



Flood Consequence Assessment for Planning

Prepared for:

Stephen Woodward

July 2020

Our reference:

89712-Davies-GarbettPI

Location:

No.1 Garbett Place

Crynant

Neath

SA10 8PQ



Document Issue Record

Project: Flood Consequence Assessment for Planning
Client: Stephen Woodward
Location: No. 1 Garbett Place, Crynant, Neath, SA10 8PQ
Application: Construction of two new dwellings
Our reference: 89712-Davies-GarbettPI
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Lead Consultant: Mrs Emma Jeffery
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Key Facts

Flood Risk Posed:

- The site is situated predominantly within Flood Zone B, and partially within Flood Zone C (as defined by NRW).
- Fluvial risk, originating from the River Dulais.
- The development will be classified as “highly vulnerable” throughout.
- Modelled flood levels and flood extents have been requested from the NRW.
- The site is entirely above the modelled 1:100 year flood levels, both at the present day and with an allowance for climate change.
- Risk of surface water, groundwater and sewer surcharge flooding would appear to be low.

Flood Risk Management:

- The site has current valid planning permission for the construction of a detached residential dwelling.
- The finished floor level will be at least 0.78m above the 1:100 year flood level with allowance for climate change (and 600mm above the 1:1000 year flood level).
- Safe escape from the site can be provided.
- A flood warning and evacuation plan will be implemented post development.
- Flood proofing of the properties will be incorporated as appropriate.

Assuming accordance with these flood risk management measures, Unda Consulting Limited consider the proposed application to be suitable in flood risk terms.

Introduction

Unda Consulting Limited have been appointed by Stephen Woodward (hereinafter referred to as “the applicant”) to undertake a Site Specific Flood Consequence Assessment (FCA) for Planning at Construction of two new dwellings (hereinafter referred to as “the site”). The FCA has been undertaken in accordance with Technical Advice Note 15 (TAN 15) and the associated technical guidance.

The site appears to be located predominantly within Flood Zone B, and partially within Flood Zone C2 as defined by Natural Resource Wales (NRW) on their Development Advice Map. Under Technical Advice Note 15 (TAN 15), a FCA is required if a proposed development:

- includes building or engineering works in Flood Zone C1, C2 or B;
- includes building or engineering works on land classified as having critical drainage problems;
- changes the use of land or buildings in a location at risk of flooding from rivers or the sea, or with critical drainage problems;
- changes the use of land or buildings in a way that increases the flood vulnerability of the development where it may be subject to other sources of flooding;
- site is larger than 1 hectare.

Given that the proposed application site is located within Flood Zone B: (Areas known to have been flooded in the past evidenced by sedimentary deposits), and Flood Zone C2 (Without significant flood defence infrastructure) and includes building work, the applicant is required to submit a FCA under TAN 15. The assessment should demonstrate to the Local Planning Authority (LPA) and NRW 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 potential users.

The objectives of a FCA to support a planning application are to establish:

- whether the 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.

Existing Situation

Site Usage:

The site comprises of an existing residential garden / empty plot adjacent to number 2 Garbett Place.

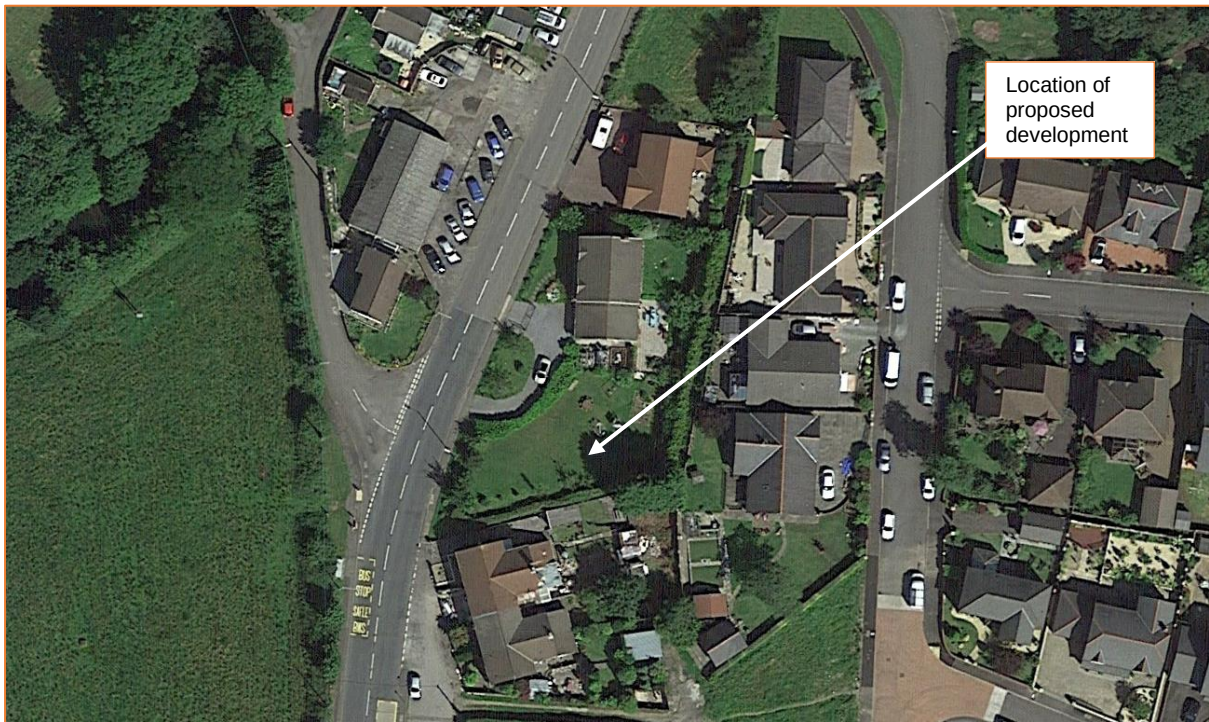


Figure 1: Aerial view of the site and immediate surrounding area (Source: Google Earth)



Figure 2: Street view of the site (Source: Google Earth)

It should be noted however that the site has current valid planning permission for the construction of a detached residential dwelling (Neath Port Talbot Council Planning Ref: P2019/5286).

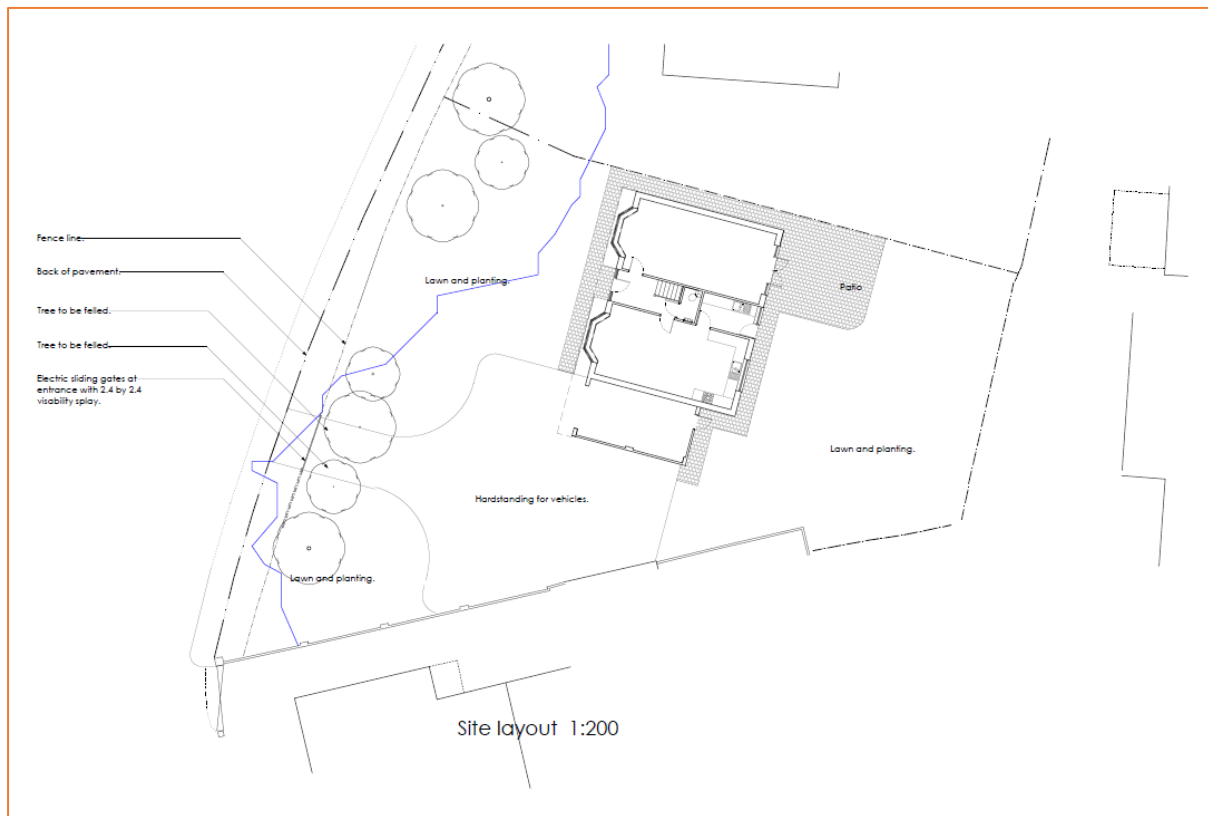


Figure 3: Approved Site Layout (Source: AgW Architecture)

Topography:

The site is approximately 70m to the east by the River Dulais, 80m to the south of and 115m north of tributaries of the River Dulais.

A topographic site survey undertaken by Mike Williams Surveys in November 2017 shows topographic levels across the site range between approximately 100.10mAOD to 100.87mAOD. The site slopes gently down from east to west (towards Garbett Place) and from south to north.

Topographic levels in the area of the proposed houses ranges between 100.15mAOD to 100.84mAOD.

Geology and Soil:

The British Geological Survey (BGS) Map indicates that the bedrock underlying the site is Llynfi Member - Sandstone. Sedimentary Bedrock formed approximately 310 to 315 million years ago in the Carboniferous Period. Local environment previously dominated by rivers.

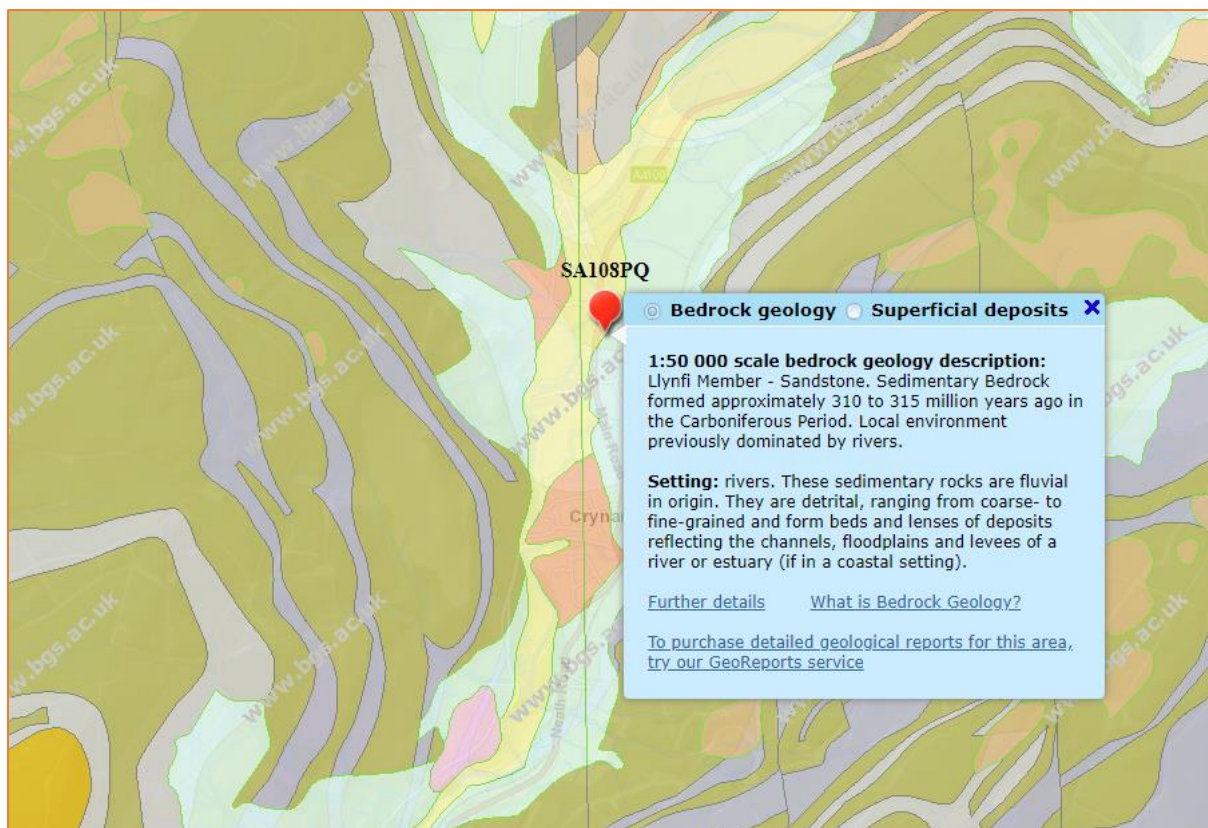


Figure 4: Local geology (Source: BGS)

The soil type on site, taken from the UKSO data, is deep riverine clay, sands and gravels parent material with a clay to sandy loam texture.

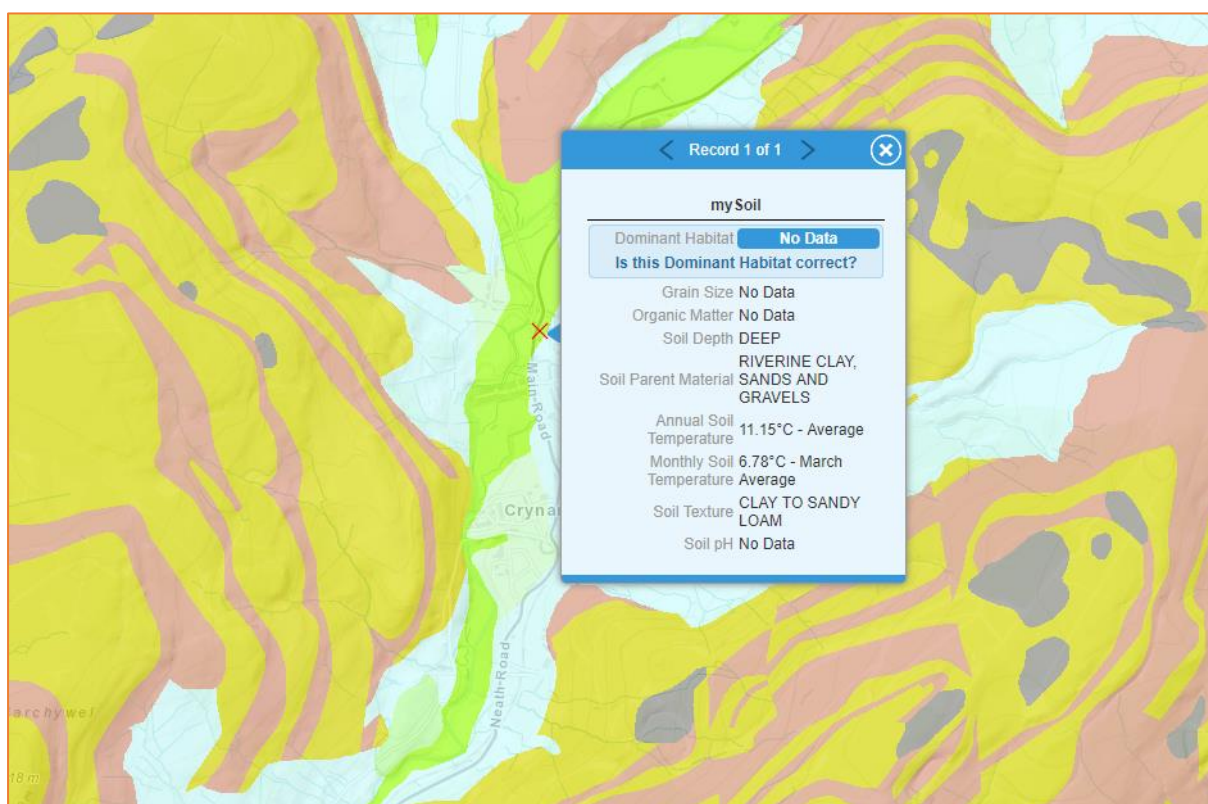


Figure 5: Local soil types (Source: UKSO)

Proposed Development

The proposed planning application is for the construction of two new dwellings.

Detailed site plans are provided in the report Appendix.

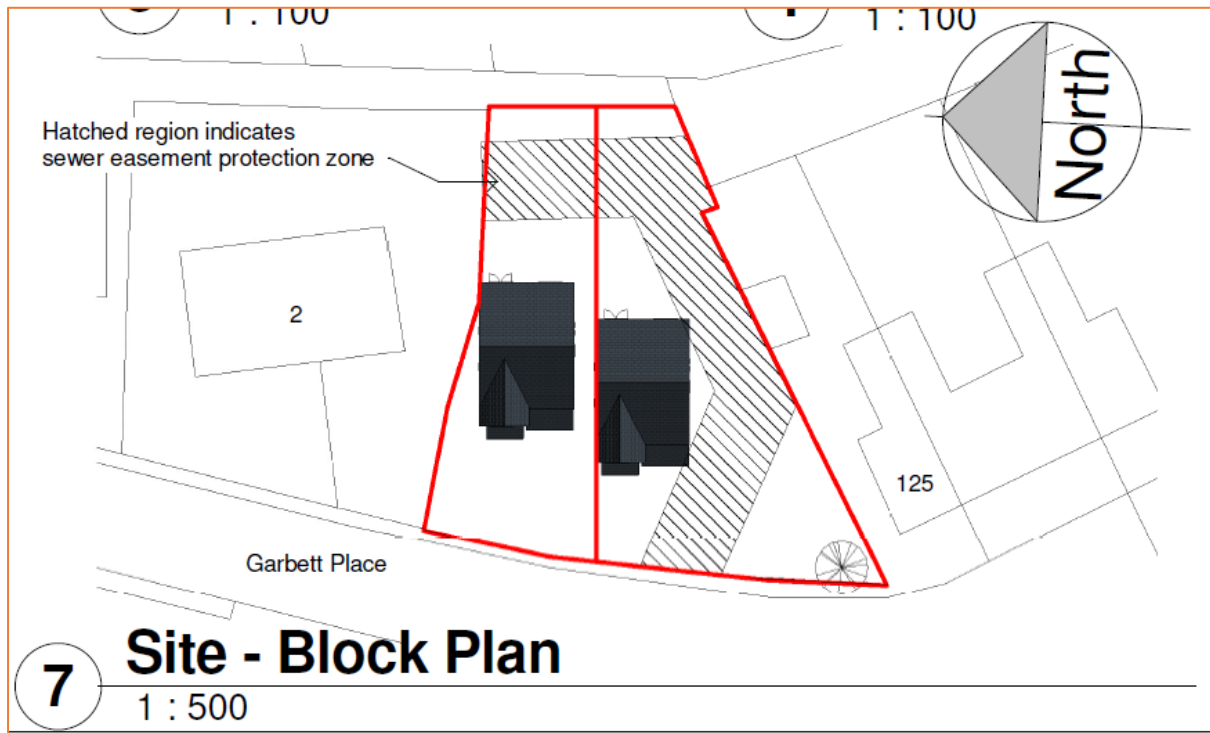


Figure 6: Proposed site layout (Source: CCS)

Assessment of Flood Risk

Flood Zones:

Within planning, Flood Zones refer to the probability of river and sea flooding. They are shown on the Natural Resource Wales Development Advice Map, available on Natural Resource Wales' web site.

Description of Zone	Zone Name	Use within the precautionary framework
Considered to be at little or no risk of fluvial or tidal/coastal flooding.	A	Used to indicate that justification test is not applicable and no need to consider flood risk further.
Areas known to have been flooded in the past evidenced by sedimentary deposits.	B	Used as part of a precautionary approach to indicate where site levels should be checked against the extreme (0.1%) flood level. If site levels are greater than the flood levels used to define adjacent extreme flood outline there is no need to consider flood risk further.
Based on Environment Agency extreme flood outline, equal to or greater than 0.1% (river, tidal or coastal)	C	Used to indicate that flooding issues should be considered as an integral part of decision making by the application of the justification test including assessment of consequences.
Areas of the floodplain which are developed and served by significant infrastructure, including flood defences.	C1	Used to indicate that development can take place subject to application of justification test, including acceptability of consequences
Areas of the floodplain without significant flood defence infrastructure.	C2	Used to indicate that only less vulnerable development should be considered subject to application of justification test, including acceptability of consequences. Emergency services and highly vulnerable development should not be considered.

Table 1: Flood Zones

The Flood Zones shown on the Natural Resource Wales Development Advice Map do not take account of the possible impacts of climate change and consequent changes in the future probability of flooding.

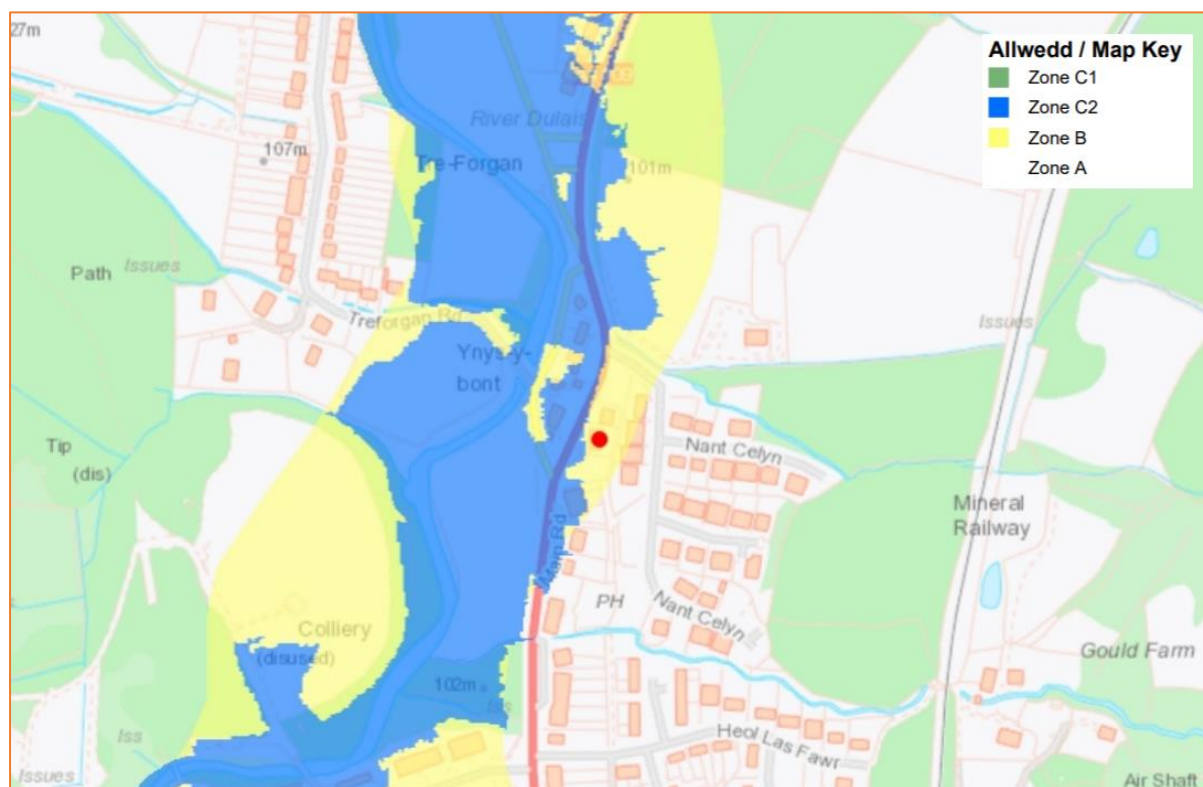


Figure 7: Development Advice Map (Source: NRW)

The Flood Zones shown on the Natural Resource Wales Development Advice Map do not take account of the possible impacts of climate change and consequent changes in the future probability of flooding.

The site is located predominantly within zone B, and partially within C2.

The risk would appear to be predominantly fluvial, and originate from the River Dulais.

Fluvial (River Dulais):

The River Dulais (Welsh: Afon Dulais) is a river of Wales which has its source at Mynydd y Drum. It joins the River Neath after flowing over Aberdulais Falls.

Modelled flood levels and extents:

Modelled fluvial flood levels and flood extents have been requested from the NRW as part of a flood data request.

Modelled flood data has been provided from the NRW – Cryant Project – an Estry-Tuflow model.

Modelled flood levels have been extracted across the site. The maximum flood level (in mAOD) is shown in the table below:

	Defended	Un defended
1:100 year present day	Outside extent	100.09mAOD
1:1000 year present day	100.22mAOD	100.23mAOD
1:100 year climate change	Outside extent	100.05mAOD

Table 2: Maximum modelled flood levels on site (Source: NRW)

Comparison of these modelled flood levels with topographic site levels in the area of the proposed houses (100.15mAOD to 100.84mAOD) shows that the proposed houses are located on land already entirely above the modelled 1:100 year flood level – both at the present day and with an allowance for climate change, however for the modelled 1:1000 year event the area of the proposed houses could be inundated with up to 0.08m of floodwater. It should be noted however that the majority of both houses is situated entirely above the modelled 1:1000 year flood level (100.23mAOD) – an area of approximately 12m² of the northern most house is below the modelled 1:1000 year flood level only.

It should be noted that while the proposed houses are shown to be partially within the modelled 1:100 year flood extents (both at the present day and with allowance for climate change) comparison of modelled flood levels with topographic site levels confirms that the houses are located on land already entirely above these modelled flood levels.

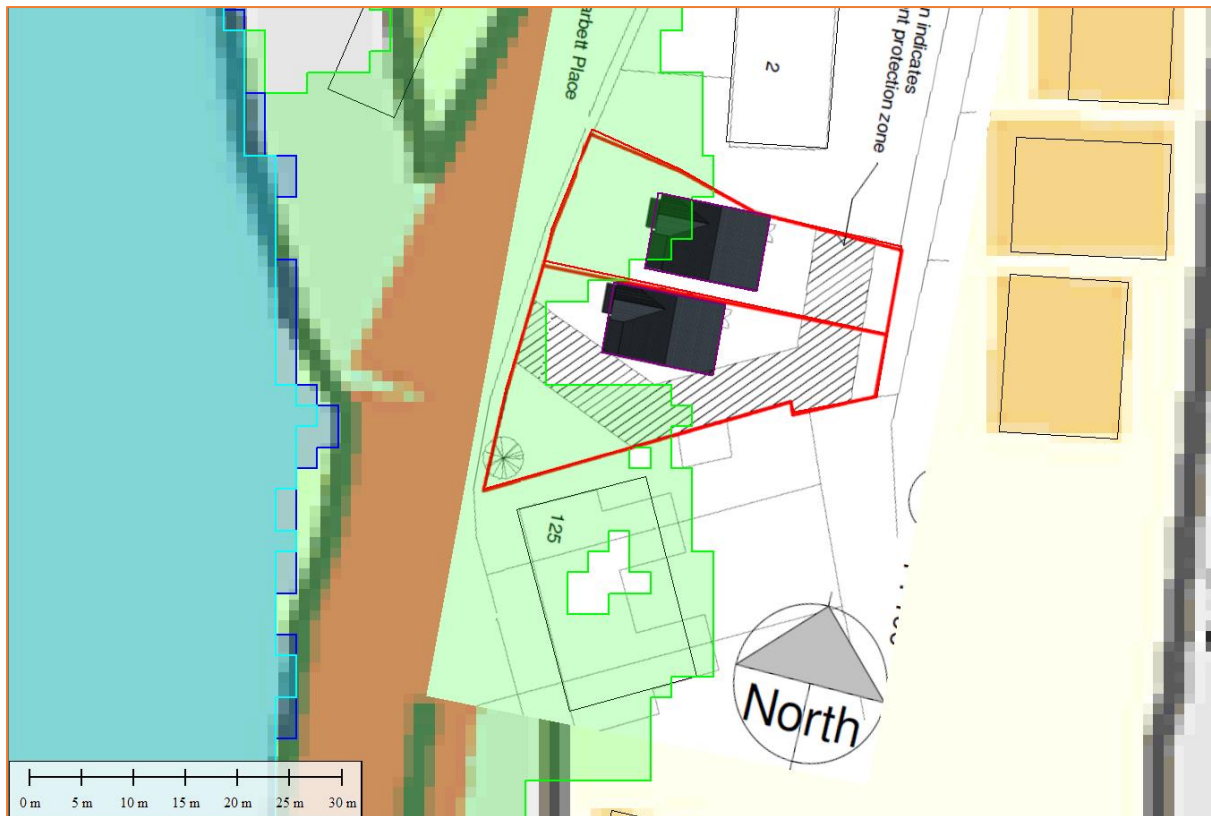


Figure 8: Modelled defended maximum flood extent map. 1:100 year 2017 shown in light blue, 1:100 year 2117 shown in dark blue and 1:1000 year shown in green (Source: NRW)

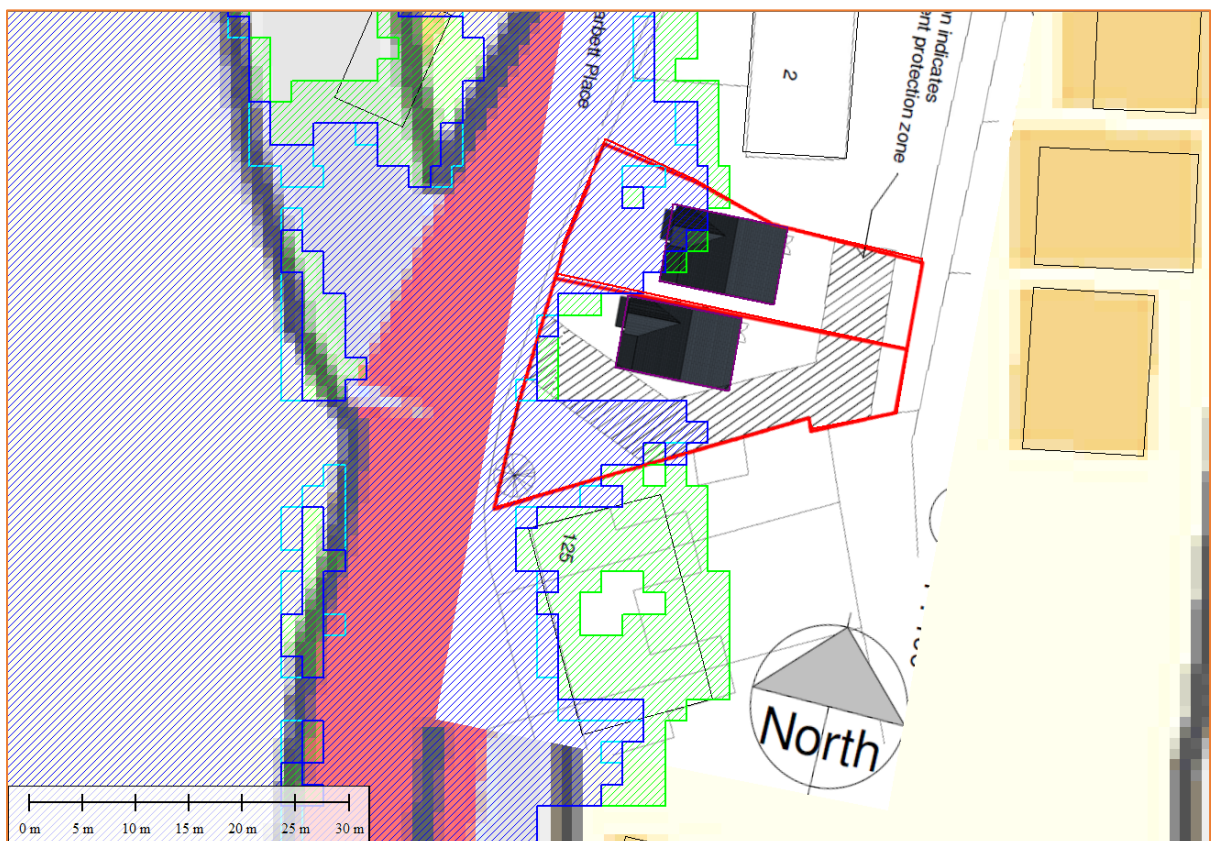


Figure 9: Modelled undefended maximum flood extent map. 1:100 year 2017 shown in light blue hatch, 1:100 year 2117 shown in dark blue hatch and 1:1000 year shown in green hatch (Source: NRW)

Flood defences:

No formal flood defences have been identified by NRW that offer protection to the site in this location. The site is however shown to be entirely outside of the modelled defended 1:100 year maximum flood extents – both at the present day and with allowance for climate change.

Residual risk (breach or overtopping of flood defences):

Breaching of flood defences can cause rapid inundation of areas behind flood defences as flow in the river channel discharges through the breach. A breach can occur with little or no warning, although they are much more likely to concur with extreme river levels or tides when the stresses on flood defences are highest. Flood water flowing through a breach will normally discharge at a high velocity, rapidly filling up the areas behind the defences, resulting in significant damage to buildings and a high risk of loss of life. Breaches are most likely to occur in soft defences such as earth embankments although poorly maintained hard defences can also be a potential source of breach.

Overtopping of flood defences occurs when water levels exceed the protection level of raised flood defences. The worst case occurs when the fluvial or tidal levels exceed the defence level as this can lead to prolonged flooding. Less severe overtopping can occur when flood levels are below defence levels, but wave action causes cyclic overtopping, with intermittent discharge over the crest level of the defence. Flood defences are commonly designed with a freeboard to provide protection against overtopping from waves. The risk from overtopping due to exceedance of the flood defence level is much more significant than the risk posed by wave overtopping. Exceedance of the flood defence level can lead to prolonged and rapid flooding with properties immediately behind the defences at highest risk.

No raised flood defences act to defend the site from direct inundation, meaning there is negligible residual risk from breach and overtopping of flood defences. The undefended modelled flood levels and extents have been used for this Flood Consequence Assessment.

Historical flood events:

The site does not fall within a historic flood extent recorded by NRW.

Pluvial (Surface Water):

Pluvial (surface water) flooding happens when rainwater does not drain away through the normal drainage systems or soak into the ground, but lies on or flows over the ground instead.

In 2013 the EA and NRW, working with Lead Local Flood Authorities (LLFAs), produced an updated Flood Map for Surface Water. It is considered to represent a significant improvement on the previous surface water flood maps available, both in terms of method and representation of the risk of flooding. The modelling techniques and data used and considerably improved, and also incorporated locally produced mapping where this is available to represent features best modelled at a local scale.

The Flood Map for Surface Water assesses flooding scenarios as a result of rainfall with the following chance of occurring in any given year (annual probability of flooding is shown in brackets):

- 1:30 (3.3%)
- 1:100 (1%)
- 1:1000 (0.1%)

The mapping below shows the Risk of Flooding from Surface Water centred on the site. Please note that NRW do not consider this information suitable to be used to identify the risk to individual properties or sites. It is useful to raise awareness in areas which may be at risk and may require additional investigation.

The Natural Resources Wales Surface Water Flood Map suggests that the site lies predominantly within areas of “Very Low” risk of flooding from surface water.

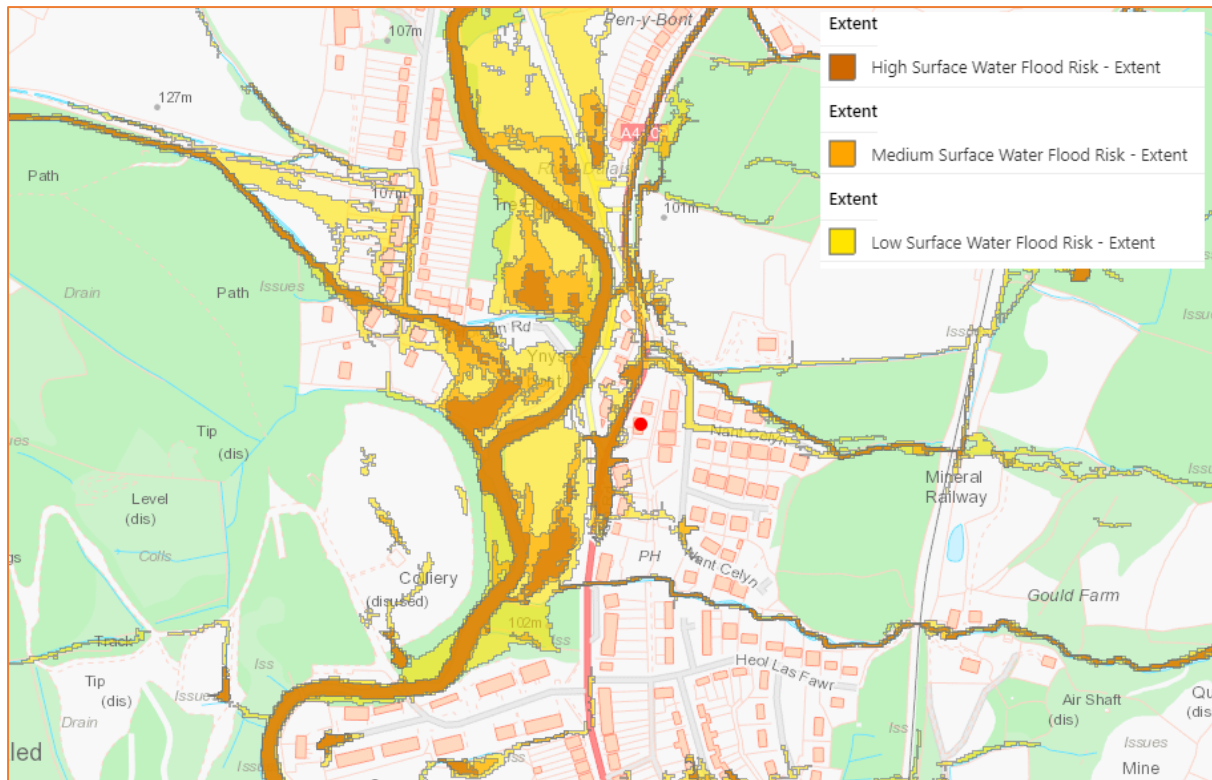


Figure 10: Extract from Natural Resources Wales Surface Water Flood Map (Source: NRW)

Groundwater:

Groundwater flooding occurs as a result of water rising up from the underlying rocks or from water flowing from abnormal springs. This tends to occur after much longer periods of sustained high rainfall. Higher rainfall means more water will infiltrate into the ground and cause the water table to rise above normal levels. Groundwater tends to flow from areas where the ground level is high, to areas where the ground level is low. In low-lying areas the water table is usually at shallower depths anyway, but during very wet periods, with all the additional groundwater flowing towards these areas, the water table can rise up to the surface causing groundwater flooding.

Groundwater flooding is most likely to occur in low-lying areas underlain by permeable rocks (aquifers). These may be extensive, regional aquifers, such as chalk or sandstone, or may be localised sands or river gravels in valley bottoms underlain by less permeable rocks. Groundwater flooding takes longer to dissipate because groundwater moves much more slowly than surface water and will take time to flow away underground. No information has been provided to suggest that the site is susceptible to groundwater flooding.

No information has been provided to suggest that the site is susceptible to groundwater flooding.

Sewer Surcharge:

Sewer flooding occurs when the sewer network cannot cope with the volume of water that is entering it. It is often experienced during times of heavy rainfall when large amounts of surface water overwhelm the sewer network causing flooding. Temporary problems such as blockages, siltation, collapses and equipment or operational failures can also result in sewer flooding.

All Water Companies have a statutory obligation to maintain a register of properties/areas which have reported records of flooding from the public sewerage system, and this is shown on the DG5 Flood Register. This includes

records of flooding from foul sewers, combined sewers and surface water sewers which are deemed to be public and therefore maintained by the Water Company. The DG5 register records of flood incidents resulting in both internal property flooding and external flooding incidents. Once a property is identified on the DG5 register, water companies can typically put funding in place to address the issues and hence enable the property to be removed from the register. It should be noted that flooding from land drainage, highway drainage, rivers/watercourses and private sewers is not recorded within the register.

No information has been provided to suggest that the site is susceptible to sewer surcharge flooding.

Other Sources:

The Natural Resources Wales Risk of Flooding from Reservoirs Map suggests that the site lies outside of the "Maximum extent of flooding" from reservoir failure. The Natural Resources Wales also advise on their website that reservoir flooding is extremely unlikely. All major reservoirs have to be inspected by specialist dam and reservoir Engineers. These inspections are monitored and enforced by the Natural Resources Wales themselves. The risk to the site from reservoir flooding is therefore minimal and is far lower than that relating to the potential for fluvial flooding to occur.

There do not appear to be any further artificial (man-made) sources of flood risk (such as raised canals) in the vicinity of the site.

Flood Risk Management Measures

Vulnerability to flooding:

TAN15 classifies property usage by vulnerability to flooding.

Post development, the development will be classified as “highly vulnerable” throughout, as the application is for the construction of two residential properties. The existing site has current valid planning permission for the construction of a single detached residential dwelling, and as such is already classified as “highly vulnerable” throughout.

Particular flooding consequences may not be acceptable for particular types of development. For example, allowing residential development in areas which are subject to high risks of flooding can result in a traumatic impact on people's lives. The precautionary framework identifies the vulnerability of different land uses to flooding, and for this purpose, development has been subdivided into three categories:

Development category	Types
Emergency services	hospitals, ambulance stations, fire stations, police stations, coastguard stations, command centres, emergency depots and buildings used to provide emergency shelter in time of flood
Highly vulnerable development	all residential premises (including hotels and caravan parks), public buildings (e.g. schools, libraries, leisure centres), especially vulnerable industrial development (e.g. power stations, chemical plants, incinerators), and waste disposal sites
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

Table 3: Vulnerability to flooding categories

The Emergency Services category describes facilities which need to be operational and accessible at all times. Highly vulnerable development describes development where the ability of occupants to decide on whether they wish to accept the risks to life and property associated with flooding, or be able to manage the consequences of such a risk, is limited. It also includes those industrial uses where there would be an attendant risk to the public and the water environment should the site be inundated. Less vulnerable development describes development where the ability of occupants to decide on whether they wish to accept such risks is greater than that in the highly vulnerable category. The vulnerability attributed to a mixed use proposal will be defined by the most vulnerable use.

There are uses which are considered to be exceptions to the general rule, and have not been classified above, because they are required in a fluvial, tidal or coastal location by virtue of their nature. These include boatyards, marinas, essential works required at mooring basins, and development associated with canals.

Physical Design Measures:

In accordance with section A1.14 of TAN15 there is a frequency threshold of flooding below which flooding of development should not be allowed. The following table, taken from TAN15, provides indicative guidance as to what the frequency threshold could be for different types of development in terms of annual probability of occurrence:

Type of development	Threshold frequency	
	Fluvial	Tidal
Residential	1%	0.5%
Commercial / retail	1%	0.5%
Industrial	1%	0.5%
Emergency services	0.1%	0.1%
General infrastructure	1%	0.5%

Table 4: TAN15 Flood frequency thresholds

A modelled undefended 1:100 year flood level with allowance for climate change of 100.05mAOD has been provided by NRW. Comparison of this modelled flood level with topographic site levels however has confirmed that the entire site is above the modelled design flood level (minimum topographic level on site is 100.10mAOD).

As such, the entire site is flood free for the 1:100 year flood event with allowance for climate change.

As a precautionary measure, the finished floor level of the proposed houses should be set at least 600mm above this flood level (a finished floor level of 100.65mAOD).

Based on the plans provided, the finished floor level of the proposed houses will be set at 100.83mAOD – which is the same as that of the approved detached dwelling on site. As such, the finished floor level will be at least 0.78m above the 1:100 year flood level with allowance for climate change (and 600mm above the 1:1000 year flood level).

To help protect against flooding during extreme events, the applicant has agreed to implement flood resistant design measures into the proposed property, in consultation with the Local Authority building control department. These measures can include the following:

- Solid concrete ground floor slab, with waterproof membrane;
- Waterproof screed used on floors;
- Closed-cell foam used in wall cavities;
- Waterproof ground floor internal render;
- External walls rendered resistant to flooding to first floor level;
- Exterior ventilation outlets, utility points and air bricks fitted with removable waterproof covers;
- Ground floor electrical main ring run from first floor level; and on separately switched circuit from first floor;
- Electrical incomer and meter situated at first floor level or above;
- Boilers, control and water storage / immersion installed at first floor level or above;
- Gas meter installed at first floor level or above;
- Plumbing insulation of closed-cell design;
- Non-return valves fitted to all drain and sewer outlets;
- Manhole covers secured;
- Anti-syphon fitted to all toilets;
- Built-in furniture units of solid, water resistant material;
- Use of MDF carpentry (i.e. skirting, architrave, built-in storage) avoided at ground floor level;
- Stairs of solid hardwood construction with wood faces treated to resist water penetration.

Safe Escape:

TAN 15 requires a route of safe escape for all residents and uses to be provided from new residential properties in Flood Zone C. The site is situated predominantly within Flood Zone B and partially within Flood Zone C2.

Type of development	Maximum depth of flooding (mm)	Maximum rate of rise of floodwaters (m/hr)	Maximum speed of inundation of flood risk area (hrs)	Maximum velocity of floodwaters (metres/sec)
	Property Access			Property Access
Residential (habitable rooms)	600 600	0.1	4	0.15 0.3
Commercial & Retail	600 600	0.3	2	0.15 0.3
Industrial	1000 1000	0.3	2	0.3 0.45
Emergency Services	450 600	0.1	4	0.15 0.3
General Infrastructure	600 600	0.3	2	0.3 0.3

Table 5: TAN15 table A1.15

Table A1.15 shows the threshold frequency beyond which proposed development would be expected to flood under extreme conditions (1:100 year event with allowance for climate change). For new residential development a maximum flood depth of 600mm would be allowance at the property and for the site access, with a maximum velocity of 0.3m/s.

Analysis of modelled flood depths and velocities along the escape route (south along A4109) for the 1:100 year event with allowance for climate change, shows that the modelled depths do not exceed 300mm and the modelled velocities do not exceed 0.2m/s. As such, safe escape from the site as per the definitions within TAN15.

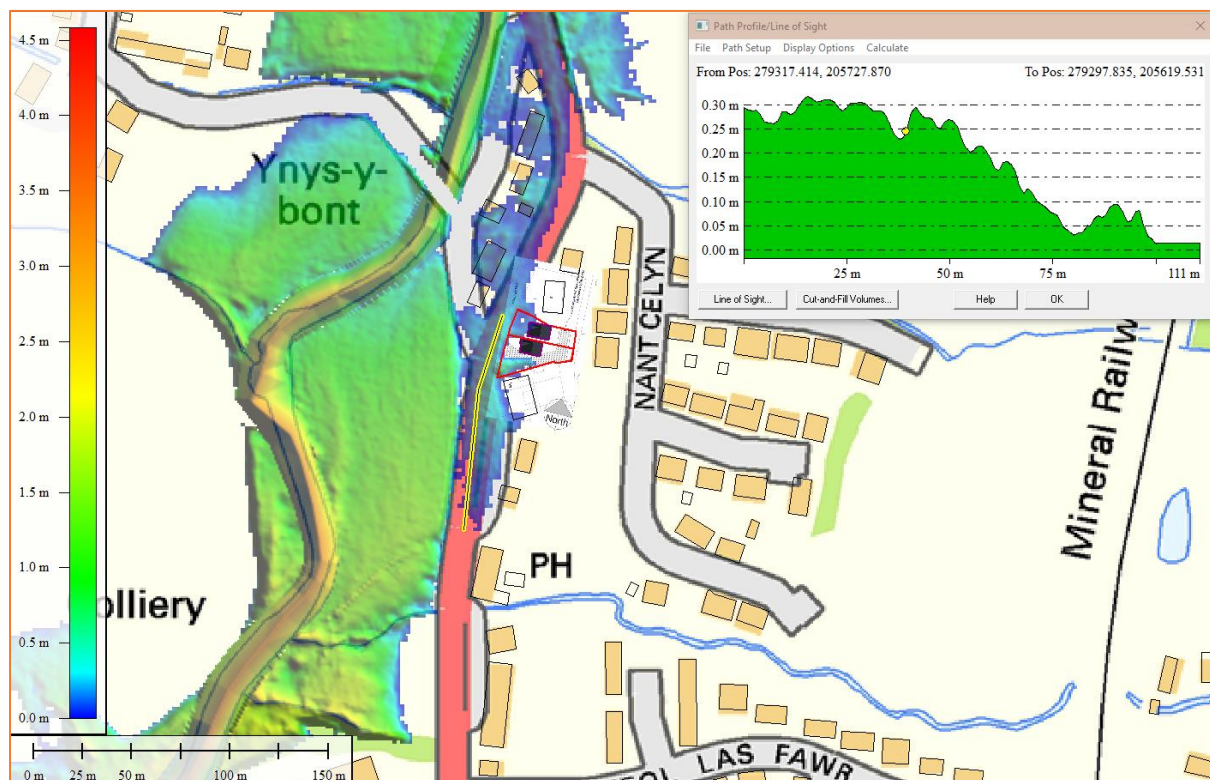


Figure 11: Modelled maximum flood depth for the 1:100 year event with allowance for climate change (Source: NRW)



Figure 12: Modelled maximum velocities for the 1:100 year event with allowance for climate change (Source: NRW)

Flood Alert/Warnings:

NRW is responsible for issuing flood warnings. Flood warnings are issued to the emergency services and local authorities. Both private individuals and organisations can sign-up to receive warnings via phone, text or email. This system of receiving warnings is currently voluntary.

Advice regarding severe flood warnings will generally be given during weather forecasts on local radio and TV. In the case of extreme events, warnings can also be disseminated via door to door visits by the police or locally appointed flood wardens.

The applicant has agreed to implement a flood warning and evacuation plan post development, and subscribe to the NRW's flood warning service.

The site is in a NRW Flood Alert Area. The NRW issue flood warnings to specific areas when flooding is expected. It is recommended that the applicant registers online with the free NRW Floodline Warnings Direct service at <https://www.fws.environment-agency.gov.uk/app/olr/home?style=NRW&lang=en> to receive flood warnings by phone, text or email.

Flood Warning:

The flood warning service has three types of warnings that will help you prepare for flooding and take action:

Flood Warning	Flood Alert	Flood Warning	Severe Flood Warning
			
What it means?	Flooding is possible. Be prepared.	Flooding is expected. Immediate action required.	Severe flooding. Danger to life.
When it's used?	Two hours to two days in advance of flooding.	Half an hour to one day in advance of flooding.	When flooding poses a significant threat to life.
What to do?	Be prepared to act on your flood plan. Prepare a flood kit of essential items. Monitor local water levels and the flood forecast on our website.	Move family, pets and valuables to a safe place. Turn off gas, electricity and water supplies if safe to do so. Put flood protection equipment in place.	Stay in a safe place with a means of escape. Be ready should you need to evacuate from your home. Co-operate with the emergency services. Call 999 if you are in immediate danger.

Table 6: Flood Warnings

Flood Plan:

It is recommended that the applicant and future owners, occupiers and Landlords of the Farmhouse and the proposed properties prepare a flood plan to protect life and property during a flood event:

Before a flood:

- Find out if you are at risk of flooding.
- Find out if you can receive flood warnings.
- Prepare and keep a list of all your important contacts to hand or save them on your mobile phone.
- Think about what items you can move now and what you would want to move to safety during a flood such as pets, cars, furniture, and electrical equipment.
- Know how to turn off gas, electricity and water supplies.
- Prepare a flood kit of essential items and keep it handy. It can include copies of important documents, a torch, a battery-powered or wind-up radio, blankets and warm clothing, waterproofs, rubber gloves and a first aid kit including all essential medication.
- Consider buying flood protection products such as flood boards and airbrick covers to help reduce flood water getting into your property.

During a flood:

- Tune into your local radio station on a battery or wind-up radio.
- Fill jugs and saucepans with water.
- Grab your flood kit - if you have prepared one.
- Collect blankets, torch, first aid kit, medication and food.
- Move important documents, personal items, valuables, and lightweight belongings upstairs or to high shelves.
- Raise large items of furniture, or put them in large bags if you have them.
- Move people, outdoor belongings, cars and pets to higher ground.

- Switch off water, gas and electricity at mains when water is about to enter your home. Do not touch sources of electricity when standing in water.
- Fit flood protection products, if you have them, for example flood boards, airbrick covers, sandbags.
- Put plugs in sinks and baths. Weigh them down with a pillowcase or plastic bag filled with soil.
- If you do not have non-return valves fitted, plug water inlet pipes with towels or cloths.
- Move your family and pets upstairs or to a high place with a means of escape.
- Listen to the advice of the emergency service and evacuate if told to do so.
- Avoid walking or driving through flood water. Six inches of fast-flowing water can knock over an adult and two feet of water can move a car.

After a flood:

- If you have flooded, contact your insurance company as soon as possible.
- Take photographs and videos of your damaged property as a record for your insurance company.
- If you don't have insurance, contact your local authority for information on grants and charities that may help you.
- Flood water can contain sewage, chemicals and animal waste. Always wear waterproof outerwear, including gloves, wellington boots and a face mask.
- Have your electrics, central heating and water checked by qualified engineers before switching them back on.

Off-Site Impacts

Floodplain storage:

TAN15 requires that where development is proposed in undefended areas of floodplain, which lie outside of the functional floodplain, the implications of ground raising operations for flood risk elsewhere needs to be considered. Raising existing ground levels may reduce the capacity of the floodplain to accommodate floodwater and increase the risk of flooding by either increasing the depth of flooding to existing properties at risk or by extending the floodplain to cover properties normally outside of the floodplain. Flood storage capacity can be maintained by lowering ground levels either within the curtilage of the development or elsewhere in the floodplain, in order to maintain at least the same volume of flood storage capacity within the floodplain.

In undefended tidal areas, raising ground levels is unlikely to impact on maximum tidal levels so the provision of compensatory storage should not be necessary.

For development in a defended flood risk area, the impact on residual flood risk to other properties needs to be considered. New development behind flood defences can increase the residual risk of flooding if the flood defences are breached or overtopped by changing the conveyance of the flow paths or by displacing flood water elsewhere. If the potential impact on residual risk is unacceptable then mitigation should be provided.

Comparison of modelled flood levels with topographic site levels confirms that the entire site is above the modelled 1:100 year flood level with allowance for climate change. As such, there will be no unacceptable loss of flood storage post development.

Surface Water Drainage Strategy:

The development will utilise Sustainable Urban Drainage (SuDs) design in accordance with the TAN15 for Planning Applications hierarchy as follows:

1. Store rainwater for later use;
2. Infiltration techniques;
3. Attenuate rainwater by storing in tanks for gradual release;
4. Discharge rainwater direct into watercourse;
5. Discharge rainwater into surface water sewer;
6. Discharge rainwater into a combined sewer;
7. Attenuation of rainwater in ponds or open water features with controlled discharge into the local stream.

From 7th January 2019, all new developments of more than 1 dwelling house or where the construction area is 100 square meters or more, will require sustainable drainage systems (SuDS) for surface water. The SuDS must be designed and built in accordance with Statutory SuDS Standards published by the Welsh Ministers and SuDS Schemes must be approved by the local authority acting in its SuDS Approving Body (SAB) role, before construction work begins.

Conclusion

Unda Consulting Limited have been appointed by Stephen Woodward to undertake a Site Specific Flood Consequence Assessment (FCA) for Planning at No. 1 Garbett Place, Crynant, Neath, SA10 8PQ. The FCA has been undertaken in accordance with Technical Advice Note 15 (TAN 15) and the associated technical guidance.

The site has current valid planning permission for the construction of a detached residential dwelling (Neath Port Talbot Council Planning Ref: P2019/5286). The proposed planning application is for construction of two new dwellings.

Post development, the development will be classified as “highly vulnerable” throughout, as the application is for the construction of two residential properties. The existing site has current valid planning permission for the construction of a single detached residential dwelling, and as such is already classified as “highly vulnerable” throughout.

The site appears to be located predominantly within Flood Zone B, and partially within Flood Zone C2 as defined by Natural Resource Wales (NRW) on their Development Advice Map

Modelled flood data has been provided from the NRW – Crynant Project – an Estry-Tuflow model.

Comparison of these modelled flood levels with topographic site levels in the area of the proposed houses shows that the proposed houses are located on land already entirely above the modelled 1:100 year flood level – both at the present day and with an allowance for climate change, however for the modelled 1:1000 year event the area of the proposed houses could be inundated with up to 0.08m of floodwater. It should be noted however that the majority of both houses is situated entirely above the modelled 1:1000 year flood level – an area of approximately 12m² of the northern most house is below the modelled 1:1000 year flood level only.

It should be noted that while the proposed houses are shown to be partially within the modelled undefended 1:100 year flood extents (both at the present day and with allowance for climate change) comparison of modelled flood levels with topographic site levels confirms that the houses are located on land already entirely above these modelled flood levels.

No formal flood defences have been identified by NRW that offer protection to the site in this location. The site is however shown to be entirely outside of the modelled defended 1:100 year maximum flood extents – both at the present day and with allowance for climate change.

As such, the entire site is flood free for the 1:100 year flood event with allowance for climate change.

As a precautionary measure, the finished floor level of the proposed houses should be set at least 600mm above this flood level (a finished floor level of 100.65mAOD).

Based on the plans provided, the finished floor level of the proposed houses will be set at 100.83mAOD – which is the same as that of the approved detached dwelling on site. As such, the finished floor level will be at least 0.78m above the 1:100 year flood level with allowance for climate change (and 600mm above the 1:1000 year flood level).

Analysis of modelled flood depths and velocities along the escape route (south along A4109) for the 1:100 year event with allowance for climate change, shows that safe escape from the site as per the definitions within TAN15.

The Natural Resources Wales Surface Water Flood Map suggests that the site lies predominantly within areas of “Very Low risk of flooding from surface water.

The risk of flooding posed to the site by groundwater, sewer surcharge and reservoir flooding would appear to be low.

- The site is situated predominantly within Flood Zone B, and partially within Flood Zone C (as defined by NRW).
- The site has current valid planning permission for the construction of a detached residential dwelling.
- The development will be classified as “highly vulnerable” throughout.
- Modelled flood levels and flood extents have been requested from the NRW.
- The site is entirely above the modelled 1:100 year flood levels, both at the present day and with an allowance for climate change.
- Risk of surface water, groundwater and sewer surcharge flooding would appear to be low.
- The finished floor level will be at least 0.78m above the 1:100 year flood level with allowance for climate change (and 600mm above the 1:1000 year flood level).
- Safe escape from the site can be provided.
- A flood warning and evacuation plan will be implemented post development.
- Flood proofing of the properties will be incorporated as appropriate.

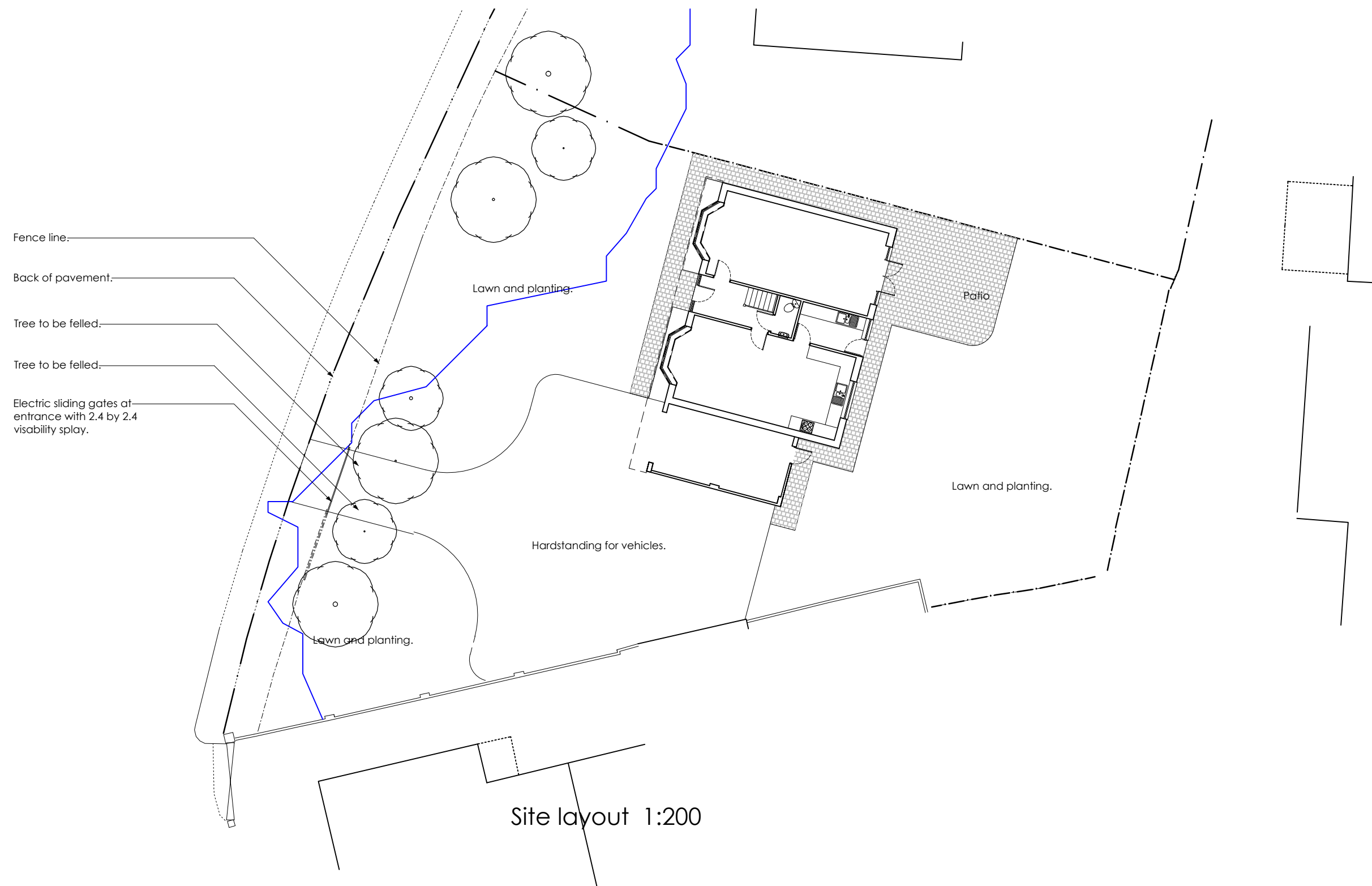
Assuming accordance with these flood risk management measures, Unda Consulting Limited consider the proposed application to be suitable in flood risk terms.

Appendix

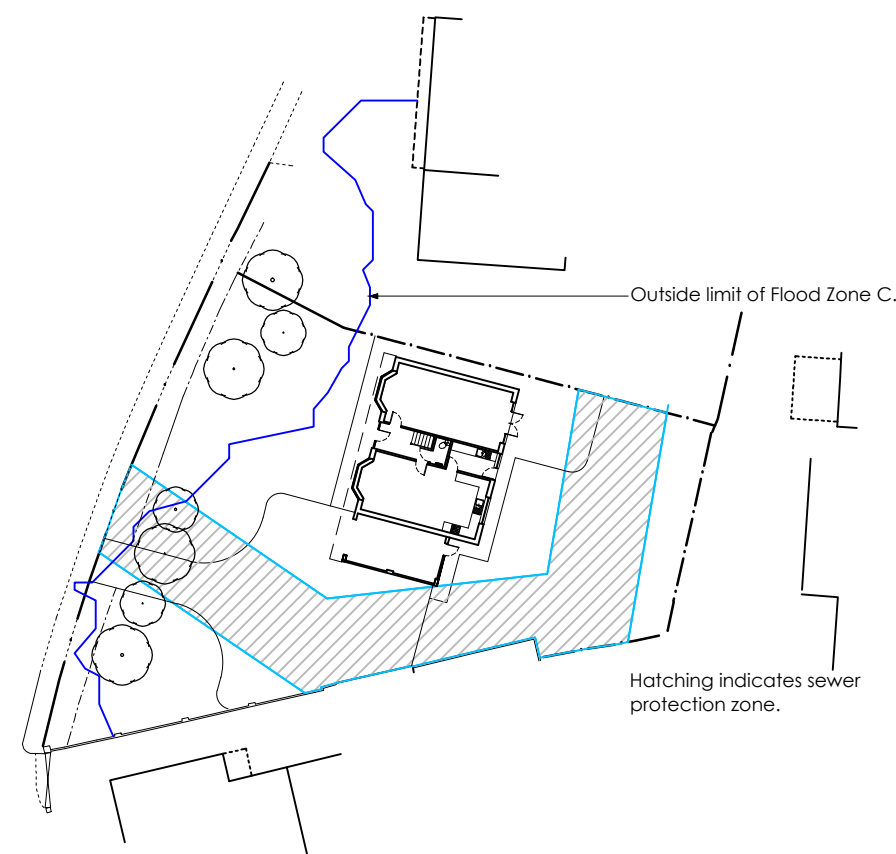
- Approved Plans and Elevations.
- Proposed Plans and Elevations.
- Topographic site survey.

The Contractors shall check all dimensions on site and report all errors, discrepancies and omissions to the Architect. Do not scale off this drawing. Use figured dimensions only.

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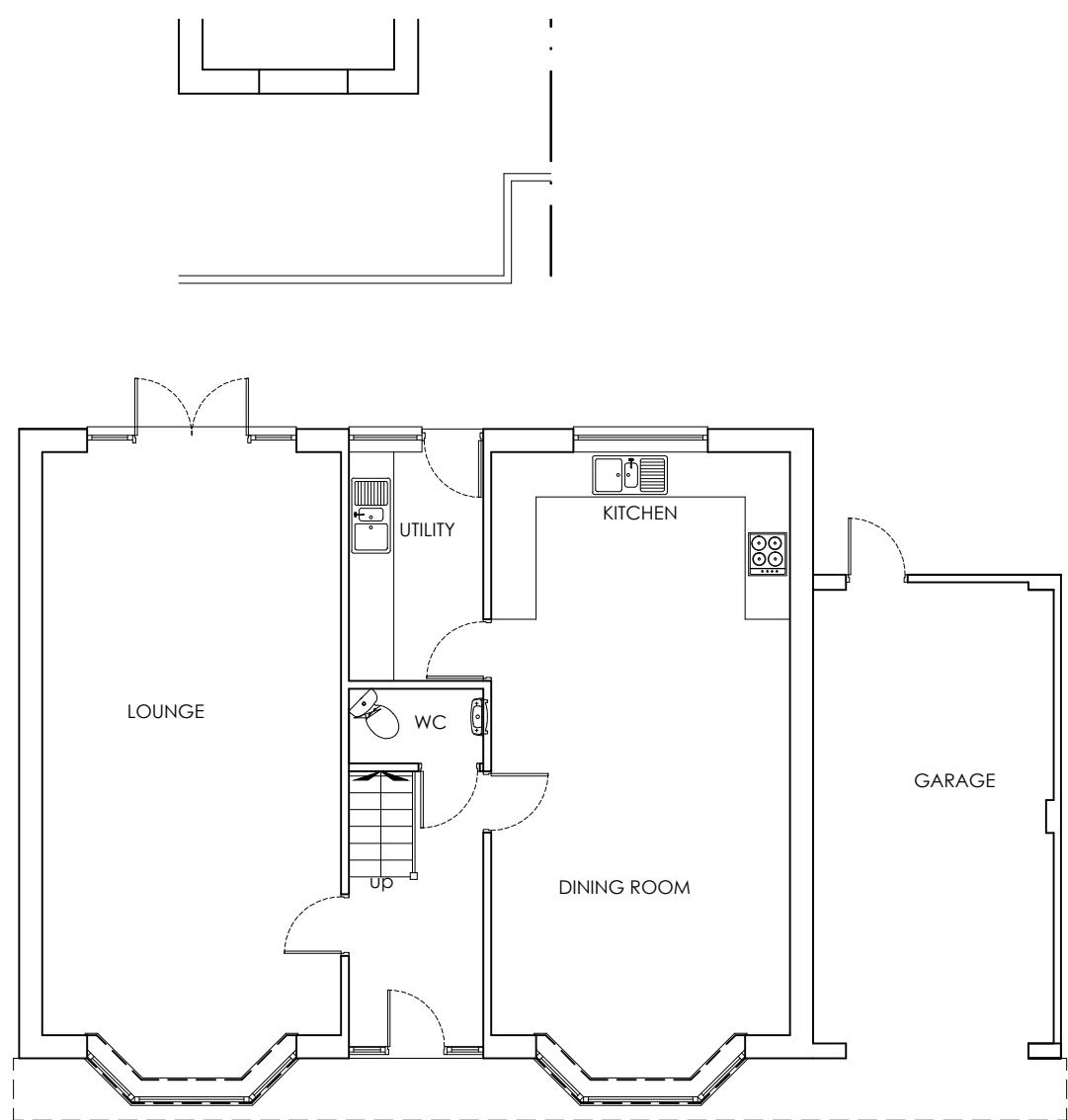
Site layout 1:200



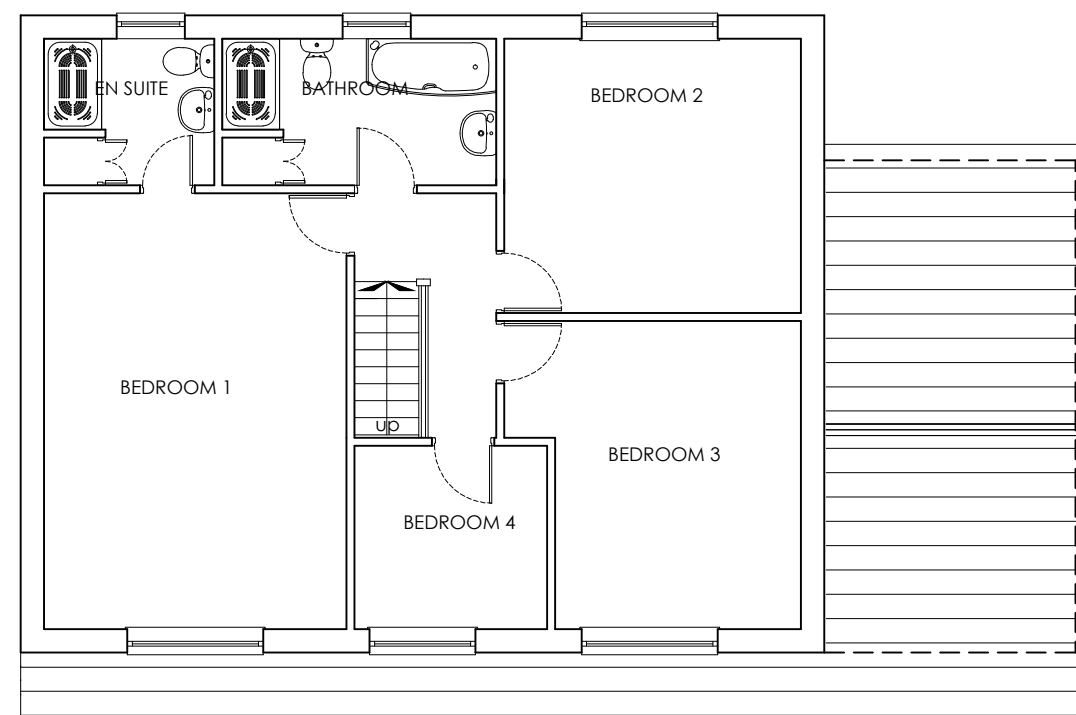
Site layout showing restraints 1:500



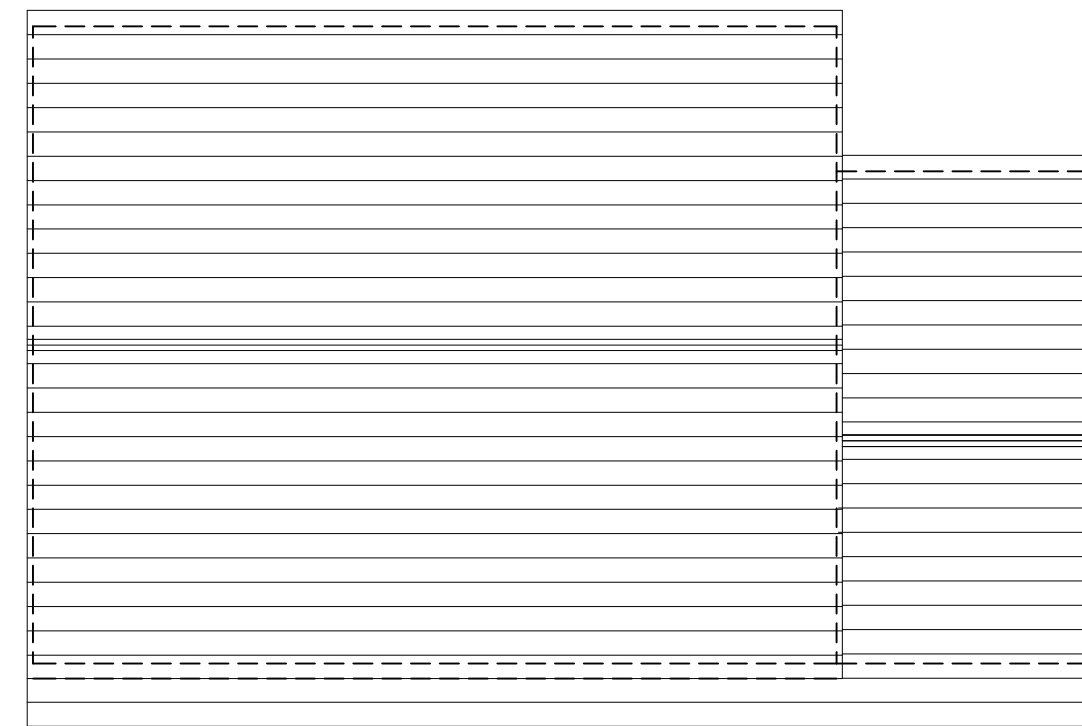
Location plan 1:1250



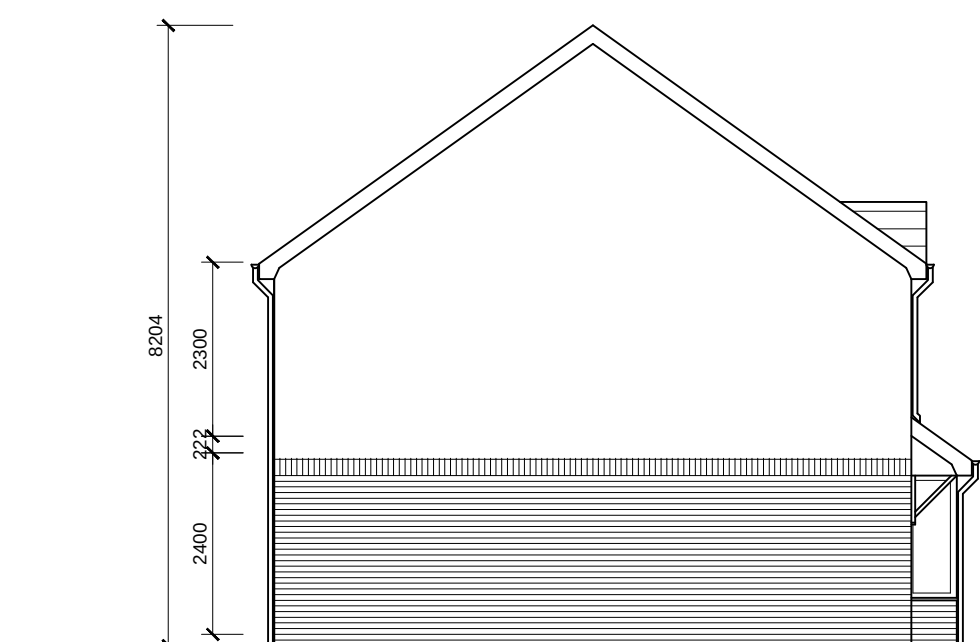
Ground floor plan 1:100



First floor plan 1:100



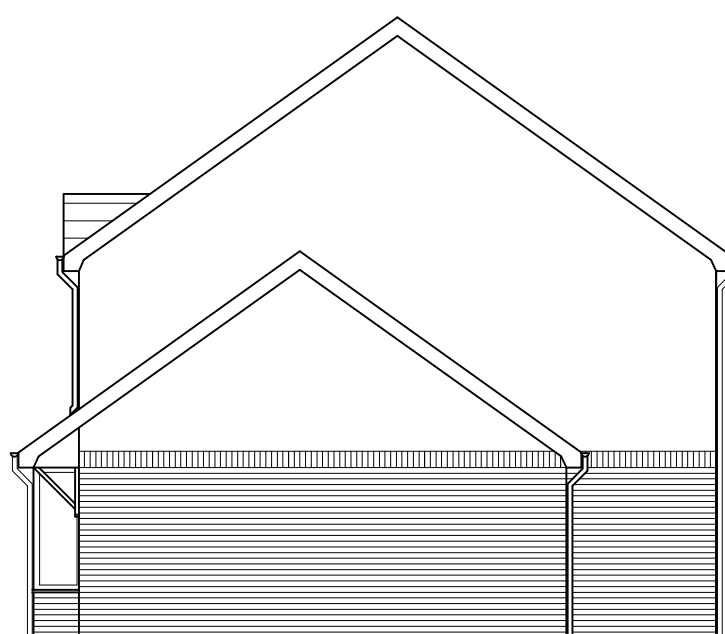
Roof plan 1:100



North elevation 1:100



West elevation 1:100



South elevation 1:100



East elevation 1:100

FINISHES SCHEDULE

Roof - Dark brown interlocking tiles.
Ground floor - Red facing brick.
First floor - Whitewash plan render.
North and east boundaries - Timber close boarded fencing.
West boundary - Ornate metalwork as existing.

Rev B - Depth of building reduced to lower ridge by 200mm.
Rev A - Ridge lowered by 200mm.

Contract Title
New dwelling at
1 Garbett Place
Crynant, Neath SA10 8PQ
for
Mr and Mrs S Woodward

Drawing Title
Plans and elevations as proposed.

Drawn AgW	Ch'k'd AgW	Date 07.2019
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Drawing No.
1279/01

Scale as shown @ A1	Revision B
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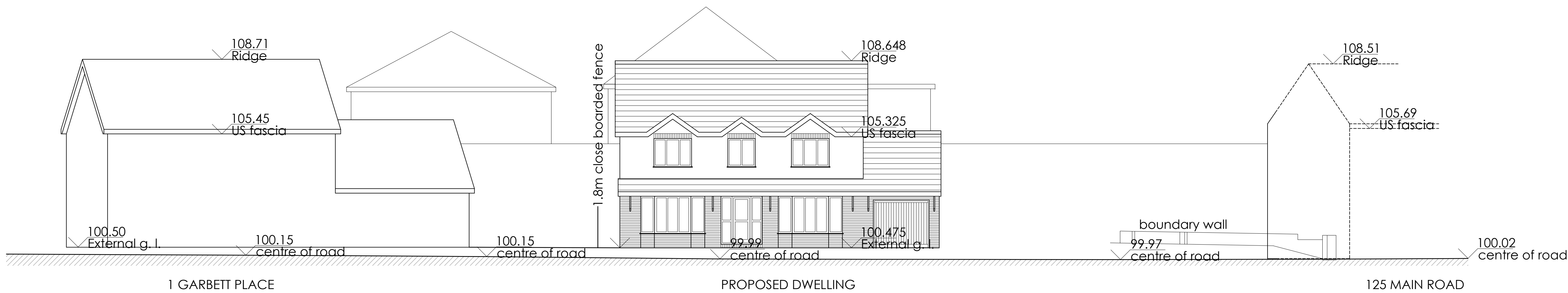
Stage Preliminary P Building Reg BR	Planning PL Tender T	PL
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AgW
ARCHITECTURE

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The Contractors shall check all dimensions on site and report all errors, discrepancies and omissions to the Architect. Do not scale off this drawing. Use figured dimensions only.

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Contract Title
New dwelling at
1 Garbett Place
Crynant, Neath SA10 8PQ
for
Mr and Mrs S Woodward

Drawing Title
Street elevation as proposed.

Drawn	Ch'k'd	Date
AgW	AgW	10.2019

Drawing No.
1279/02

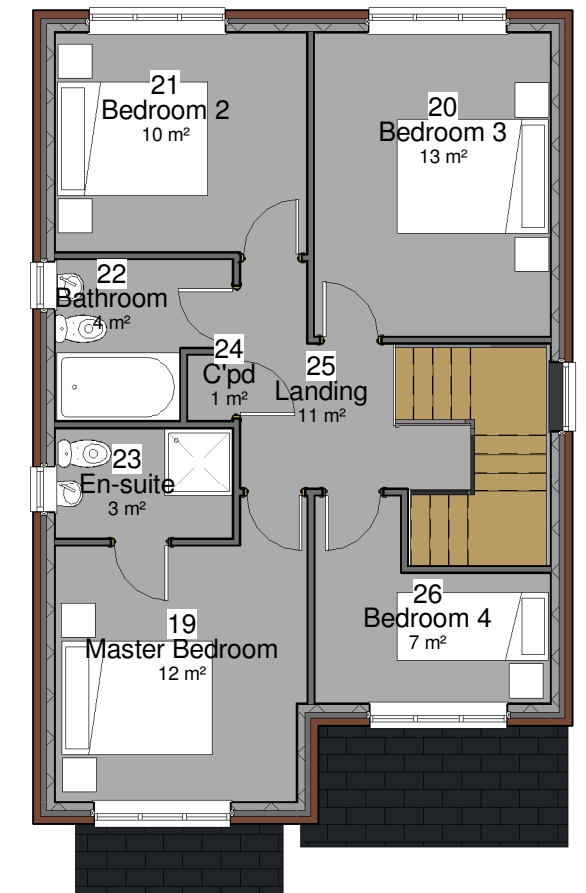
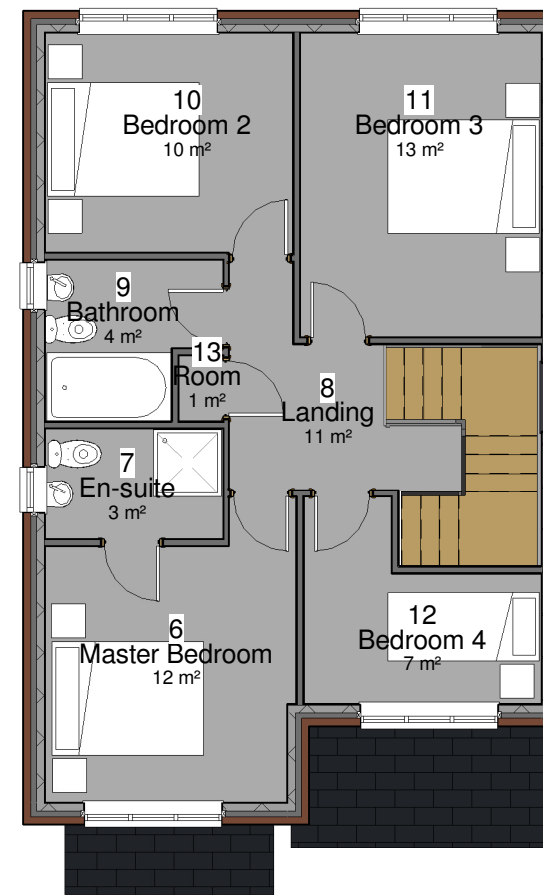
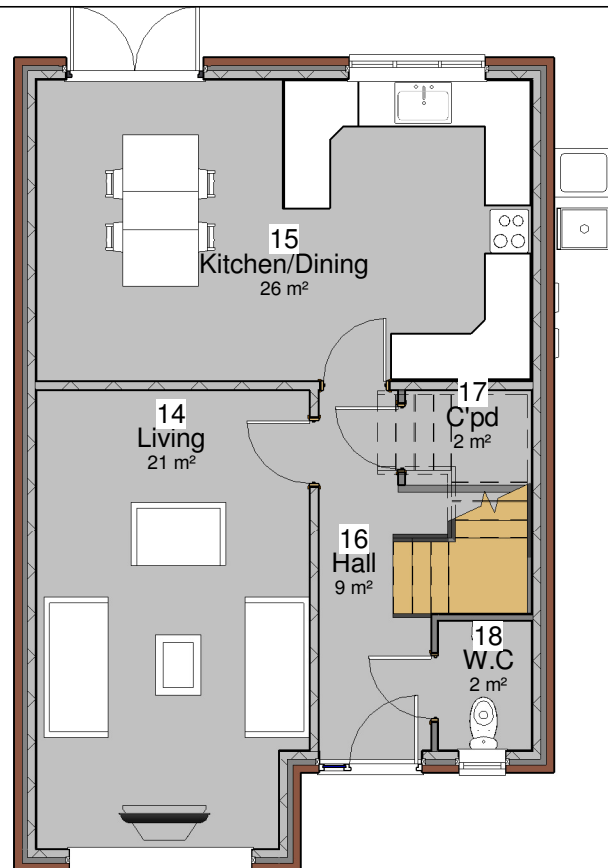
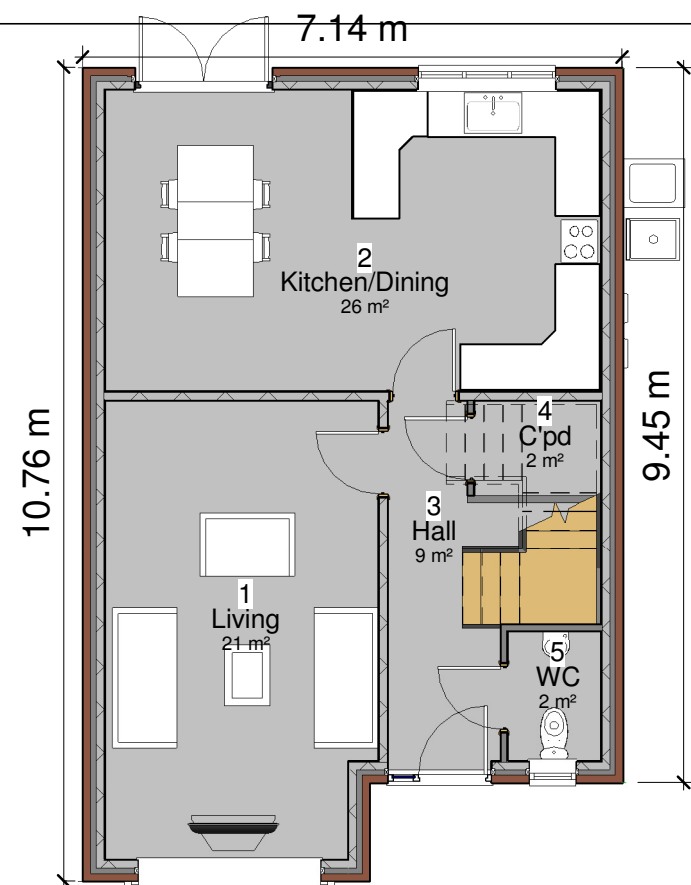
Scale	Revision
1:100 @ A1	0

Stage	PL
Preliminary P Building Reg BR Planning Pl Tender T	

 **AgW**
ARCHITECTURE

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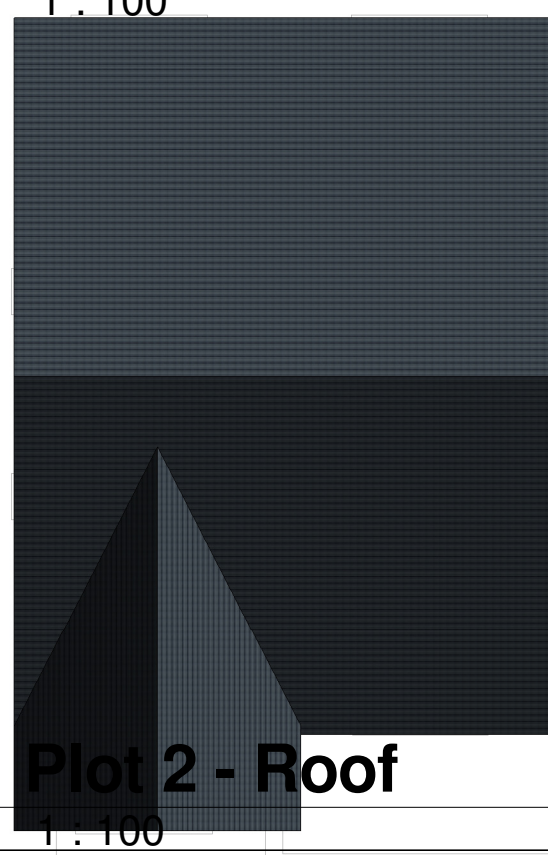


1 Plot 1 - GF
1 : 100

2 Plot 2 - GF
1 : 100

3 Plot 1 - FF
1 : 100

4 Plot 2 - FF
1 : 100



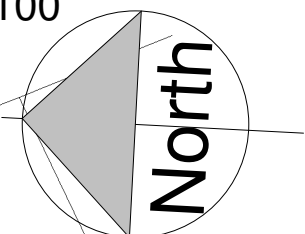
5 Plot 1 - Roof
1 : 100

6 Plot 2 - Roof
1 : 100

7 Site - Block Plan
1 : 500

Hatched region indicates
sewer easement protection zone

Garbett Place

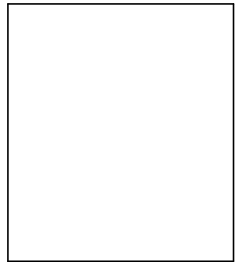
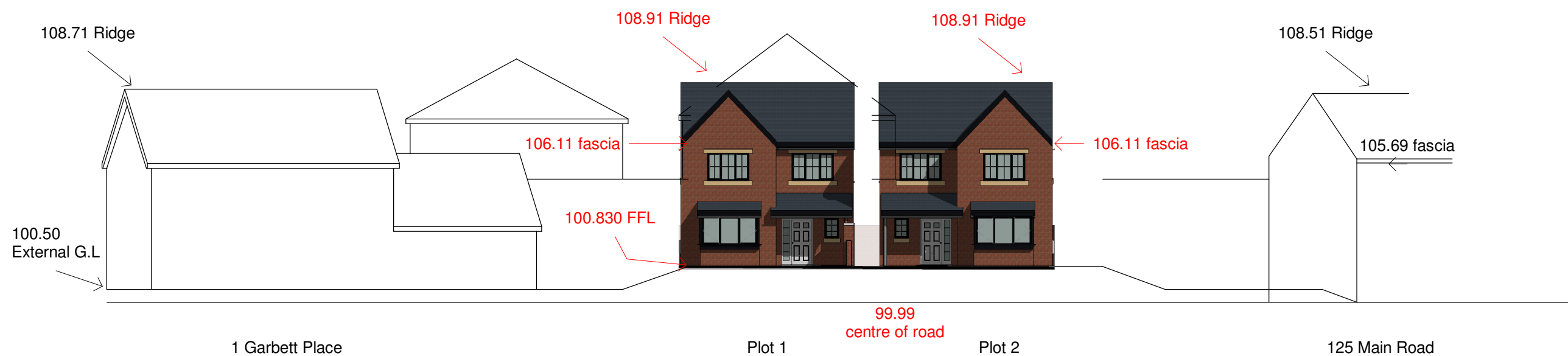


No.	Description	Date

 COMPLETE CAD & STRUCTURAL SOLUTIONS www.ccs-solutions.co.uk			
CODE	STATUS	SUITABILITY DESCRIPTION	PURPOSE OF ISSUE
			PLANNING

PROJECT	1a & 1b Garbet Place	
SHEET	Proposed floor plans	

CLIENT Mr Stephen Woodward		
Date 13/05/2020	Project number 25012020	Scale (@ A3) As indicated
Drawn by CCS	DRWAING NUMBER A300	
Checked by CCS		REV A



No.	Description	Date

 COMPLETE CAD & STRUCTURAL SOLUTIONS www.ccs-solutions.co.uk			
CODE	STATUS	SUITABILITY DESCRIPTION	PURPOSE OF ISSUE
			PLANNING

PROJECT	1a & 1b Garbet Place
SHEET	Street View & FFL

CLIENT			Mr Stephen Woodward	
Date	22/03/220	Project number	25012020	Scale (@ A3)
				1 : 200
Drawn by	CCS	DRWAING NUMBER		REV
Checked by	CCS	A308		C

