breach scenario has been simulated for the 0.1% AEP event for 100 years of climate change. As shown in Figure 5-5, the greatest flood depths are found in the western part of the site, reaching 0.95m.

Flooding within the proposed building footprint is expected to reach levels of 6.63mAOD, therefore, internal flooding up to 0.49m is predicted.

The NRW breach results are based on the simultaneous breach failure of 8 locations along the coast. These results can therefore be assumed to be precautionary, representing a highly unlikely worst-case scenario.

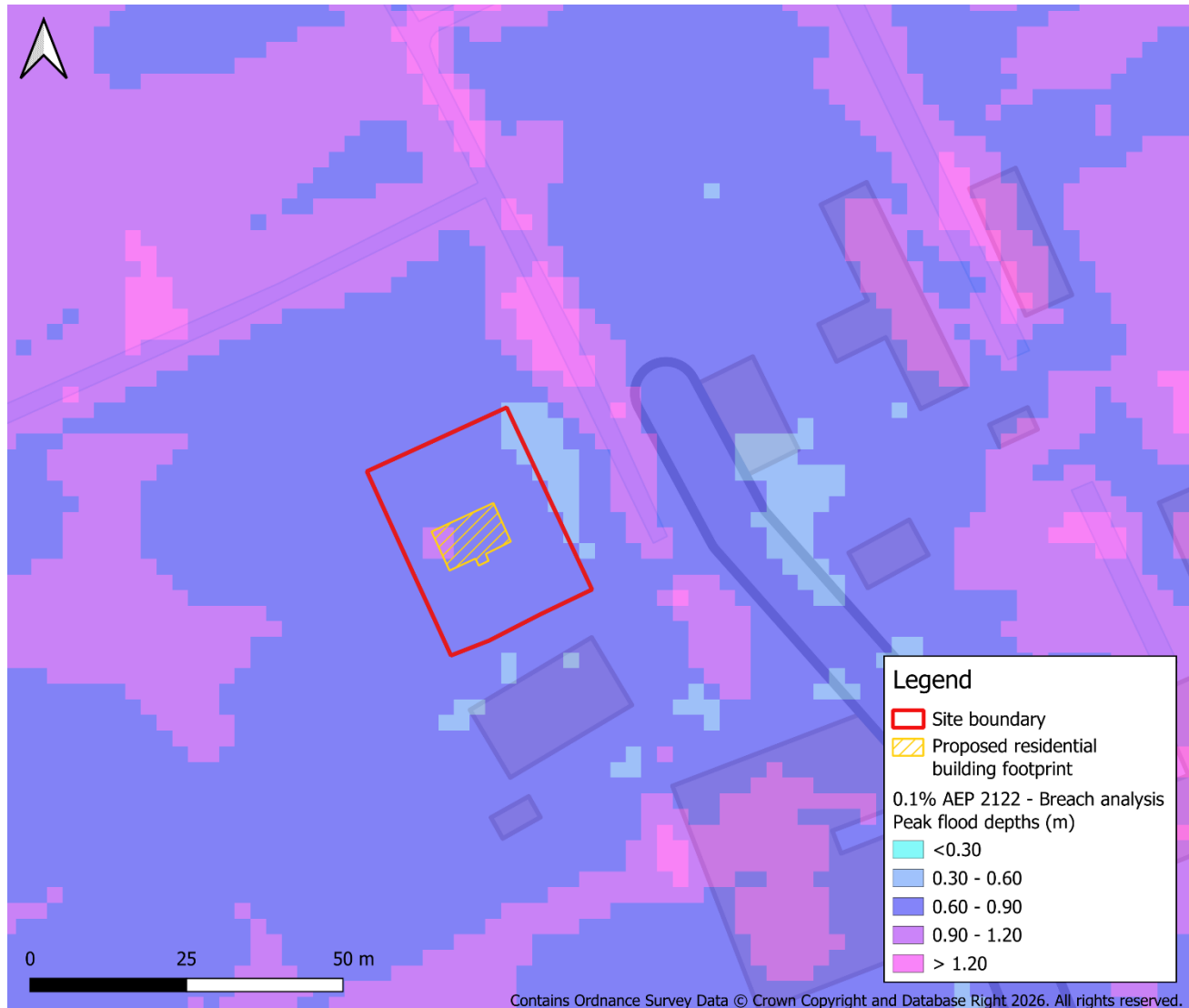


Figure 5-5: Breach analysis 0.1% AEP Tidal Event plus climate change peak flood depths

Should a breach occur, access and egress to and from the proposed development site may be restricted due to the significant flood depths present in both the 2122 0.5% AEP plus climate change and 2122 0.1% AEP plus climate change events. If residents are unable to evacuate the site in the event of a breach, then it is recommended that they seek refuge on the first floor of the proposed development, which will remain flood free, until flooding recedes to a safe level.

6 Flooding and the Plan Led System

6.1 Application of Flood Zones to Development Management Decisions

When considering a site for development, TAN-15 sets out the requirements for the form of development in any given flood zone.

It is understood that the presence of the site within the TAN-15 Defended Zone supplants the site's location within Flood Zone 3, regardless of the source of risk. For a proposed development site within a TAN-15 Defended Zone, Section 10.17 of TAN-15 states:

"On brownfield sites, redevelopment proposals should not over intensify use neither should they reduce the area's ability to absorb flood water and nor cause problems with flooding elsewhere. All applications should consider opportunities to incorporate flood resilient design as appropriate and any proposal involving highly vulnerable development must be compliant with the tolerable conditions set out in section 11."

Given that the proposals are indicated to remain flood free during the 0.5% AEP and 0.1% AEP plus climate change events, as outlined in Section 5.2, the redevelopment proposals will not alter any flooding mechanisms to third party land, or the area's ability to absorb flood water. Additionally, flood resilient design is not a necessity in this instance due to the proposed building footprint remaining flood free under all conditions. In accordance with Section 10.17, redevelopment within the defended Zone must be compliant with the tolerable conditions set out within Section 11 of TAN-15, which is demonstrated in Section 6.2.

6.2 Acceptability of Flood Consequences

Whether a development should proceed or not will depend upon whether the consequences of flooding can be safely managed, including its effects on flood risk elsewhere. TAN-15 sets out the key conditions that should be met to demonstrate that development is appropriate for its location.

The site has been assessed against the Acceptability Criteria of Section 11 of TAN-15, as shown in Table 6-1 below.

Table 6-1 Assessment of Acceptability Criteria

TAN-15 Acceptability Criteria	Comments	Achieved
No increase in flooding elsewhere.	Detailed hydraulic modelling shows that the proposed redevelopment site shall remain flood free during the 0.5% AEP +CC event (for the 2122 epoch). Therefore, the proposals shall have no impact on flood risk to third parties during this event, as detailed in Section 5 of this FCA.	Yes

TAN-15 Acceptability Criteria	Comments	Achieved
	During the 0.1% AEP +CC event, very shallow flooding (<30mm) is predicted where development is proposed, and the residential building will be raised above the flood level to 6.14mAOD. Due to the tidal nature of flood risk to the site, it is unlikely that flood waters shall be displaced by the proposed development.	
Occupiers aware of flood risk.	The site owners will be provided with information on flooding risks in the form of this report. It is also advised that site users sign up to NRW's flood alerts and warnings.	Yes
Escape/evacuation routes present	Flood free escape and safe evacuation routes are accessible to the south of the site via the unnamed road which connects to St Brides Road (B4239) in the 0.5% AEP plus climate change event. Tidal flooding is predicted to occur along the unnamed road which provides a direct connection to St Brides Road (BA239) in the 0.1% AEP event plus climate change (2122). However, this is predominantly to shallow depths of less than 220mm and therefore pedestrian and vehicular use is envisaged to remain accessible to evacuate if required. Tidal flood events typically have a significant lead time of 1-2 days. It is therefore recommended that the occupiers of the site sign up to the NRW flood alert and warning services to ensure that evacuation of the site can be done in a timely manner if necessary. The site is located within the 'Coast from Aberthaw to Severn Bridge' Flood Alert area and the 'Coast at the Wentlooge Levels in the Newport Area' Flood Warning area.	Yes

TAN-15 Acceptability Criteria	Comments	Achieved
Flood emergency plans and procedures agreed and in place	The development site and the access/egress road are predicted to remain flood-free in the 0.5% AEP plus climate change event. The proposed building is expected to be flood-free during the 0.1% AEP plus climate change event. It is also advisable a Flood Response Plan is prepared to ensure that occupiers of the site are aware of the flood risk and recommended actions.	Yes
Flood resistant and resilient design	N/A - The proposed building footprint is predicted to be flood-free in the 0.5% and 0.1% AEP events, plus an allowance for climate change.	Yes

6.2.1 Frequency thresholds: designing development to be flood free

The required design standard for new development is to be flood free during the 0.5% AEP tidal flood event, plus an allowance for climate change over the lifetime of development as stated in Figure 5 of TAN-15. In accordance with Section 11.8, this threshold may be applied with more flexibility for redevelopment, and the thresholds are to be used as a guide.

The proposals are predicted to be flood free in the 0.5% AEP plus climate change event (2122) and therefore meet this frequency threshold.

6.2.2 Tolerable conditions: managing consequences in an extreme flood event

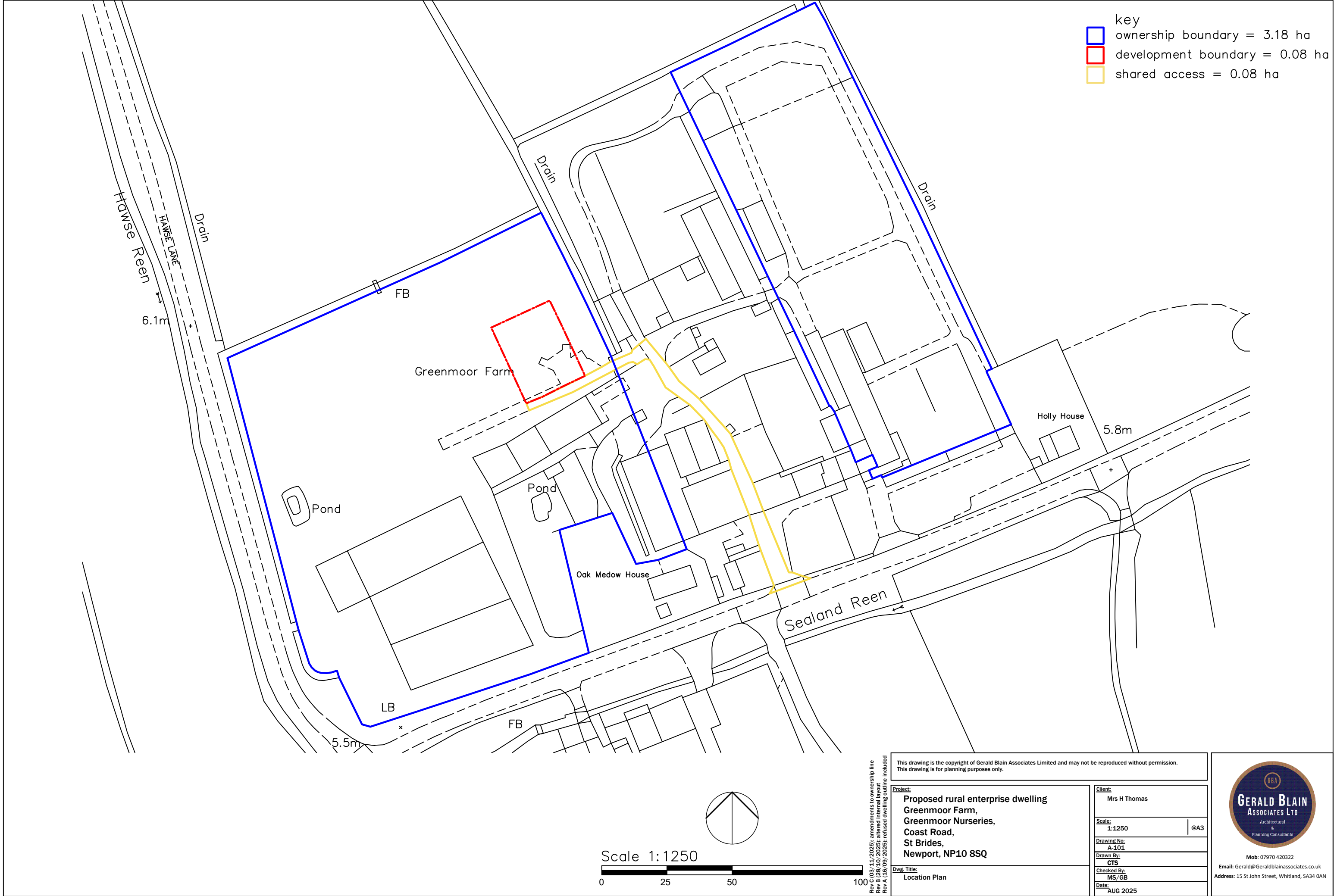
The flood-free thresholds relate to very serious but not extreme flood events. During extreme flood events, there is recognition that it may not be possible to keep all development flood-free. Figure 6 of TAN-15 provides indicative tolerable flood depth and velocity conditions for the 0.1% AEP event, including an allowance for climate change. Up to 600mm of flooding is considered tolerable within Highly Vulnerable Developments. It is understood that some flexibility to this indicative value is afforded to redevelopment sites.

The proposed residential building will be flood free during the 0.1% AEP event, plus an allowance for climate change. This therefore complies with the tolerable conditions as outlined in TAN-15.

7 Conclusions

- JBA Consulting were commissioned by Geraint John Planning Ltd to prepare a Flood Consequences Assessment (FCA) to support a planning application for the proposed residential development at land adjacent to Greenmoor Nurseries, St Brides, Newport.
- The proposed development is a residential dwelling 10m north of the associated kennels, to enable an employee to be onsite 24/7 to ensure the safety, security, and health of the dogs.
- The site has a vulnerability classification of Highly Vulnerable Development as defined by TAN-15.
- The site is located within the TAN-15 Defended Zone and presently benefits from tidal flood defences. Development proposals within the TAN-15 Defended Zone are justified provided that they are consistent with the acceptability considerations set out in Section 11 of TAN-15.
- Flood risk from rivers, surface water, groundwater, reservoir failure and sewers are shown to be low/very low across the site.
- Presently, the flood risk from the sea is low, but is predicted to increase with climate change over the lifetime of the development. Consequently, a detailed assessment of the tidal flood risk at the site has been undertaken.
- Detailed Tidal modelling demonstrates the site to be entirely flood free in the 2122 0.5% AEP event. The site is mostly flood free within the 2122 0.1% AEP event and the proposed residential building is predicted to be flood free.
- With the addition of 100 years of climate change and multiple breaches in the coastal flood defences, there is the potential for widespread flooding of the site. However, even in the most extreme design event (1in1000yr), internal flood depths are predicted to remain below the recommended tolerable flood conditions of TAN15.
- Dry access/egress to the building is shown via the unnamed access road connected to the B4239 during the 1% AEP plus climate change event. Shallow flooding of the access road is shown during the 0.1% AEP event; however, this is within the tolerable limit of 600mm under TAN15.
- The FCA has demonstrated that all aspects of the Acceptability Criteria set out in TAN-15 have been satisfied. Consequently, we conclude that on the grounds of flood risk, the proposed development meets the requirements set out in TAN-15 and the aims of Planning Policy Wales.

A Development Proposals



- key
- ownership boundary = 3.18 ha
 - development boundary = 0.08 ha
 - shared access = 0.08 ha

Rev C (03/11/2025): amendments to ownership line
Rev B (28/10/2025): altered internal layout
Rev A (16/09/2025): refused dwelling outline included

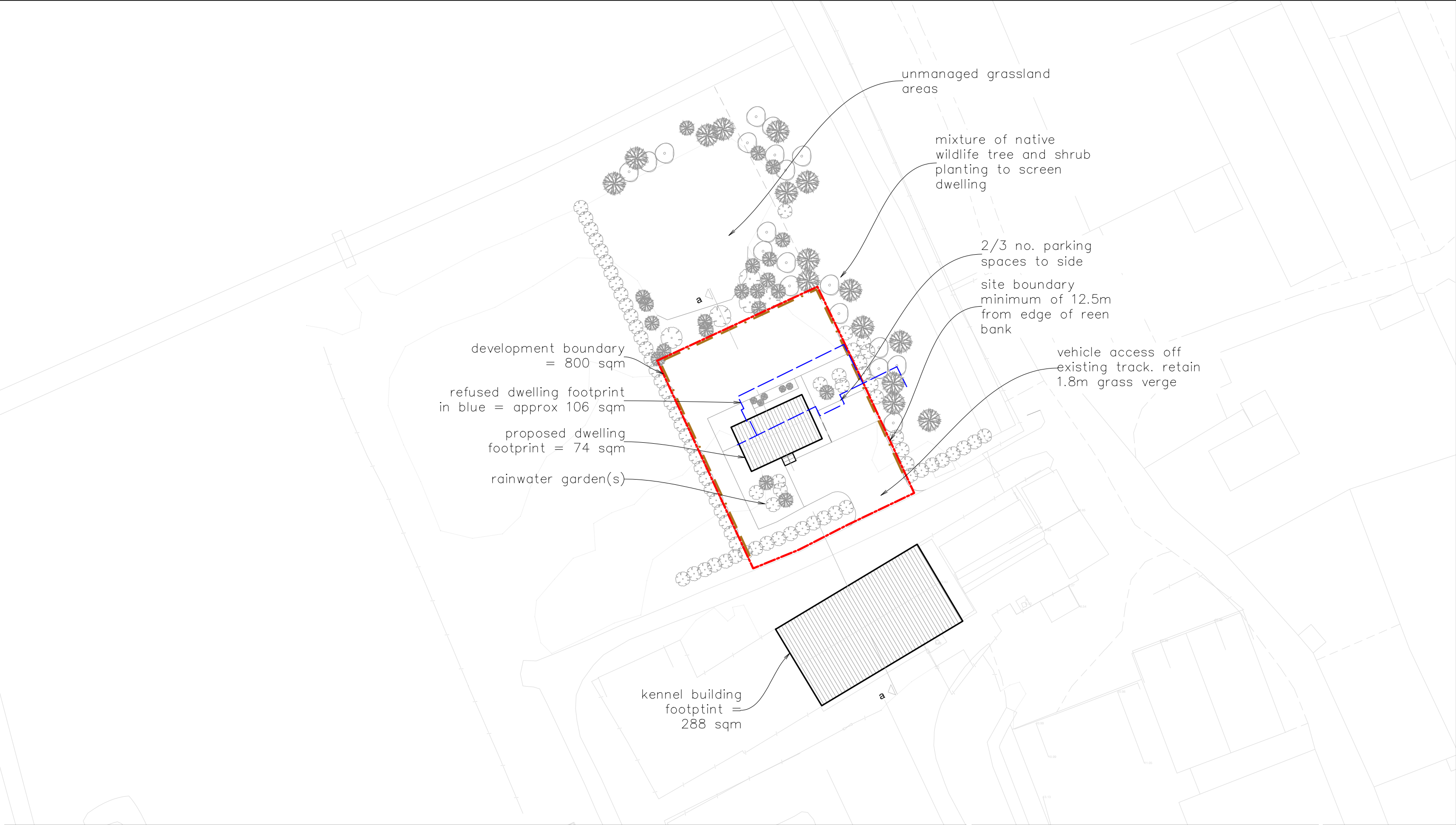
This drawing is the copyright of Gerald Blain Associates Limited and may not be reproduced without permission.
This drawing is for planning purposes only.

Project:	Proposed rural enterprise dwelling Greenmoor Farm, Greenmoor Nurseries, Coast Road, St Brides, Newport, NP10 8SQ	
Dwg. Title:	Location Plan	

Client:	Mrs H Thomas	
Scale:	1:1250	@A3
Drawing No:	A-101	
Drawn By:	CTS	
Checked By:	MS/GB	
Date:	AUG 2025	



Mob: 07970 420322
Email: Gerald@Geraldblainassociates.co.uk
Address: 15 St John Street, Whitland, SA34 0AN



development boundary
= 800 sqm

refused dwelling footprint
in blue = approx 106 sqm

proposed dwelling
footprint = 74 sqm

rainwater garden(s)

unmanaged grassland
areas

mixture of native
wildlife tree and shrub
planting to screen
dwelling

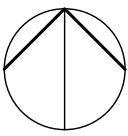
2/3 no. parking
spaces to side

site boundary
minimum of 12.5m
from edge of reën
bank

vehicle access off
existing track. retain
1.8m grass verge

kennel building
footptint =
288 sqm

Scale 1: 500



Rev C (03/11/2025): amendments to ownership line
Rev B (28/10/2025): altered internal layout
Rev A (16/09/2025): refused dwelling outline included

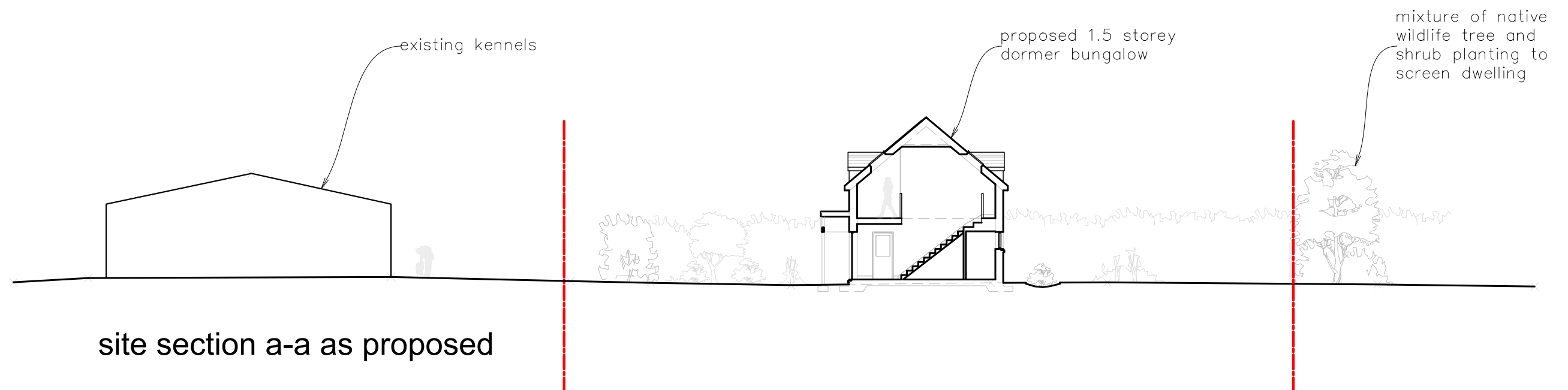
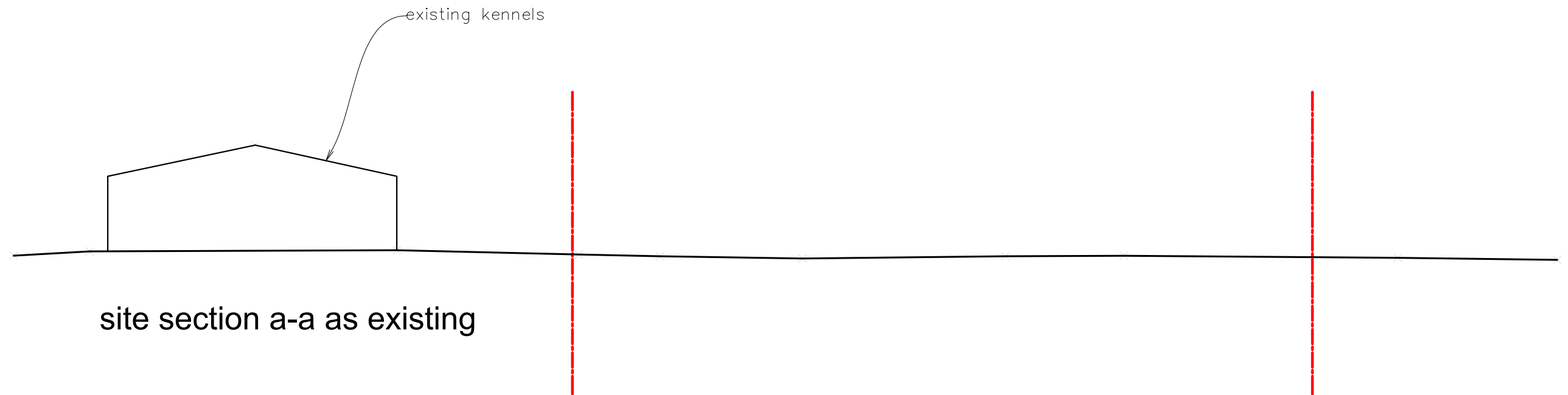
This drawing is the copyright of Gerald Blain Associates Limited and may not be reproduced without permission.
This drawing is for planning purposes only.

Project:
Proposed rural enterprise dwelling
Greenmoor Farm,
Greenmoor Nurseries,
Coast Road,
St Brides,
Newport, NP10 8SQ
Dwg. Title:
Block Plan as Proposed

Client:
Mrs H Thomas
Scale:
1:500 @A3
Drawing No:
A-112
Drawn By:
CTS
Checked By:
MS/GB
Date:
AUG 2025



Mob: 07970 420322
Email: Gerald@Geraldblainassociates.co.uk
Address: 15 St John Street, Whitland, SA34 0AN



Scale 1:200



Rev C (03/11/2025): amendments to ownership line
Rev B (28/10/2025): altered internal layout
Rev A (16/09/2025): refused dwelling outline included

This drawing is the copyright of Gerald Blain Associates Limited and may not be reproduced without permission.
This drawing is for planning purposes only.

Project:
Proposed rural enterprise dwelling
Greenmoor Farm,
Greenmoor Nurseries,
Coast Road,
St Brides,
Newport, NP10 8SQ

Dwg. Title:
Site Section a-a as Existing and Proposed

Client:
Mrs H Thomas

Scale:
1:200 @A3

Drawing No:
A-114

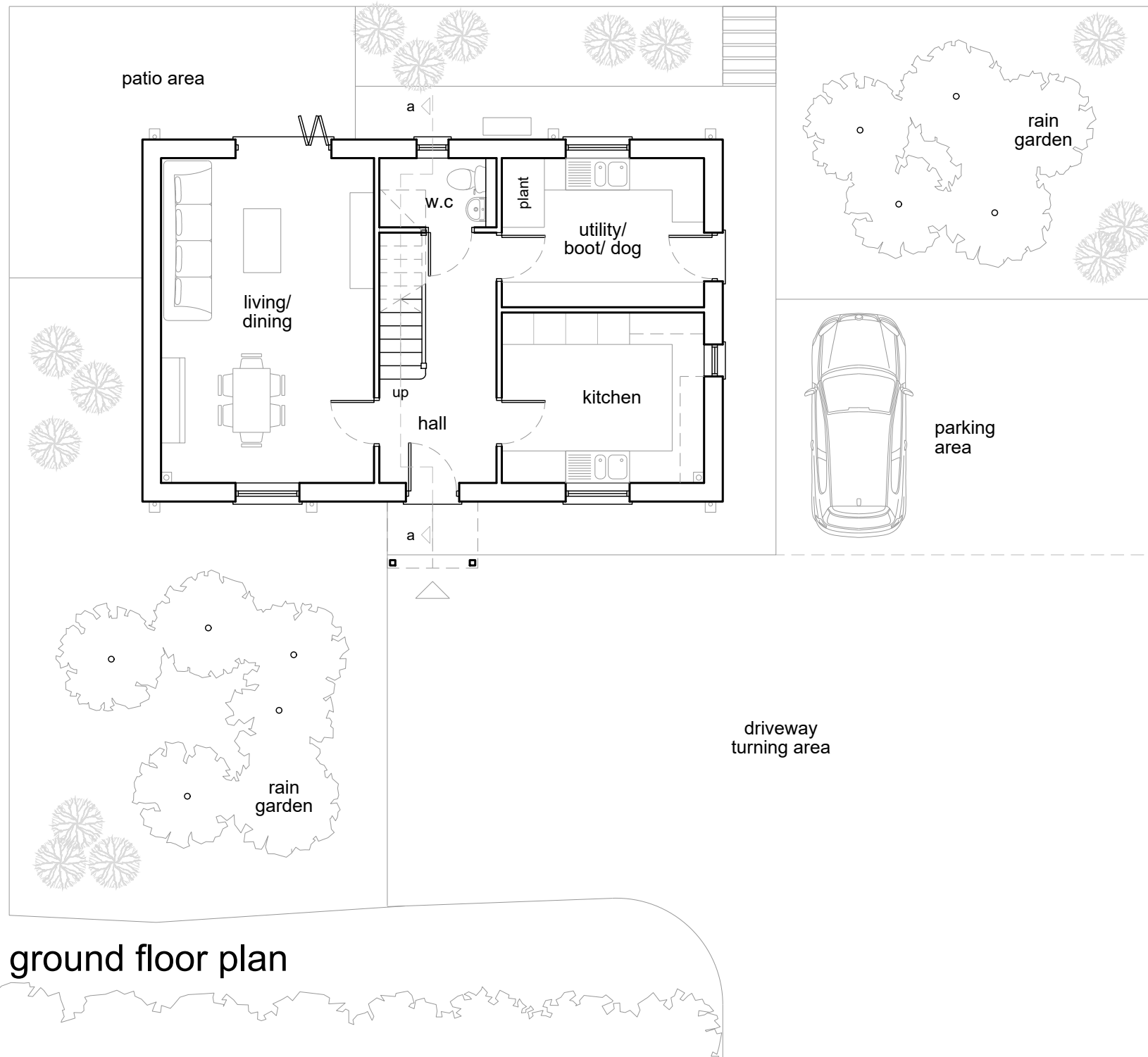
Drawn By:
CTS

Checked By:
MS/GB

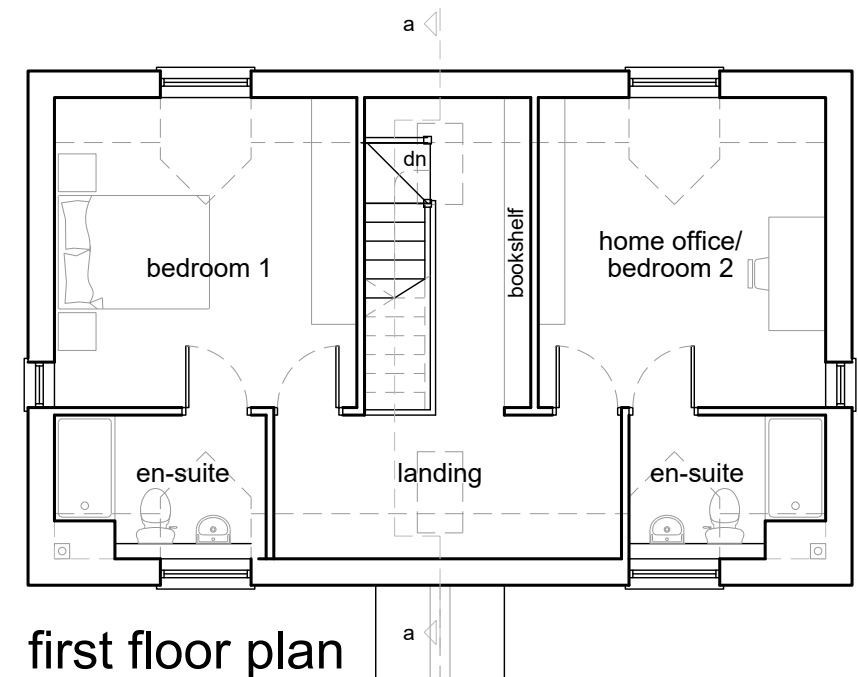
Date:
AUG 2025



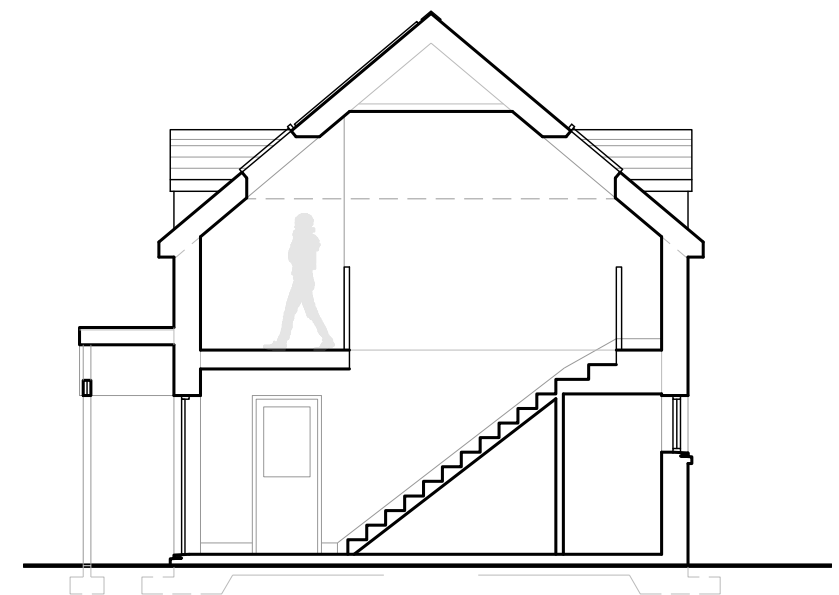
Mob: 07970 420322
Email: Gerald@Geraldblainassociates.co.uk
Address: 15 St John Street, Whitland, SA34 0AN



ground floor plan



first floor plan



section a-a

Scale 1:100



Rev C (03/11/2025): amendments to ownership line
Rev B (28/10/2025): altered internal layout
Rev A (16/09/2025): refused dwelling outline included

This drawing is the copyright of Gerald Blain Associates Limited and may not be reproduced without permission. This drawing is for planning purposes only.	
Project: Proposed rural enterprise dwelling Greenmoor Farm, Greenmoor Nurseries, Coast Road, St Brides, Newport, NP10 8SQ	Client: Mrs H Thomas
Dwg. Title: Plans and Section as Proposed	Scale: 1:100 @A3
	Drawing No: A-115
	Drawn By: CTS
	Checked By: MS/GB
	Date: AUG 2025



Mob: 07970 420322
Email: Gerald@Geraldblainassociates.co.uk
Address: 15 St John Street, Whitland, SA34 0AN

Our Offices

Bristol
Coleshill
Cork
Doncaster
Dublin
Edinburgh
Exeter
Glasgow
Haywards Heath
Leeds
Limerick

Newcastle
Newport
Peterborough
Portsmouth
Saltaire
Skipton
Tadcaster
Thirsk
Wallingford
Warrington



Registered Office

1 Broughton Park
Old Lane North
Broughton
SKIPTON
North Yorkshire
BD23 3FD
United Kingdom

+44(0) 1756 799919
info@jbaconsulting.com
www.jbaconsulting.com

Follow us on  

Jeremy Benn
Associates Limited
Registered in
England
3246693

JBA Group Ltd is
certified to
ISO 9001:2015
ISO 14001:2015
ISO 27001:2022
ISO 45001:2018

