Ysgol Cwm Gwyddon

Flood Consequences Assessment

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Client Name: Caerphilly County Borough Council

Client Address: Penallta House, Tredomen Park, Ystrad Mynach. Hengoed, CF82 7PG

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1.0 Introduction

1.1 Project Background

Curtins Consulting has been appointed to prepare a site-specific Flood Consequences Assessment to support a planning application for the proposed Ysgol Cwm Gwyddon Primary School development.

This report is based on currently available information and preliminary discussions. Proposals contained or forming part of this report represent the design intent and may be subject to alteration or adjustment in completing the detailed design for this project. Where such adjustments are undertaken as part of the detailed design and are deemed a material deviation from the intent contained in this document, prior approval shall be obtained from the relevant authority in advance of commencing such works.

Where the proposed works, to which this report refers, are undertaken more than twelve months following the issue of this report, Curtins Consulting shall reserve the right to re-validate the findings and conclusions at no cost to Curtins Consulting.

1.2 Scope of Assessment

This assessment has been undertaken in accordance with the standing advice and requirements of Natural Resources Wales (NRW) and the Welsh Government as outlined in Planning Policy Wales Technical Advice Note 15: Development and Flood Risk.

The assessment has:

- Investigated potential risks of flooding to the site;
- Considered the impact the development may have elsewhere with regards to flooding; and
- Considered outline proposals to mitigate any potential risk of flooding determined to be present.

2.0 Existing Site Details

2.1 Location and Description

The proposed development site falls within the former Cwmcarn High School grounds and is situated on the former playing fields. The former High School building has mainly been demolished with only a small part of the building retained for potential future development, however this is outside of the proposed development boundary.

To the west of the site is a formal grassed sports pitch which is adjacent to the embankment of the River Ebbw. To the north / northwest of the site is further sports facilities including rugby pitches, changing rooms and associated infrastructure. To the north / northeast is an existing industrial unit which is home to the Gerry Jones Transportation Services. To the east of the proposed site is the rest of the former High School grounds which is adjacent to the A467.

To the south of the site is the existing access road from Chapel Farm Terrace, this is to be retained to provide access to both the existing car park and proposed bus layby. As stated previously there is an existing car park located in the south west corner of the development site which we are retaining as is, with only minimal resurfacing / relining works to be undertaken. Due to there being no change to the car parking area it will not be considered in the FCA. The industrial units and sports facilities to the north have a separate access from Darren Drive, which is accessed off the A467, further north.

Figure 1 - Aerial photograph of the site and surrounding areas (Google© 2021)

The proposed development comprises of a new single storey primary school with associated infrastructure and ecology areas. Hard and Soft play areas are to be provided along the east and west sides of the building, with a multi-use games area (MUGA) also provided to the east of the building. To the north of the new school building, a staff car park will be constructed with access provided off Darren Drive. The existing car park on the adjacent site to the north will be utilised as a parent drop off area. The site also comprises of two ecology areas which are to be utilised as outdoor learning facilities by the school as well as providing an area for above ground attenuation.

In the south east corner of the site adjacent to the existing access road from Chapel Farm Terrace a new bus bay is to be constructed.

The proposed development layout is included in Appendix A.

2.2 Topography

The proposed development site falls from north to south, with levels ranging from approximately 80.38m AOD in the northeast corner to approximately 76.6m AOD in the southwest. The site falls gradually across its upper half before falling more sharply as it approaches the existing car park, which itself lies fairly flat at between approximately 76.6m to 76.81m AOD. Moving east from the car park along the existing access road to the site, levels begin to rise, reaching approximately 78.5m AOD in the southeast corner of the site, where the entrance gate to the former school lies.

A topographical survey of the proposed site is included in Appendix B.

2.3 Existing Watercourses

The nearest watercourse to the proposed development site is the River Ebbw. This is located to the west of the site, just beyond the existing adjacent grassed sports pitch, approximately 30m west of the southern existing car park and 85m west of the proposed school building area.

2.4 Public Sewers

Public sewer records for the site have been obtained from Welsh Water (DCWW) and are included in Appendix C. These do not indicate the presence of any public sewers within the proposed development site.

To the west of the site, two combined public sewers run south beneath the adjacent grassed sports pitch; one 825mm in diameter and one in 975mm diameter. These join at a manhole just northwest of the existing car park to be retained, with a 1350mm diameter sewer exiting the manhole to flow southeast. DCWW sewer maps also indicate that there is an overflow outfall into the River Ebbw at this point. To the south of the site, a series of foul infrastructure noted as being a private sewer transfer is indicated as serving the residential properties of Priory Ct, with further combined drainage shown to serve the residential properties south of this.

2.5 Private Drainage

The proposed development is located in the grounds of the former Cwmcarn High School. A CCTV survey of the existing site has not identified any existing drains in the vicinity of the proposed building. To the southwest of the proposed school building, a CCTV survey of the land around the former Cwmcarn High School building has identified a series of separate surface and foul water networks which would have served the former school. These both head towards the southwest corner of the site where they are likely to discharge into the river and combined sewer respectively.

2.6 Site Geology

British Geological Survey (BGS) mapping identifies the majority of the site as being underlain by superficial River Terrace sand and gravel deposits, with a section of the west and north of the site being underlain by superficial deposits of Alluvium – clay, silt, sand and gravel (BGS, n.d). Due to the resolution of the BGS mapping it is not possible to tell the exact boundary of each superficial deposit type; this will need to be deduced via a ground investigation. The bedrock beneath the site is classified as Rhondda Member – sandstone (BGS, n.d.).

3.0 Development and Flood Risk

3.1 Planning Policy Wales (PPW) and Technical Advice Note 15 (TAN 15)

In February 2021, the Welsh Government published the 11th edition of Planning Policy Wales, the aim of which is to set out the 'land use planning policies of the Welsh Government' (Welsh Government, 2021). PPW is supported by additional technical advice notes (TANs), with TAN 15 relating to Development and Flood Risk. TAN 15 was published in July 2004 by the Welsh Assembly Government (now the devolved Welsh Government)

TAN 15 outlines how flood risks should be assessed in relation to development. It is supported by Development Advice Maps (DAMs), which 'are based on the best available information considered sufficient to determine when flood risk issues need to be taken into account in planning future development' (Welsh Assembly Government, 2004). DAMs classify areas across Wales into three different development advice zones, each of which requires different planning actions as outlined in Table 1.

Table 1 - Development Advice Maps Zone Classification Descriptions (Extract of TAN 15, Welsh Assembly Government, 2004, Figure 1)

Description of Zone		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.

The extent of flooding and the type of flooding consequences that would be considered acceptable will vary between developments depending on the proposed land use. TAN 15 outlines a precautionary framework that classifies developments into different vulnerability groups based on the vulnerability of the end land use to flooding. Three vulnerability groups are identified, as outlined in Table 2. Table 3 then outlines the appropriate planning requirements and acceptability criteria that TAN 15 has established when considering different types of development in different Flood Zones.

Table 2 - Flood Risk Vulnerability Classification (Extract of TAN 15, Welsh Assembly Government, 2004, Figure 2)

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 - Summary of Policy Requirements According to DAM Zone (Extract of TAN 15, Welsh Assembly Government, 2004, Section 9)

DAM	Development Type (Section 5)	Planning Requirements (Section 4)	Acceptability Criteria (Section 7 & Appendix 1)	Development Advice (Section 5, 6, 7 & Appendix 1)
A	Emergency services Highly vulnerable development Less vulnerable development Other	• Justification test not applicable • Refer to surface water requirements	• No increase in flooding elsewhere	No constraints relating to river or coastal flooding, other than to avoid increasing risk elsewhere.
B	Emergency services	• 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. • Refer to surface water requirements	• Acceptable consequences for nature of use • Occupiers aware of flood risk • Escape/evacuation routes present • Effective flood warning provided • Flood emergency plans and procedures • Flood resistant design • No increase in flooding elsewhere	Generally suitable for most forms of development. Assessments, where required, are unlikely to identify consequences that cannot be overcome or managed to an acceptable level. It is unlikely, therefore, that these would result in a refusal of planning consent on the grounds of flooding.
	Highly vulnerable development		• Acceptable consequences for nature of use • Occupiers aware of flood risk • Escape/evacuation routes present • Effective flood warning provided • Flood emergency plans and procedures • No increase in flooding elsewhere	

	Less vulnerable development		• Occupiers aware of flood risk • No increase in flooding elsewhere	
	Other	• Refer to surface water requirements	• No increase in flooding elsewhere	
C1	Emergency services Highly vulnerable development Less vulnerable development	• Application of justification test (section 6) , including acceptability of consequences (section 7 and appendix 1) • Refer to surface water requirements	• Acceptable consequences for nature of use • Flood defences adequate • Agreement for construction and maintenance costs secured • Occupiers aware of flood risk • Escape/evacuation routes present • Effective flood warning provided • Flood emergency plans and procedures • Flood resistant design • No increase in flooding elsewhere	Plan allocations and applications for all development can only proceed subject to justification in accordance with section 6 and acceptability of consequences in accordance with section 7 and Appendix 1.
	Other	• Application of acceptability of consequences (section 7 and appendix 1) • Refer to surface water requirements	• Acceptable consequences for nature of use • Occupiers aware of flood risk • Desirable if effective flood warning and evacuation routes/procedure provided depending on nature of proposal • No increase in flooding elsewhere	Plan allocations and applications for development should only be made if considered acceptable in accordance with section 7 and Appendix 1.
C2	Emergency services Highly vulnerable development	The flooding consequences associated with Emergency Services and highly vulnerable development are not considered to be acceptable. Plan allocations should not be made for such development and planning applications not proposed.		
	Less vulnerable development	• Application of justification test (section 6) , including acceptability of consequences (section 7 and appendix 1) • Refer to surface water requirements	• Acceptable consequences for nature of use • Flood defences adequate • Agreement for construction and maintenance costs secured • Occupiers aware of flood risk • Escape/evacuation routes present • Effective flood warning provided • Flood emergency plans and procedures	Plan allocations or applications for less vulnerable development can only proceed subject to justification in accordance with section 6 and acceptability of consequences in accordance with section 7 and Appendix 1.
	Other	• Application of acceptability of consequences (section 7 and appendix 1) • Refer to surface water requirements	• Flood resistant design • No increase in flooding elsewhere • Acceptable consequences for nature of use • Occupiers aware of flood risk • Effective flood warning provided • No increase in flooding elsewhere	Plan allocations and applications for development should only be made if considered acceptable in accordance with section 7 and Appendix

3.2 TAN 15 - Justifying the Location of Development

Section 6 of TAN 15 outlines the basis behind justifying the location of development within different Flood Zones. Section 6 states that:

'Much urban development in Wales has taken place alongside rivers and in the coastal plain. It is therefore inevitable, despite the overall aim to avoid flood risk areas, that some existing development will be vulnerable to flooding and fall within zone C. Some flexibility is necessary to enable the risks of flooding to be addressed whilst recognising the negative economic and social consequences if policy were to preclude investment in existing urban areas, and the benefits of reusing previously developed land. Further development in such areas, whilst possibly benefiting from some protection, will not be free from risk and could in some cases exacerbate the consequences of a flood event for existing development and therefore a balanced judgement is required.

New development should be directed away from zone C and towards suitable land in zone A, otherwise to zone B, where river or coastal flooding will be less of an issue. In zone C the tests outlined in sections

6 and 7 will be applied, recognising, however, that highly vulnerable development and Emergency Services in zone C2 should not be permitted. All other new development should only be permitted within zones C1 and C2 if determined by the planning authority to be justified in that location. Development, including transport infrastructure, will only be justified if it can be demonstrated that:

i. Its location in zone C is necessary to assist, or be part of, a local authority regeneration initiative or a local authority strategy required to sustain an existing settlement1; or,

ii. Its location in zone C is necessary to contribute to key employment objectives supported by the local authority, and other key partners, to sustain an existing settlement or region;

and,

iii. It concurs with the aims of PPW and meets the definition of previously developed land; and,

iv. The potential consequences of a flooding event for the particular type of development have been considered, and in terms of the criteria contained in sections 5 and 7 and appendix 1 found to be acceptable.' (Welsh Assembly Government, 2004, Section 6)

3.3 TAN 15 - Assessing Flooding Consequences

Section 7 of TAN 15 outlines how the flooding consequences of a development should be assessed when developing in higher risk flood zones. Section 7 states that:

'If a development proposal in zone C1, or in C2 if it is defined as being of low vulnerability, meets the test outlined in section 6, the justification will be in the knowledge that those developments will flood and will need to be planned accordingly. This section will apply in zone C, and those parts of zone B where flooding has been identified as a material consideration to allow for localised problems.

Whether a development should proceed or not will depend upon whether the consequences of flooding of that development can be managed down to a level which is acceptable for the nature/type of development being proposed, including its effects on existing development. It would certainly not be sensible for people to live in areas subject to flooding (even in two storey buildings) where timely flood warnings cannot be provided and where safe access/egress cannot be achieved.

Where development is justified the assessment can be used to establish whether suitable mitigation measures can be incorporated within the design to ensure that development is as safe as possible 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 natural heritage.' (Welsh Assembly Government, 2004, Section 7)

3.4 Statutory Standards and Guidance for Sustainable Drainage Systems (SuDS)

The Welsh Government have enacted the Flood and Water Management Act 2010 (Schedule 3) that came into effect in Wales on 7th January 2019, which requires new developments to include Sustainable Drainage System (SuDS) features that comply with national standards.

The key documents published by the Welsh Government are the 'Statutory Standards for Sustainable Drainage Systems – Design, Construction, Operating and Maintaining Surface Water Drainage Systems' and 'Sustainable Drainage (SuDS) Statutory Guidance' dated 2018 and 2019 respectively.

These state that 'From 7th January 2019, all new developments of more than 1 dwelling house or where the construction area is 100m^2 or more, will require sustainable drainage (SuDS) for surface water. SuDS must be designed and built in accordance with Statutory SuDS published by Welsh Ministers and SuDS Schemes must be approved by the local authority acting in its SuDS Approval Body (SAB) role, before construction work begins' (Welsh Government, 2019).

This involves engagement with the local SAB, Newport City Council in this instance, for submission of a SAB Application, which is in addition to the Planning Application process with the intent that both processes run in parallel.

4.0 Site Specific Flood Risk Assessment

4.1 Flood Risk Categorisation

The Welsh Government's web-based Development Advice Mapping (DAM), published by NRW, indicates the Flood Zone classification of an area. An extract of the DAM covering the proposed development site is included in Appendix D. This shows the majority of the site to lie within an area classified as Flood Zone A, corresponding to an area 'considered to be at little or no risk of fluvial or coastal/ tidal flooding (Welsh Assembly Government, 2004, Figure 1). However, the areas immediately north and west of the site and some areas to the south of the site are indicated to be at much higher risk, with the majority of the land between the site and the River Ebbw classified as being Flood Zone C2, with small pockets classified as being Flood Zone B. The higher flood classification reaches into the proposed development site as it moves south, with the existing car park in the south of the site, which is to be retained, being predominantly classified as lying within Flood Zone C2.

4.2 Development Advice Map / Flood Zone Compatibility

This assessment considers proposals for a new primary school, with additional areas for car parking to the north and a bus bay to the south. Figure 2 of TAN 15 (see Table 2) classifies schools as being a Highly Vulnerable development type, with transport infrastructure and car parks classified as being a Less Vulnerable development type.

As noted in Section 4.1, the proposed building is within an area predominantly classified as Flood Zone A, with the outdoor ecology areas being located within Flood Zone C2 and B. Under Section 9 of TAN 15, as outlined in Table 2 above, all types of development are acceptable in Flood Zone A, providing they do not cause an increase in flooding elsewhere. However, only Less Vulnerable development is permissible in Flood Zone C2 areas and for development to occur in Flood Zone C2 areas a justification test must be conducted alongside an assessment of the acceptability of consequences and the establishment of additional safety measures. Please refer to Section 5.0 for this assessment.

4.3 Flooding from Rivers or the Sea

The Flood Risk Assessment (FRA) Wales Map indicates the flood risk of an area from a range of flooding sources. An extract of the FRA Wales Map indicating the flood risk at the proposed development site from rivers and sea flooding is included in Appendix E. This shows the site to lie outside of an area classified as being at risk of flooding from the sea and predominantly outside of an area classified as being at risk of flooding from rivers. The adjacent sites to the northwest, west and south west are classified as being at a much higher risk of flooding from rivers, with significant areas of the adjacent land classified as being at high risk of river flooding.

4.4 Historic Flooding

The FRA Wales Map also indicates any recorded flood events held for an area, accounting for records held by 'NRW, its predecessors and other Risk Management Authorities' (NRW, 2020). As shown in Appendix E, these records do not indicate any historic flooding at the development site or within the immediate vicinity of the site.

4.5 Flood Defences

The FRA Wales Map does not highlight any flood defences in the vicinity of the site, nor does it note the site as being an area benefitting from flood defences. Additionally, the site is not noted as being a flood storage area (see Appendix E).

4.6 Flooding from Sewers

As noted in Section 2.4, the nearest sewers to the site comprise two large diameter combined DCWW sewers running south through the adjacent grassed sports pitch to the west, with an overflow outfall to the adjacent River Ebbw also identified. Any flooding from these sewers is therefore likely to be directly discharged into the River Ebbw via the overflow outfall, or alternatively follow overland flow routes down to the river. Therefore, the flood risk to the development from adopted sewer flooding is considered low.

4.7 Flooding from Private Drainage

A noted in Section 2.5, the proposed development is located in the grounds of the former Cwmcarn High School. CCTV surveys have indicated foul and surface water networks serving the adjacent land where the former school building was located which have been made redundant by the demolition of the school. No existing private drainage was identified in the area of the proposed primary school. Therefore, no existing private drainage which could cause a flood risk to the proposed development has been identified. Furthermore, the proposed development will be designed to accommodate storms up to the 1 in 100-year event plus a climate change allowance therefore again minimising the flood risk to the proposed development from private drainage.

4.8 Flooding from Surface Water and Small Watercourses

The FRA Wales Map indicates the flood risk to an area of flooding from surface water and small watercourses. The surface water and small watercourse flood risk to the proposed site is indicated in Appendix F. This shows the majority of the proposed development site lies outside of an area classified as being at risk of flooding from surface water or small watercourses, with some areas of the existing car park identified as being at low risk of flooding. Reviewing these areas with reference to the topographical survey (See Appendix B), it can be seen that the areas identified as being at low risk of flooding correspond to localised depressions across the car park surface and therefore it can be concluded that this flood risk is from surface water flooding. Given that the existing car park is located away from and at a lower level to the proposed building, the flood risk to the proposed school from surface water or small watercourse flooding is considered low. Additionally, as part of the proposed works, the existing car park will be re-surfaced helping to remove the existing localised depressions and thus reduce the flood risk identified in this area.

4.9 Flooding from Reservoirs, Canals and Artificial Sources

The flood risk to the proposed development site from reservoir flooding, as indicated by the FRA Wales Map, is included in Appendix G. This shows that the site is located in an area identified as being at risk of flooding from reservoirs. The risk of flooding from reservoirs is due to a total failure of the reservoir infrastructure which is classed as low risk of occurring.

The site does not lie in the vicinity of any canals and no other artificial sources of flooding have been identified.

4.10 Overall Flood Risk

The flood risk to the proposed development site is largely divided between its northern and southern extents. The north of the site, in which it is proposed to locate the primary school building and associated play areas, lies within Flood Zone A and outside of areas classified as being at risk of flooding from rivers, the sea, surface water or small watercourses. However, the existing car park and ecology areas to the south of the site, along with much of the area adjacent to the site, lies within Flood Zone C2 and is noted as being at risk of flooding from rivers and surface water and will be subject to an evacuation plan.

Across the site, the flood risk from both sewers and private drainage is considered low but a risk of flooding from reservoirs has been identified.

The location of the primary school building, a Highly Vulnerable development type, is considered acceptable in a Flood Zone A area providing it does not increase the flood risk elsewhere. However, given it is situated in amongst areas with a higher Flood Zone classification, it is necessary to ensure that safe access and egress from the site can be maintained during flood events. Additionally, further justification and an assessment of flood consequences is required for the car park to the south of the site, which lies within an area classified as Flood Zone C2. This will be completed in Section 5.0.

5.0 Development Location and Flooding Consequences

5.1 Justification of the Southern Car Park Location

In determining the site layout for the primary school development, preference has been given to placing higher risk development types, specifically the school building itself and associated play areas, in lower risk areas. However, the proposed ecology areas and retained existing car park to the southwest of the site lies within an area classified as Flood Zone C2. Under TAN 15, a car park is classified as a Less Vulnerable development type. Section 9 of TAN 15 outlines that the location of Less Vulnerable development in Flood Zone C2 areas is permissible but is subject to a justification test, amongst other checks.

As the car park is an existing feature, its current location has already been determined. The car park area, along with the rest of the site, is not noted as being a Flood Storage area on the FRA Wales Maps (see Appendix E). Therefore, through re-surfacing the car park and allowing it to remain operational, no additional flood risk is created to the surrounding areas as no additional flood storage areas are being built on. Providing the consequences of the car park / ecology flooding are adequately addressed, it is therefore considered justified to continue using this area for this Less Vulnerable use rather than abandoning the existing feature.

5.2 Assessing Flooding Consequences of the Southern Car Park Flooding / Ecology Areas

Whilst retaining the car park in this area and providing the lower ecology area is considered justified, it is necessary to ensure that the consequences of any flooding in these areas is acceptable. It is therefore proposed to implement several steps to ensure that the risks created by the car park flooding are minimised. These include, but are not limited to:

- Ensuring all users of the site are aware of the flood risk through displaying clear signs explaining the flood risk to the site;
- Displaying clear escape routes from the car park / ecology area to areas at lower risk of flooding;
- Ensuring the manager of the site is signed up to receive flood warnings from NRW; and
- Closing / barrier off these areas in the event of receiving a flood warning from NRW.

As noted in Section 5.1, since this car park is existing, is not noted as being a Flood Storage Area (See Appendix E) and it is not proposed to alter the car park beyond re-surfacing, no additional flood consequences to the surrounding areas are created by continuing to use this car park.

5.3 Consequences to the Primary School of Adjacent Flooding

Whilst the location of the primary school building, a Highly Vulnerable development type, in an area classified as Flood Zone A is acceptable under TAN 15 guidance, given the high-risk classification of the surrounding areas it is important to assess the impact any flooding of adjacent areas may have on the school.

Access to the site is currently provided off the local access road to the south of the site. A new access route off Darren Drive to the north will be created as part of the proposed works and will form the primary means of vehicular access to the primary school site. The branch of Darren Drive leading down to the site is classified as Flood Zone B by the DAM map and as being at low risk of flooding from rivers (see Appendix E).

Given the proximity of the site to higher flood risk areas, it is therefore recommended to implement several steps in addition to those proposed for the car park to ensure that the risks created by any adjacent flooding are minimise. These include, but are not limited to;

- The development of a flood emergency plan to be circulated to all site users; and
- Ensuring the school management is signed up to receive flood warnings from NRW.

6.0 Conclusions

The proposed development site is predominantly located within an area classified as Flood Zone A and outside of areas identified as being at risk of flooding form rivers, the sea, surface water or small watercourses. The proposed primary school building and associated play areas has been located within this area. To the south of the site, the levels fall to an existing car park, which is to be retained. The car park lies within an area classified as Flood Zone C2 however as it is an existing car park not offering flood storage areas it is considered justified to continue using this as area as a car park provided adequate steps are taken to ensure users are both aware of the risk and adequately prepared for flood events. Additionally, given the proximity of high-risk areas to the proposed primary school, it is recommended that the school is also signed up to receive flood warnings from NRW and that an emergency flood plan is developed and circulated, amongst other steps.

7.0 References

British Geological Survey (BGS), n.d. *Geology of Britain viewer (classic)* [Online]. BGS. Available from: http://mapapps.bgs.ac.uk/geologyofbritain/home.html [Accessed 23rd July 2021].

Natural Resources Wales (NRW), 2020. *Recorded Flood Extents* [Online]. NRW. Available from: https://naturalresources.wales/flooding/managing-flood-risk/flood-risk-map-guidance/recorded-flood-extents/?lang=en [Accessed: 2nd July 2021].

Welsh Assembly Government, 2004. *Planning Policy Wales Technical Advice Note 15: Development and Flood Risk* [Online]. National Assembly for Wales. Available from: https://gov.wales/sites/default/files/publications/2018-09/tan15-development-flood-risk.pdf [Accessed 2nd July 2021].

Welsh Government, 2019. *Sustainable Drainage (SuDS) Statutory Guidance* [Online]. Welsh Government. Available from: https://gov.wales/sites/default/files/publications/2019-06/statutory-guidance.pdf [Accessed 8th July 2021].

Welsh Government, 2021. *Planning Policy Wales* [Online]. Welsh Government. Available from: https://gov.wales/sites/default/files/publications/2021-02/planning-policy-wales-edition-11_0.pdf [Accessed 23th July 2021].

Appendices

Appendix A – Proposed Site Layout

Unedau diwydiannol
Industrial Units
North
Gogledd
Clwb Criced Abercarn
Abercarn Cricket Club
Gwasanaeth Trafnidiaeth
Transport Services
Llwybr troed presennol wedi'i ymestyn i'r fynedfa newydd
Existing footpath extended to new entrance
Maes parcio cyhoeddus presennol
61 o leoedd parcio
Ardal gollwng i rieni
Existing Car Park
61 Spaces
Parent Drop off
Mynediad newydd i gerddwyr
New pedestrian Entrance
Mynediad i gerbydau
Vehicular Entrance
Ystafell newid pêl-droed
Football Changing rooms
Clwb Bowlio
Bowls Club
Storfa CBSC
CCBc Depot
16 o leoedd parcio i staff
16 Staff parking spaces
Mynedfa
Entrance
Neuadd a chegin
Hall and kitchen
Tanc y system chwistrellu
Sprinkler tank
Chwarae caled gofal plant
Childcare hardplay
Chwarae meddal gofal plant
Childcare softplay
SRB
Canolfan Adnoddau Arbennig
Chwarae caled hardplay
Chwarae meddal softplay
Chwarae caled meithrinfa
Nursery Hardplay
Mynedfa
Entrance
Man chwarae aml-ddefnydd
MUGA
Cae Chawarae
Playing field
A467
Commercial Road
Chwarae meddal meithrinfa
Nursery Softplay
Chwarae meddal plant iau
Junior softplay
Chwarae caled plant iau
Junior hardplay
Chwarae caled babanod
Infant hardplay
Afon Ebwy
Ebbw river
Clwb Pêl-droed Abercarn United
Abercarn AFC
Adeilad presennol
Existing Building
Rheseli beiciau
Cycle racks
Chwarae meddal babanod
Infant softplay
Man addysgu awyr agored
Outdoor teaching
Llwybr
Path
Ardal Ecoleg
Ecology Area
Ardal ecoleg (llwyfandir isaf)
Ecology Area (Lower Plateau)
Cilfan fysiau - Bus Bay
Cabinet trydan
Electric Cabinet
is-orsaf
Substation
Maes parcio isaf presennol
Existing Lower Car Park
55 o leoedd parcio
55 Parking Spaces
Mynediad presennol i gerbydau
Existing Vehicular Entrance
Priory Court
A467
Commercial Road

rev diw	date dyddiad	amendment newid	drawn lluniwyd	chckd gwiriwyd

Ysgolion yr 21ain Ganrif
21st Century Schools

drawing status Statws y darlun
Preliminary / Rhagarweiniol ☒ Planning / Cynllunio ☐

Building Consultancy
Ymgynghoriaeth Adeiladu

project title teitl y prosiect
Ysgol Gynradd Newydd Ysgol Cwm Gwyddon
Ysgol Cwm Gwyddon Replacement Primary School

drawing title teitl y llun
Cynllun Safle Arfaethedig
Proposed Site Plan

date dyddiad	scale graddfa	drawn lluniwyd	checked gwiriwyd
18/02/21	1 : 500	YS	

project no. rhif y prosiect	drawing no. rhif y llun	rev. diw
4661	P103	

SHEET SIZE: A0 MAINT Y DDALEN: A0

Appendix

Appendix B – Topographical Survey

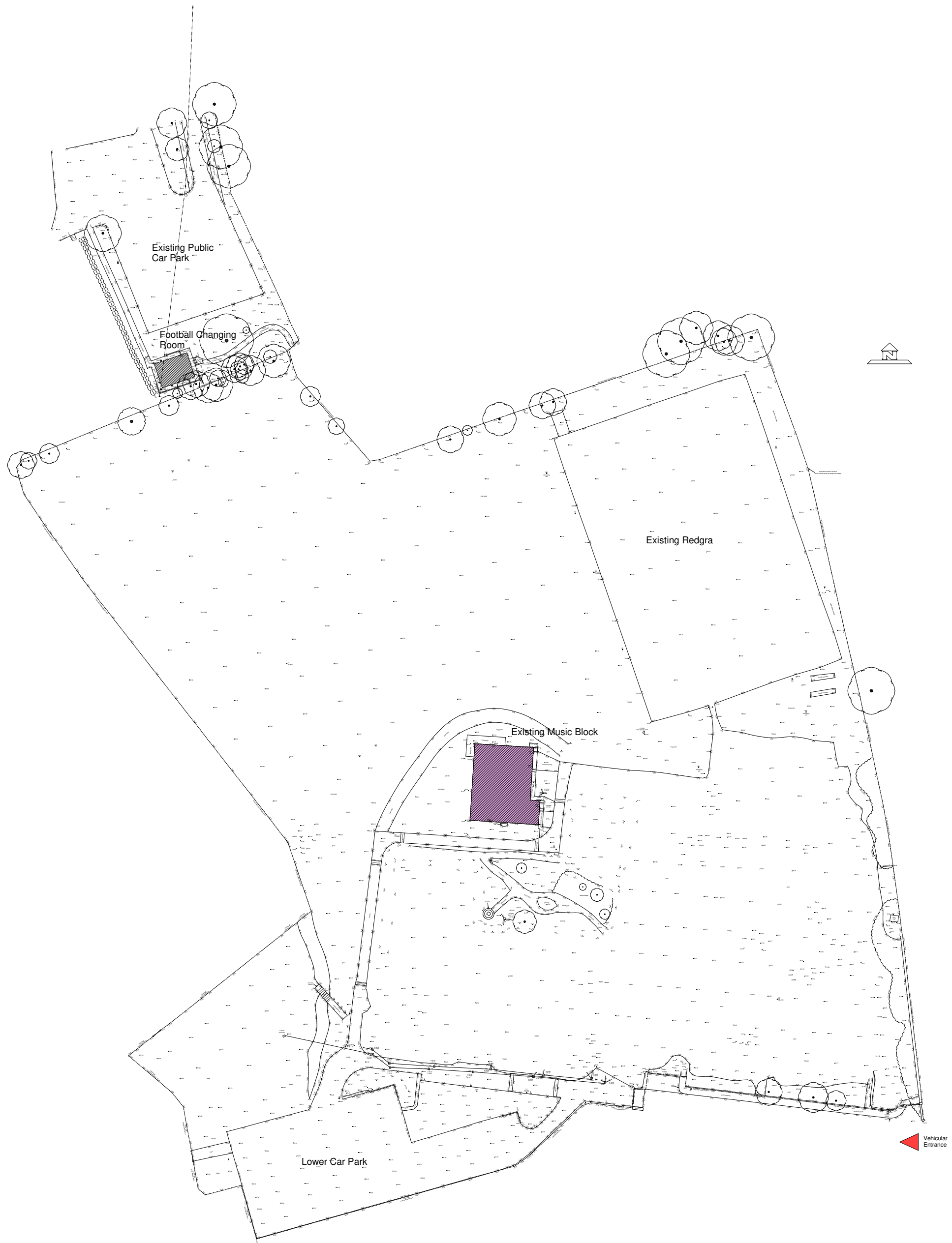
Notes:-

DO NOT SCALE FROM THIS DRAWING

ANY DISCREPENCIES TO BE REPORTED TO THE CONTRACT ADMINISTRATOR

CONTRACTOR TO CHECK DIMENSIONS ON SITE

DRAWINGS ISSUED WITHOUT STATUS ARE DRAFT ONLY



Topo Survey
1 : 500

PRELIMINARY

Ysgolion yr 21ain Ganrif
21st Century Schools

rev	date	amendment	drawn	chckd

drawing status
Preliminary ☒ Tender ☐ Construction ☐

Building Consultancy
Unit 1
Woodfieldside Buisiness Park
Pontllanfraith
Blackwood
NP12 2DG

Tel: (01495) 226622

Building Consultancy Manager: M Williams B.Eng, C.Eng, M.I.C.E

project title
Ysgol Cwm Gwyddon Replacement Primary School

drawing title
Topographical Survey

date	scale	drawn	checked
02/26/09	1 : 500	Author	Checker

project no.	drawing no.	rev.
4661	P102	-

\\corporate.group.local\files\officesWF\Building Consultancy\Projects\4661 - Ysgol Cwm Gwyddon - Replacement\Drawings\Local YS\4661 YS Local Cwm Gwyddon Replace.rvt

SHEET SIZE: A0

Appendix

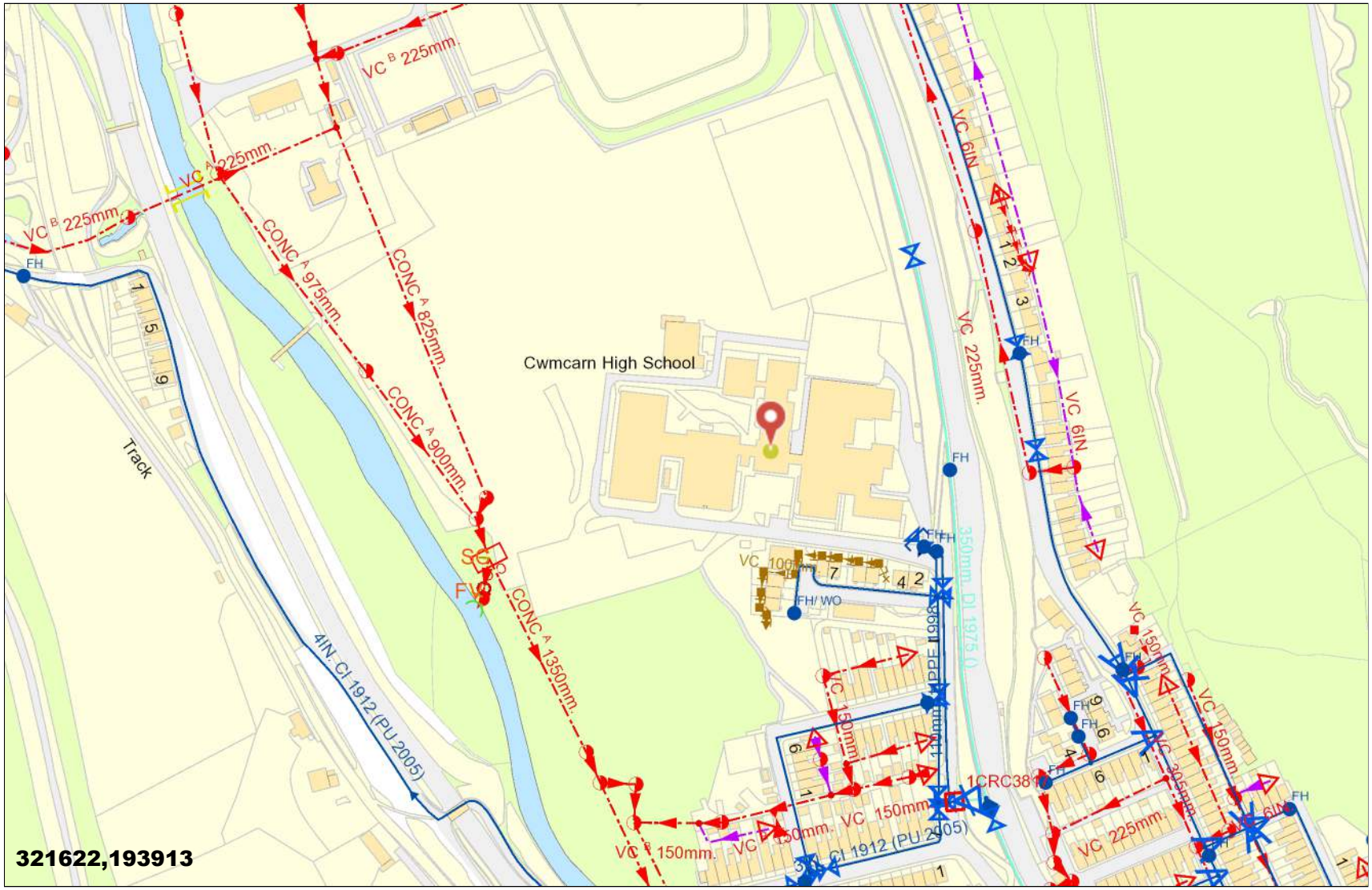
Appendix C – DCWW Sewer Records

Dŵr Cymru
Welsh Water

Cwmcarn High school

07/01/2019

Scale: 1: 3000



LEGEND

Clean Water

- Sluice Val
- Air Val, SINGLE
- Tap
- Pressure Reducing Valve
- Meter
- BULK Meter
- FH
- Cap
- Existing Main
- NON COMPANY

Sewerage External

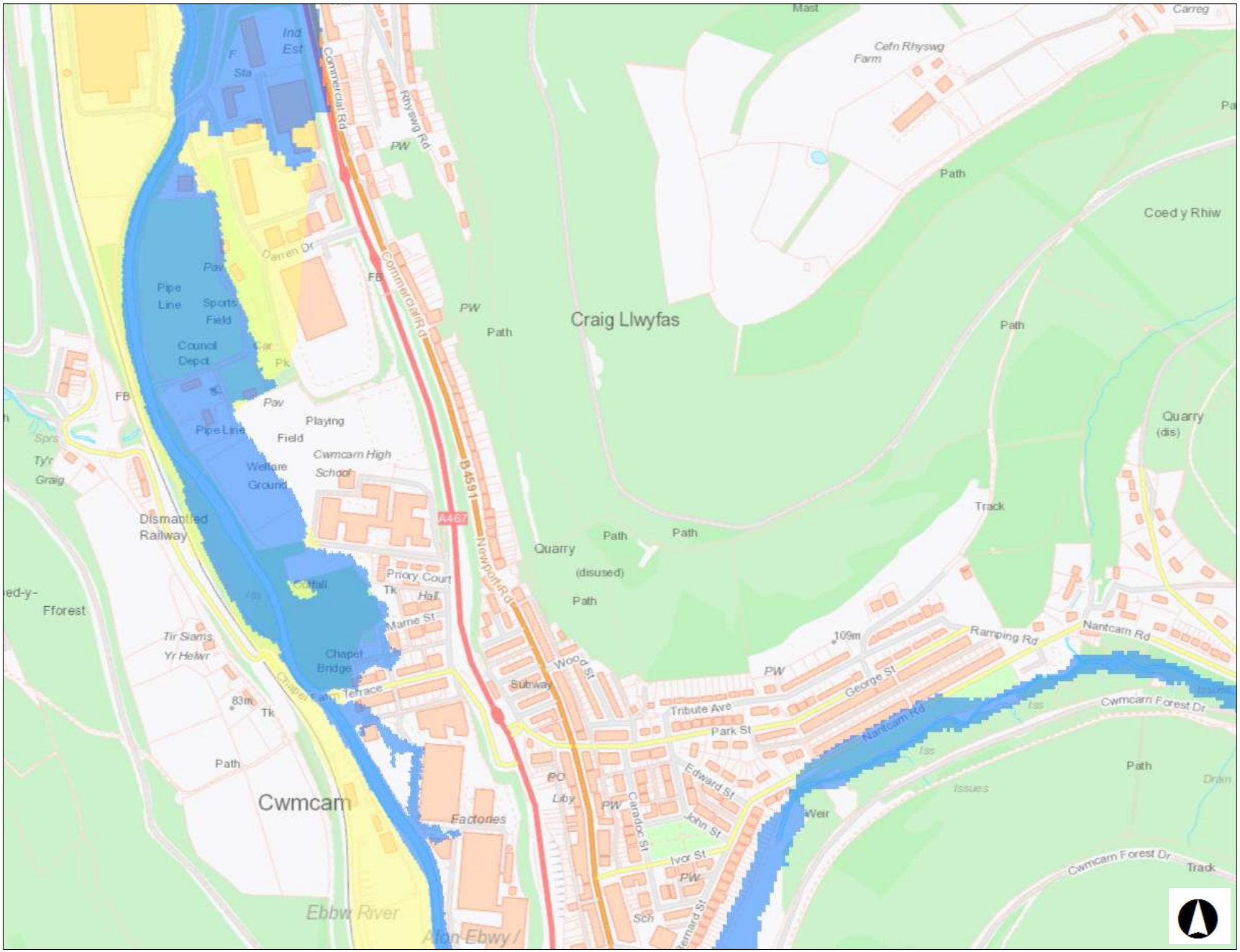
- Foul
- Surface Water
- Combined
- Rising Main
- Private
- Treatment Works
- Pumping Station
- Special Purpose
- Unknown End
- Change, Combined Overflow
- Outfall, FOUL
- Lamp Hole, Foul
- Private Sewer Transfer
- Lateral Drain
- Inspection Chamber

EXACT LOCATION OF ALL APPARATUS TO BE DETERMINED ON SITE

Whilst every reasonable effort has been taken to correctly record the pipe material of DCWW assets, there is a possibility that in some cases pipe material (other than Asbestos Cement or Pitch Fibre) may be found to be Asbestos Cement (AC) or Pitch Fibre (PF). It is therefore advisable that the possible presence of AC or PF pipes be anticipated and considered as part of any risk assessment prior to excavation

Appendix

Appendix D – DAM Flood Zone Map



Cyfoeth Naturiol Cymru
Natural Resources Wales

DAM Flood Zones

Allwedd / Map Key

- Zone C1
- Zone C2
- Zone B
- Zone A

Graddfa / Scale at A3 1:5,000

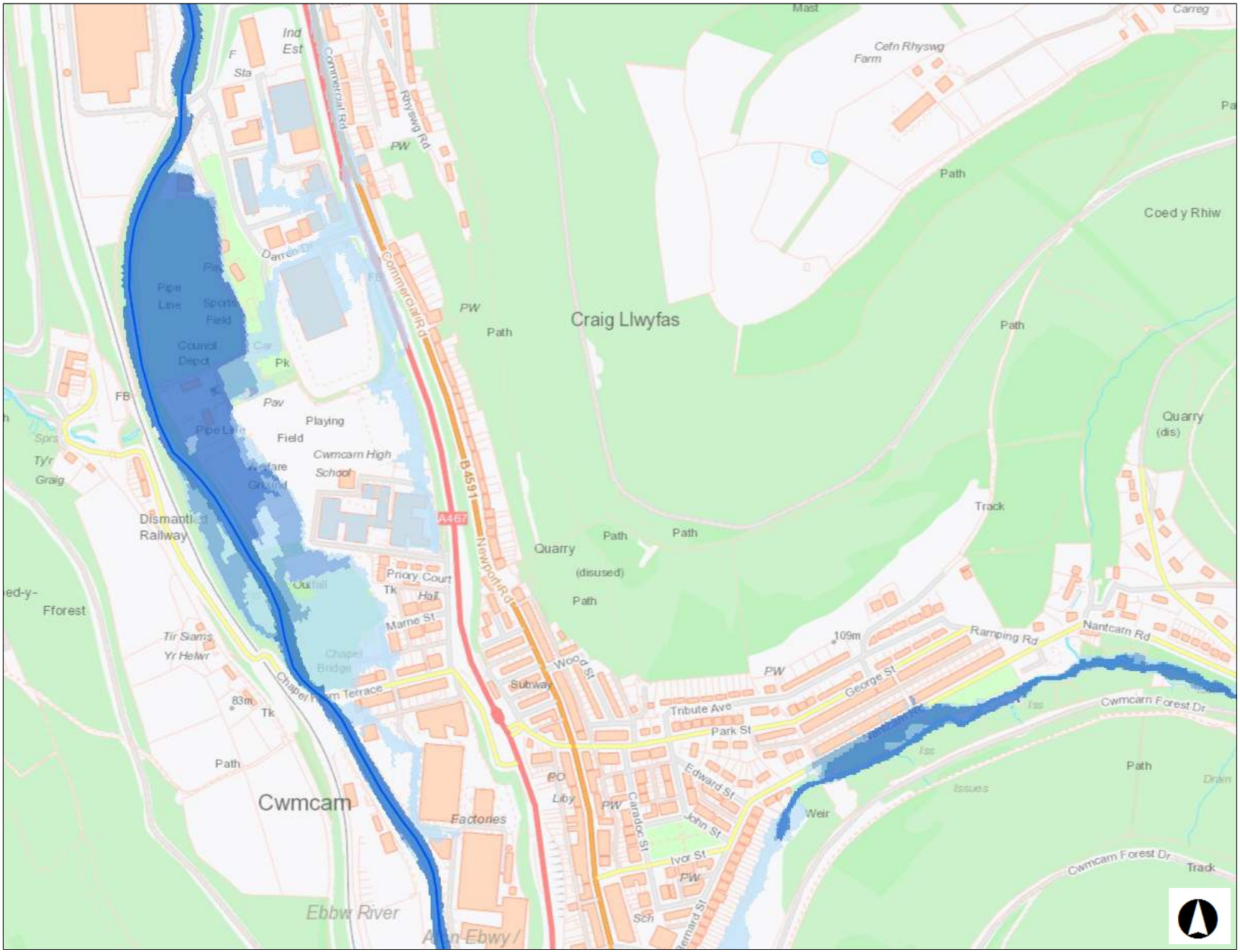
Dyddiad / Date
23/07/2021

0.3 0 0.13 0.3

British_National_Grid Kilometers

Appendix

Appendix E – FRA Wales Flood Risk from Rivers and the Sea Map



Cyfoeth Naturiol Cymru
Natural Resources Wales

FRA Wales Map - Flood Risk from Rivers and the Sea, Flood Defences and Flood Storage Areas

Allwedd / Map Key

- Main Rivers
- Flood Defence Locations
- Areas Benefitting from Flood Defences
  - Rivers
  - Sea
  - Rivers and Sea
- Shoreline Management Plan & Coastal Erosion
- Flood Storage Areas
- Flood Risk from Rivers - Extent
  - High
  - Medium
  - Low
- Flood Risk from the Sea
  - High
  - Medium
  - Low
- Recorded Flood Extents

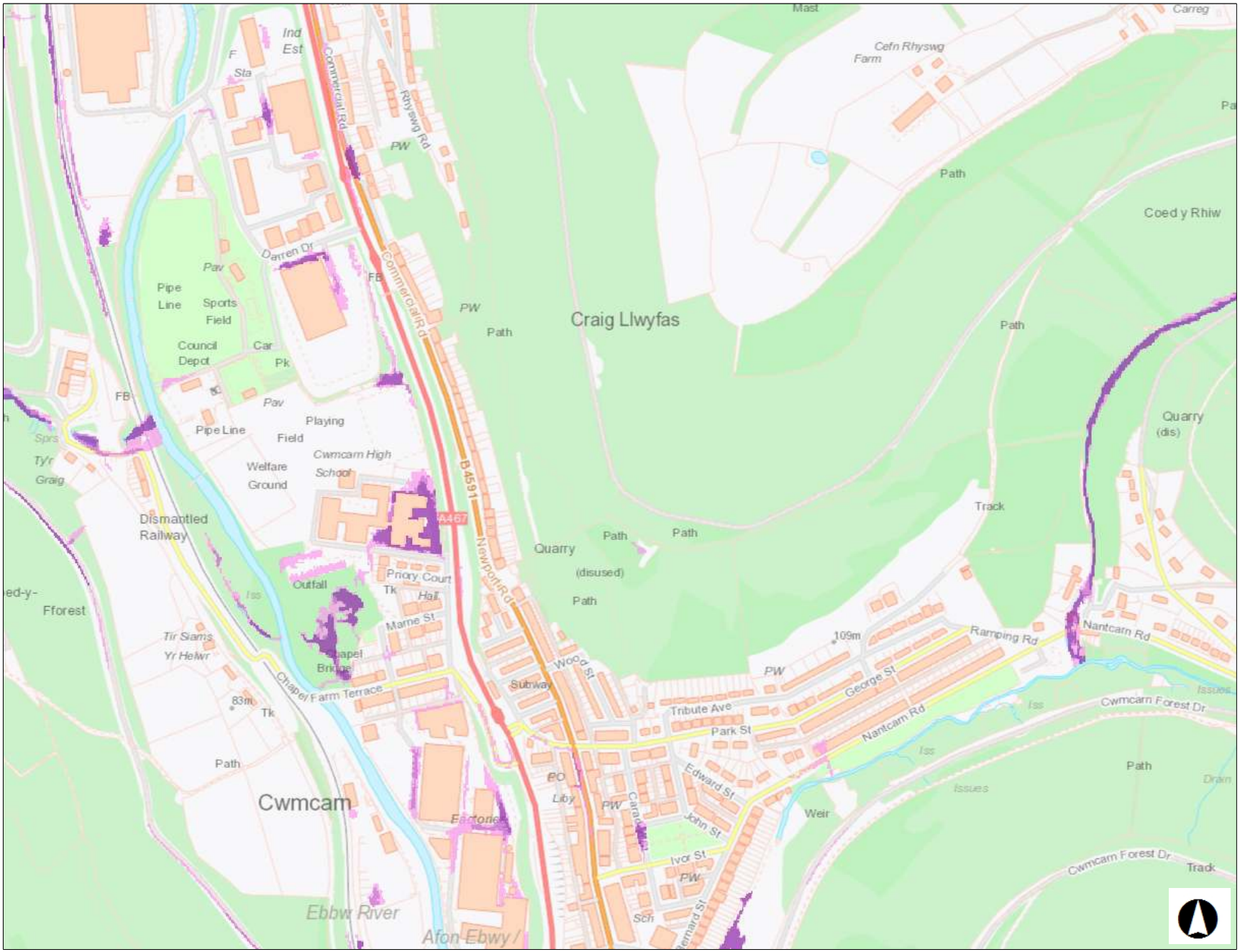
Graddfa / Scale at A3 1:5,000

Dyddiad / Date
23/07/2021

0.3 0 0.13 0.3
British_National_Grid Kilometers

Appendix

Appendix F – FRA Wales Flood Risk from Surface Water and Small Watercourses Map



Cyfoeth Naturiol Cymru
Natural Resources Wales

FRA Wales Map - Flood Risk from Surface Water and Small Watercourses

Allwedd / Map Key

Flood Risk from Surface Water & Small Watercourses - Extent

- High
- Medium
- Low

Graddfa / Scale at A3 1:5,000

Dyddiad / Date
23/07/2021

0.3 0 0.13 0.3

British_National_Grid Kilometers

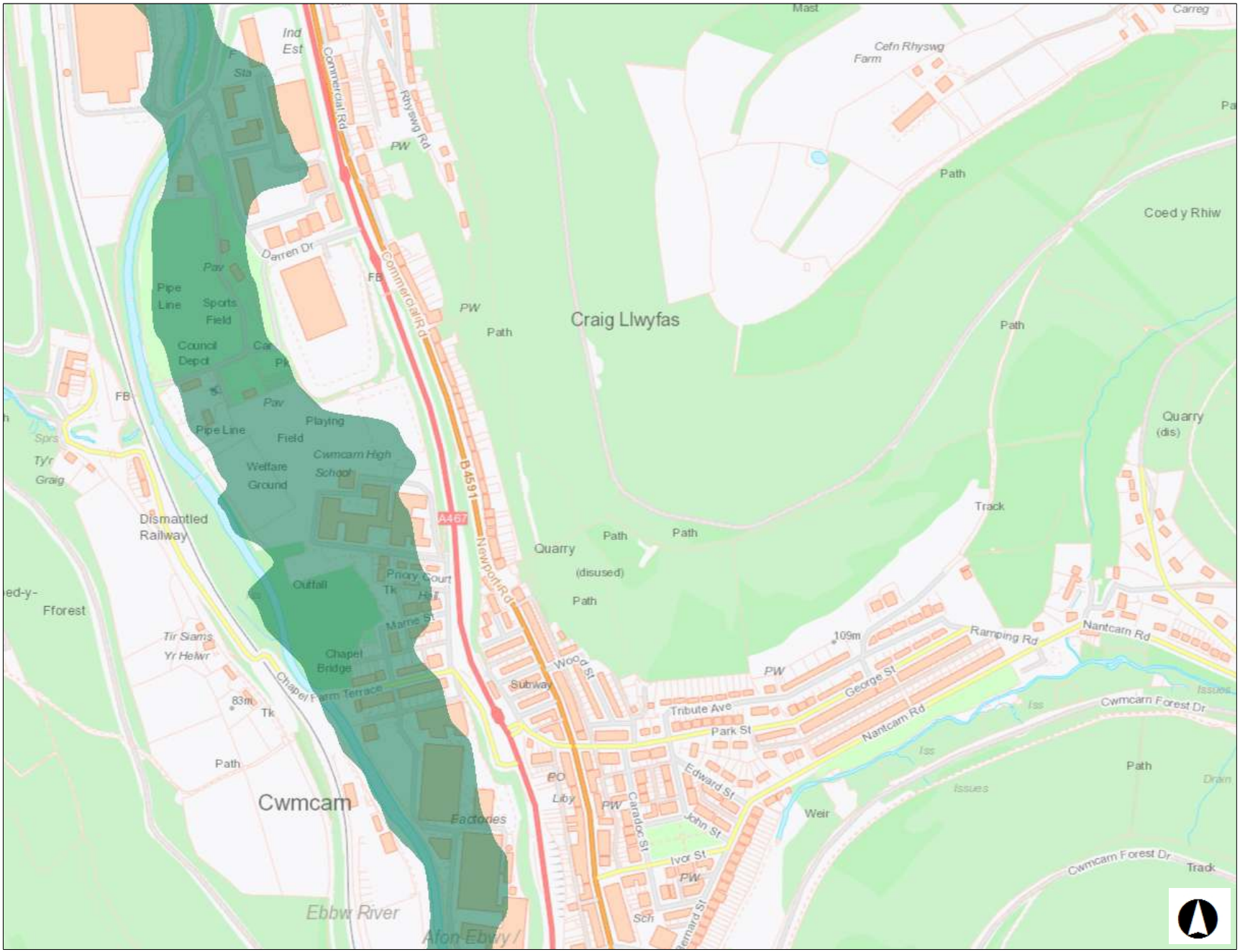
Appendix

Appendix G – FRA Wales Flood Risk from Reservoirs Map

Our Locations

Birmingham
2 The Wharf
Bridge Street
Birmingham
B1 2JS

Glasgow
Queens House
29 St Vincent Place
Glasgow
G1 2DT



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