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Flood Management Plan

Cwmbach Wetlands, Canal Road, Cwmbach, New Road, CF44 0PN

Document Control

Client	Cwmbach Wetlands Group
Report Title	Flood Management Plan – Cwmbach Wetlands, Canal Road, Cwmbach, New Road, CF44 0PN
Report Reference	175623-F02
Report Status	Final
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Checked by	J. Read
Approved by	A. Jones
Date of Issue	29/06/2023
Issue Method	PDF

Distribution

Cwmbach Wetlands Group

Down to Zero

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1 Introduction

1.1 Authorisation and Context

Ashfield Flood Risk Solutions Limited (“Ashfield”) was commissioned by Cwmbach Wetlands Group (“the Client”) to undertake a Flood Management Plan (“FMP”) following acquisition of Cwmbach Wetlands, Canal Road, Cwmbach, New Road, CF44 0PN (“the site”).

This FMP accompanies the Flood Risk Briefing Note also undertaken by Ashfield in support of the client’s decision to acquire the site (Ashfield Ref: 175623-F01).

1.2 Purpose of the Plan

The overall aim of this FMP is to provide a site-specific action plan to ensure that all staff are in a fully informed position regarding the risk of flooding and know what actions to take, should a flood event be predicted to occur. This FMP also seeks to ensure public safety in relation to access/egress around the site and that staff will be able to safely evacuate the site in a timely manner, if required, prior to the onset of any projected local flooding.

This FMP will ensure that flood warning procedures and subscription details to the Natural Resources Wales (NRW) flood warning systems are made available for the operators of the site.

1.3 Limitations

This document has been devised specifically for the purposes of flood response. A draft version of the Afon Cynon Integrated Catchment Model (Arcadis, December 2022) has been made available to Ashfield since the Flood Briefing Note (Ref. 175623-F01) was issued. This model data has been used as part of the analysis of flood risk, and is understood to be the most up to date data available at the time of writing. This data includes flood levels and depths, has been used by NRW to inform the ‘Flood Map for Planning’; however, the final model and report is yet to be released at the time of writing.

1.4 Site Location

The site is located at coordinates XY: 301551,201755 (nearest post code: CF44 0PN) and occupies an area of approximately 11.1 hectares (ha). The site is located to the west of the village of Cwmbach and approximately 1km to the south-west of Aberdare, Rhondda Cynon Taf. The site currently comprises a wetland, along with marsh grassland, swamps, woodland and scrub, which is accessed via an unnamed footpath to the south and to the north-east.

The site is bound to the north by a railway line, to the east by a residential housing development (Tir Founder Fields), and to the south and west by the River Cynon. The site’s location can be seen on Drawing 01 for reference.

2 Flood Risk Summary

Table 1 provides a summary of the classification of risk to the site from all potential flood sources. This includes information derived from the aforementioned Flood Risk Briefing Note and from the draft version of the Afon Cynon Integrated Catchment Model (Arcadis, December 2022).

Table 1 – Flood Risk Summary

Flood Source	Risk Rating	Description of Classified Risk
Fluvial	High	<p>The site is a wetland, located within the functional floodplain.</p> <p>Fluvial modelling (2012) indicates that the site is at risk of flooding from the 1 in 5 year (20% AEP) event.</p> <p>According to the more recent modelling (2022) the council-owned public footpath located along the eastern site boundary is shown to flood to depths of up to 1.97m in the 1 in 100 year +CC event and 2.65m in the 1 in 1000 year +CC event.</p> <p>The updated modelling also indicates that the majority of the residential estate to the east of the site is not located within the modelled flood extents due to the presence of a bund which runs along the eastern side of the footpath (elevated circa. 3.5m above the footpath).</p>
Tidal	Negligible	<p>The site is located a minimum of 113m above sea level and is 31km to the north-west of the nearest area at risk from tidal flooding.</p>
Surface Water	High	<p>Mapping indicates that the majority of the site is located within an area of high risk including the council-owned footpath along the southeastern boundary. This flood extent excludes the region of higher elevation in the far north of the site.</p>
Reservoir Failure	Low	<p>Mapping shows the site is located within an area predicted to be at risk in the event of reservoir failure. However, current legislation ensures that reservoirs are inspected regularly, and essential safety work is carried out as required. This means the likelihood of failure is considered to be low and the resultant risk of flooding from this source is also considered to be Low.</p>
Groundwater	Low	<p>There are no reportable instances of groundwater flooding located at or within the vicinity of the site.</p>
Artificial Sources	Low	<p>There are no reportable instances of sewer flooding located at or within the vicinity of the site.</p>

2.1 Risk to the Public

As discussed within the fluvial section of Table 1, the council-owned footpath that runs along the eastern boundary of the site is at risk of flooding to significant depths at low magnitude, high frequency flooding events. This footpath is frequently used by the public, primarily residents of the nearby Tir Founder Fields estate, for recreational use and views of the wetlands. This footpath also provides access between Cwmbach and Aberaman.

Another public footpath is located within the site boundary along the eastern bank of the River Cynon. This footpath is also frequently used by the public and subject to frequent fluvial flooding.

As outlined within the previously mentioned Flood Risk Briefing Note, permanent and temporary signage would be appropriate to inform the public of the flood risk on-site. These signs should be implemented in accordance the guidance outlined in Section 4 of this FMP.

3 NRW Flood Warning

3.1 Likelihood of Flooding

As previously discussed, fluvial flooding is considered to pose a risk to the site during the 1 in 5 year (20% AEP) event. This includes flooding of the public footpath along the eastern site boundary to depths of up to 1.97m in the 1 in 100 year +CC event.

A Flood Management Plan is required to ensure that all staff are aware of the risk and that the public remain safe and informed during a flooding event.

3.2 Flood Information Service

The NRW website provides up to date flood warning information based on address/postcode locations, using the link: <https://naturalresources.wales/flooding/check-flood-warnings/?lang=en>.

Furthermore, Floodline can be called to receive up-to-date flooding information through the following number: 0345 988 1188. The postcode for the site is: CF44 0PN.

Signing up for the NRW Flood Warning Service is required to be undertaken by the site manager or main representative. The service is free, and information is provided through telephone, mobile, email, SMS text message or fax. The information provided through these channels would be based on continually updated information that would also be available on the aforementioned NRW website. Registration for this service can be carried out over the phone (0845 988 1188) or by using the following link: <https://naturalresources.wales/flooding/sign-up-to-receive-flood-warnings/?lang=en>

Once registered, warnings will be issued up to two days in advance.

All staff should be aware of this FMP, its contents and location.

3.3 NRW Flood Warning Codes

Flood warnings are issued at differing levels of magnitude, defined as “flood warning codes” based on the latest NRW guidance¹. These codes relate to the level of risk that the site is potentially at, and each one is outlined below.

Disclaimer

Where possible, Ashfield has provided site specific advice that provides an increased level of understanding of what actions may need to be taken for the differing levels of flood warning severity on site. The responsibility of engaging with the correct information providers and carrying out specific actions that relate to the severity of warning lies with the staff/site manager. Information on flood warnings can be sought using the direct links provided within this FMP.

¹ <https://naturalresources.wales/flooding/managing-flood-risk/how-we-forecast-floods-issue-warnings-and-assess-flood-risk/?lang=en>

3.4 Five Day Forecast

“Be aware. Think ahead. Keep an eye on the weather situation”.

Forecasts are updated daily on the Flood Information Service and more frequently for situations of increased flood risk. NRW work with the Joint Flood Forecasting Centre, based at the Met Office in Exeter to provide a five-day assessment of flood risk from all sources on a county scale.

National mapping within this interface will show one of four levels of risk for each county:

1. Green = **No risk** of flooding.
2. Yellow = **Low risk** of flooding.
3. Amber = **Medium risk** of flooding.
4. Red = **High risk** of flooding.

3.5 Flood Alert

“Flooding is possible. Be prepared”.



A *Flood Alert* shall be issued between two hours and two days in advance depending on the confidence of the prediction methods. This may be triggered by unusually high predicted tide or surge levels; and/or, weather forecast predicting intense rainfall within the vicinity of the site or further upstream.

Site Specific Action

This magnitude of warning should trigger an increased level of awareness on site. Staff are recommended to:

- Be made aware that this warning is in place and be kept informed;
- Be mindful of potential areas of localised water accumulation to areas on-site that are used by staff and by the public and report these instances immediately;
- Periodic checking of the NRW website, Floodline and Flood Information Service should be carried out every two hours to establish whether the Flood Alert has been de-escalated, or escalated to a higher level (Flood Warning or Severe Flood Warning); and,
- Keep informed of any updates.

3.6 Flood Warning

“Flooding is expected. Immediate action required”.



Flood Warnings are issued half an hour to one day in advance of potential flooding occurring, depending on the accuracy of the prediction methods. This may be triggered by high tides combined with strong winds; and/or forecasted heavy rainfall within close proximity or upstream of the site.

Site Specific Action

A *Flood Warning* would warrant an increased level of vigilance and include the following recommended actions:

- Ensure that any localised accumulation of water in areas of staff and public use is identified and monitored;
- Evacuation of the site in accordance with the evacuation plan (further discussed within Section 6 of this FMP) for staff on-site as well as any pedestrians walking through via the footpaths;
- Temporary signage indicating the current risk should be deployed in-line with the guidance outlined in Section 4; and,
- Periodic checking of the NRW website, Floodline and Flood Information Service should be carried out every two hours to establish whether the *Flood Warning* has been de-escalated or escalated to a higher level (*Severe Flood Warning*).

3.7 Severe Flood Warning

“Severe flooding. Danger to life”.



A *Severe Flood Warning* poses a significant risk to life or significant disruption to local communities or infrastructure. Escalation to this level would be triggered by:

- Actual flooding being identified where it poses significant risk to life;
- Breach of flood defences or failure of a flood barrier; and/or,
- Specialised knowledge of the area that warrants its escalation.

Site Specific Action

When a Severe Flood Warning is in place, the following actions are recommended to be undertaken:

- Evacuation will have already been taken from issue of a Flood Warning;
- Continual monitoring of the NRW website, Floodline and Flood Information Service, as well as local media to understand the potential length and magnitude of the risk;
- Communication directly with NRW; and,
- The site should not be accessed until confirmation can be sought that the *Severe Flood Warning* has been removed, and further clarification from the emergency services has been given that safe access to site has been restored.

3.8 Warning No Longer in Force

“No further flooding is currently expected for your area”.

When flood warnings are no longer in force, this means that the risk of flooding has subsided, and no further flooding is expected. This decision will have been triggered through the judgement of professionals and discussions with partners which are in agreement for this to occur.

Site Specific Action

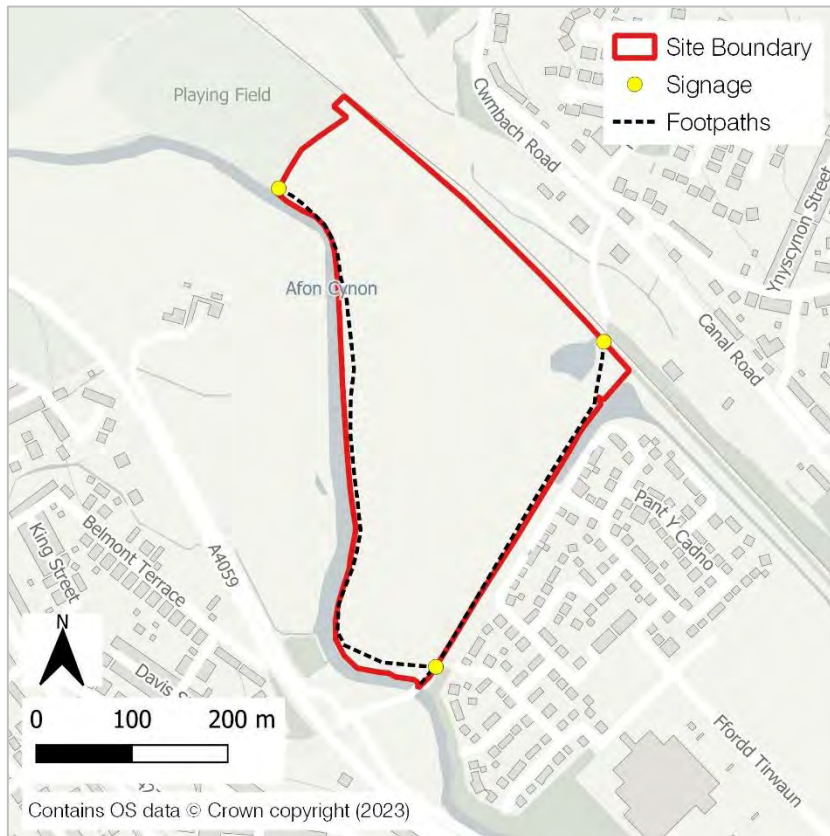
Prior to the re-opening of the site footpaths of the site and the removal of the temporary, it should be initially evaluated whether the site is safe for public use. This should be done in conjunction with NRW, Emergency Services, and any other parties.

The scope of this FMP does not cover any further actions that should be undertaken on site should severe damage have occurred. This may be in relation to significant erosion and damage to assets or drainage pipe issues. In this instance, the relevant person(s) should work alongside the NRW and relevant authorities to establish whether it is safe to access the site.

4 Signage and Actions

As previously discussed, permanent signage is recommended at the areas of access to the site as proposed within the indicative Figure 1 below. This can potentially aid in informing the public of the general flood risk across the site.

Figure 1 – Location of proposed, permanent signage



Signs are recommended to adhere to the regulations set out in the ‘Safety signs and signals: Guidance on regulations’ (2015)² (or equivalent guidelines) which indicates that signboards should be sufficiently large and clear to be easily seen and understood. Signboards should also be durable, securely fastened and properly maintained (eg washed or resurfaced) to ensure they remain visible.

The permanent signs which convey the general risk of flooding to the public must be yellow/amber in colour as seen in Table 1 of the guidance on regulations (2015) to indicate a ‘be careful’ instruction. Figure 2 indicates the pictogram that could be accompanied by the below text:

“Please be aware that this footpath is within a flood alert/warning area. Please take caution whilst walking through the site.”

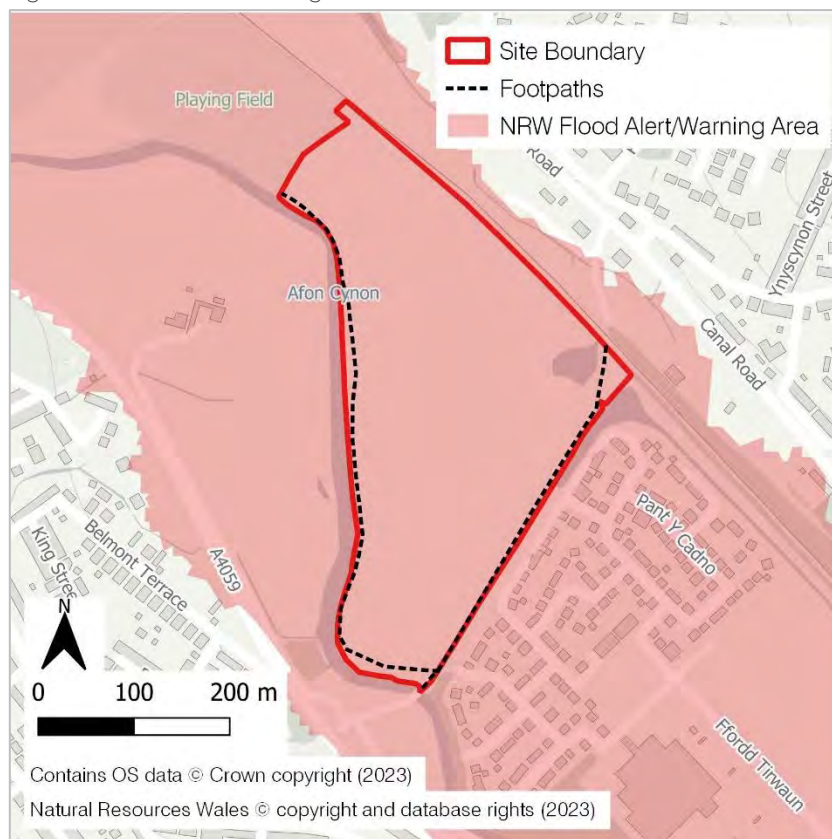
² <https://www.hse.gov.uk/pubns/books/l64.htm>

Figure 2 – Yellow warning pictogram



It is also recommended that the sign contains a QR code that will provide a link to the NRW flood alert/warning page for this location. Figure 3 below shows the flood alert/warning area at the site.

Figure 3 – Flood alert/warning area



As previously discussed in Section 3, following issue of a 'Flood Warning', temporary signs should be deployed at each of the areas of access to the site as indicated within Figure 1. This will need to be discussed and agreed Rhondda Cynon Taf County Borough Council (RCTCBC) prior to deployment due to their legal ownership of the footpath. These temporary signs should be stored year-round within a locked storage box (which is fixed to the ground) in close proximity to the locations identified within Figure 1. The signs should be red in colour to indicate 'stop' and 'danger'. Figure 4 indicates the pictogram that should be accompanied by the below text:

"WARNING - access is not advisable. Flood warning has been issued (flooding is expected)."

Figure 4 – Red warning pictogram



Furthermore, the temporary signs are recommended to be suitably anchored in place to prevent being moved by the public or washed away by any potential flood waters, which may flow at a significant rate. Fixings and brackets may be used, but similarly, this should be agreed with RCTCBC.

5 Key Contact Information

Contact details are provided in Table 2 below for information and support during a flood event. This table should be updated where there are additional stakeholders deemed to be relevant to this site.

Table 2 - Key contact information

Network Provider	Contact Telephone Number	Description
Floodline	0345 988 1188	Flood Advice and Information
Natural Resources Wales	03000 65 3000	Environmental Services
Dŵr Cymru Welsh Water	0800 052 0130	Water and Sewage Provider
National Grid	105	Electricity Provider
Wales & West Utilities	0800 111 999	Gas Provider
Emergency Services	999	Police, Fire, Ambulance, and Coast Guard
Rhondda Cynon Taff County Borough Council Emergency Planning Team	01443 425 011	RCTCBC Emergency Planning Team (Out of Hours Number)

6 Evacuation Plan

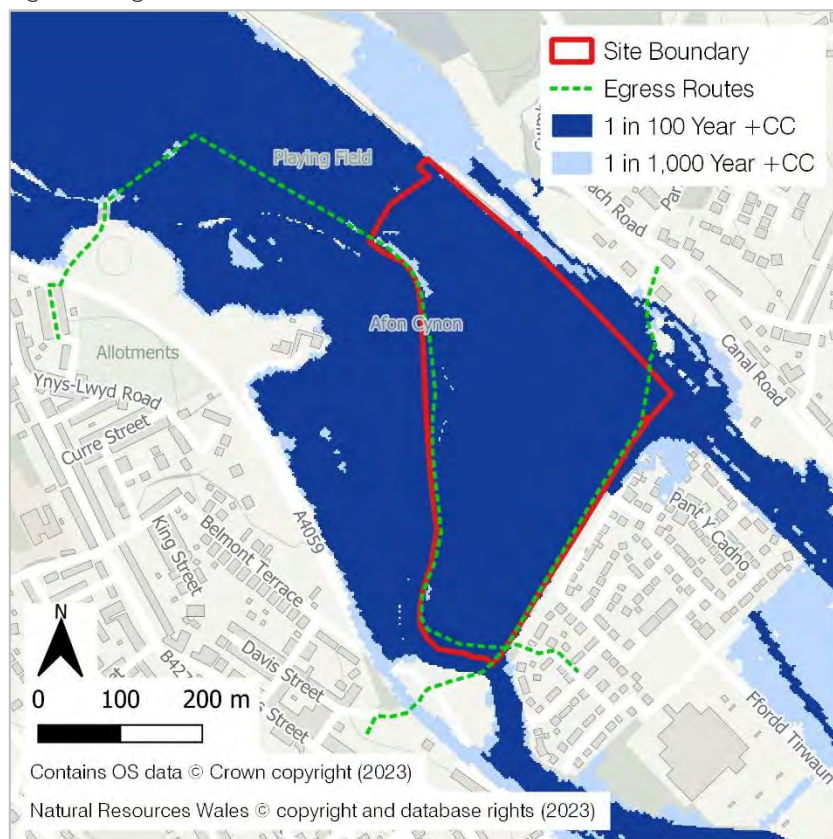
6.1 Introduction

An evacuation plan is required to ensure that egress routes away from the areas of potential flood risk can be identified and communicated, should flooding occur in areas of the site that are used by the staff and/or public, or along any important access routes.

6.2 Egress Routes

It is recommended that the site is evacuated prior to a flood event occurring. Figure 5 shows the possible egress routes from the site to areas outside of the modelled flood extents. These extents include the future 1 in 100 year and 1 in 1000 year fluvial flooding events (which include an additional allowance for the impact of climate change). The possible egress routes have also been outlined on Drawing O2 for reference.

Figure 5 – Egress Routes



Access: It is understood that the evacuees would be on foot and should follow the egress routes to the nearest area of safe refuge outside of the predicted flood extents.

Table 3 below indicates the maximum modelled flood depths that can be expected along both footpaths across events of different magnitudes.

Table 3 – Maximum Modelled Flood Depths

	Event Magnitude		
	1 in 30 Year (3.33% AEP)	1 in 100 Year (1% AEP) +CC	1 in 1,000 Year (0.1% AEP) +CC
Council-owned footpath along the eastern site boundary	1.45m	1.97m	2.65m
Footpath which follows the River Cynon along the western site boundary	1.40m	1.65m	2.29m

Should these routes be changed in future, based upon further advice from the Local Authority or NRW, this will need to be fully communicated to all users of this FMP.

6.3 Evacuation Procedure

Following the flood warning guidelines seen in Section 3, the Evacuation Procedure would be instigated when a Flood Warning is issued. In this instance, all staff and any identified members of the public along the footpaths should evacuate the site and proceed to a route that takes them outside of the modelled flood extents.

Should it not be safe to evacuate, the emergency services should be contacted to inform them of your location.

7 Summary

This FMP provides an overview of flood risk at the site, in-line with the findings of the original Flood Risk Briefing Note (Ref: 175623-F01) and with additional considerations to the draft version of the Afon Cynon Integrated Catchment Model (Arcadis, December 2022), which was made available to Ashfield since the Flood Briefing Note was issued. The measures included within this FMP are considered to be appropriate based on the high level of fluvial risk that exists at the site and immediate area.

To ensure an enhanced awareness of flood risk in the local area, all staff should register to the NRW Flood Warning service as per Section 3 of this FMP.

Limitations of this report

This report has been prepared by Ashfield Flood Risk Solutions Limited (Ashfield) for the sole benefit of the client.

This report has been prepared solely for the benefit of Cwmbach Wetlands Group (the “Client”) and future occupiers of the site, and has not been assigned to any other third parties. If reliance on this report was required by a third party, this could be arranged for an agreed fee. This report should not be used by the client in relation to any other matters not covered specifically by the scope of the report. If this report does not contain a signature in the Document Control window, then this is an uncontrolled electronic copy and should not be relied upon by the client or any other recipient, as Ashfield cannot give assurances on the source or content of the document. Ashfield has used all reasonable skill, care and diligence in the preparation of this report.

This Flood Management Plan has been prepared for the client as outlined in Section 1. It only includes a site investigation where specifically referenced. Ashfield accepts no responsibility for the accuracy or completeness of third-party data reviewed within this assessment.

This report is provided under Ashfield Solutions Limited Standard Terms and Conditions.

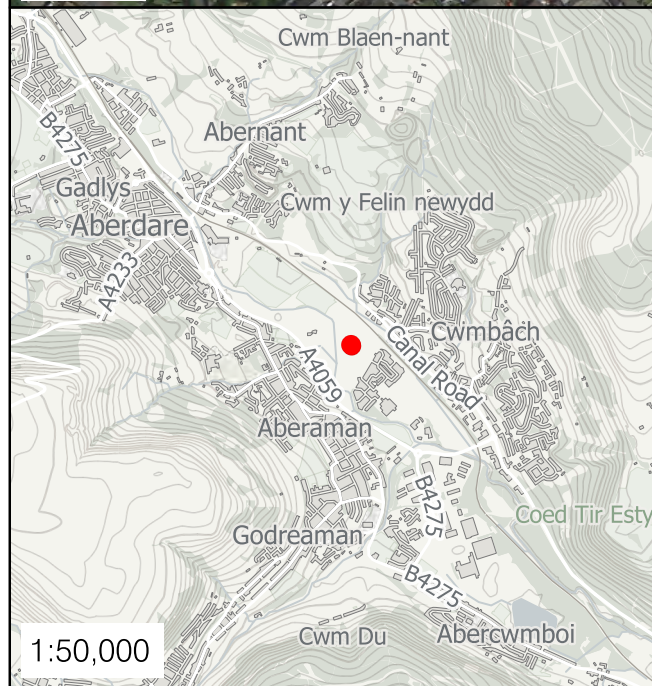
Drawings



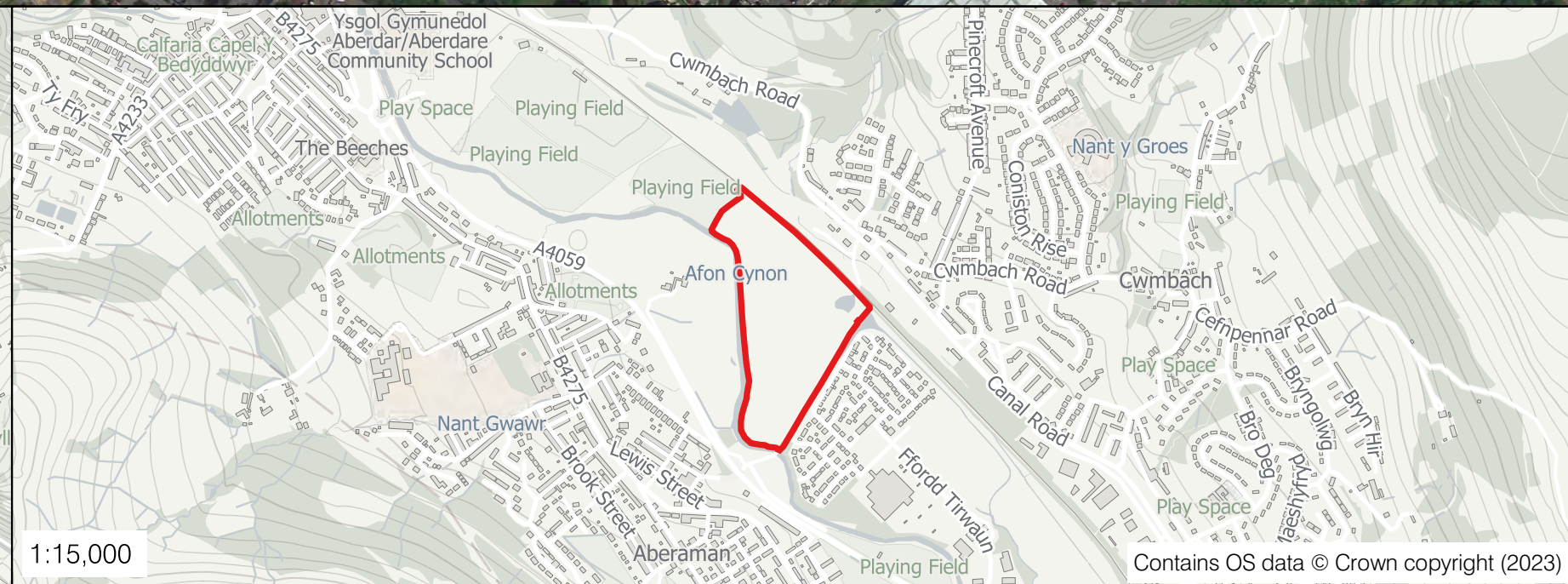
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- Legend
- Site Boundary
 - Site Location

Client
Cwmbach Wetlands Group



1:50,000



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Project
Cwmbach Wetlands, Canal Road, Cwmbach, New Road, CF44 0PN

Title
Site Location Plan

Report 175623-F01	Drawing 01	Revision -
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Legend
▭ Site Boundary
- - - Egress Routes

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 Cwmbach, New Road, CF44 0PN

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