

Cynllun Datblygu Lleol Cyngnor Bwrdeistref Sirol Merthyr Tudful (2016-2031)
Merthyr Tydfil County Borough Council Local Development Plan (2016-2031)

PAPUR BRIFFO | BRIEFING PAPER
Sustainable Drainage Systems (SuDS)

June 2019



Cyngor Bwrdeistref Sirol
MERTHYR TUDFUL
MERTHYR TYDFIL
County Borough Council

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1. Introduction

- 1.1 This briefing paper has been prepared in response to the Inspector's request for further information in his letter dated 25th April 2019, regarding the implications of the new Sustainable Drainage Systems Standards for Wales and requirements for SuDS Approval Body (SAB) approval.
- 1.2 From 7th January 2019 the application of the Sustainable Drainage Systems Standards for Wales and SAB approval has been mandatory for new developments of more than one dwelling house or construction of a building or other structure covering an area of land equal to or greater than 100 square meters.
- 1.3 The regime is relatively new with few approvals having progressed through the local authority SAB approval process as of May 2019. This is due to transitional arrangements that exempt new development proposals where a valid planning application had been received but not determined by 7th January 2019.
- 1.4 On considering an application for approval the SAB must; grant it, if satisfied that the drainage system if constructed as proposed will comply with the Statutory SuDS Standards; or refuse it if not satisfied.
- 1.5 This paper provides further information regarding the assessment of LDP sites and potential implications on the level of planned growth (number of dwellings) in the area and development viability.

2. Legislation

- 2.1 Schedule 3 of the Flood and Water Management Act 2010 makes SUDs a mandatory requirement for all new developments. Welsh Government has also prepared the following documents in order to address the SAB process:
 - The Sustainable Drainage (Appeals) (Wales) Regulations 2018;
 - The Sustainable Drainage (Approval and Adoption Procedure) Regulations 2018;
 - The Sustainable Drainage (Enforcement) (Wales) Order;
 - The Sustainable Drainage (Application for Approval Fees) Regulations 2018;
 - The Sustainable Drainage (Approval and Adoption) (Wales) Order 2018.
- 2.2 The requirement for SAB approval applies to all construction work which has drainage implications where the development or redevelopment is more than a single dwelling house or involves the construction of a building or other structure covering an area of land equal to or greater than 100 square meters.
- 2.3 In the context of new development falling under the Town and Country Planning (Use Classes) Order 1987 (as amended), guidelines have been produced by Welsh Government in order to clarify whether or not SAB approval is required on certain types of development. It is recommended that applicants/developers still contact the SAB in order to definitively determine if SAB approval is required.

3. Statutory Standards for Sustainable Drainage Systems (2018)

- 3.1 The statutory SuDS Standards contain a number of introductory principles for surface water management which SuDS schemes will need to address. Applicants must demonstrate how they have complied with these principles or provide justification for any departure. In doing so, there are six design standards that SuDS schemes need consider:
- S1 - Runoff destination (Hierarchy Standard)
 - S2 - Hydraulic control
 - S3 - Water quality
 - S4 - Amenity
 - S5 - Biodiversity
 - S6 - Construction, operation and maintenance
- 3.2 There are two types of standards. Standard S1 is a hierarchy standard which provides criteria for prioritising the choice of runoff destination, whereas the remaining standards S2 – S6 are fixed standards (although the extent/appropriateness of features required under these standards will be informed by the development scale and type and the runoff destination agreed under Standard S1).
- 3.3 Under Standard S1 there are 5 prioritised levels for identifying surface water runoff designations. These are: surface water harvesting for non-potable water use (level 1), infiltration to ground (level 2), discharge to a surface water body (level 3), discharged to a surface water sewer, highway drain, or another drainage system (level 4) and finally, discharge to a combined sewer (level 5). Level 1 should be met to the maximum extent possible, with lower levels used where required and where justification can be provided. Different levels may be suitable for different parts of a site, and more than one level may be required to sufficiently drain the site.
- 3.4 The sustainable drainage features proposed will also need to satisfy Standards S2 – S6 which set out the design criteria that all sustainable drainage features should satisfy for their construction, operation and maintenance. The aim of Standard S2 (Hydraulic Control) is to manage the surface water runoff from and on a site to protect people on the site from flooding from the drainage system for events up to a suitable return period, to mitigate any increased flood risk to people and property downstream of the site as a result of the development, and to protect the receiving water body from morphological damage. Standard 2.1 requires that surface water should be managed to prevent, so far as possible, any discharge from the site for the majority of rainfall events of less than 5mm.
- 3.5 The guidance advises (at paragraph G2.14) that interception mechanisms are based on runoff volume reduction using rainwater harvesting, evapotranspiration and infiltration processes. Infiltration rates of soils can be marginal (in terms of their use for infiltration system design for large events), but they can be extremely effective at providing Interception. This reinforces the importance of vegetative and soil based SuDS components being used. For smaller sites, a simplified

approach to delivering Interception can be used based on assumed compliance of various drainage components. These components can include for example, green roofs, rainwater harvesting systems, soakaway/infiltration systems, permeable surfaces, swales, infiltration trenches, detention basins, bioretention areas and rain gardens, ponds.

- 3.6 The type of scheme that will be appropriate will therefore vary depending on the site specifics and drainage schemes will need to be integrated into the detailed proposals. In most cases, there will be limited details available regarding the design and layout of development proposals at the strategic planning stage. The Sustainable Drainage statutory guidance suggests that an opportunities mapping exercise in consultation with the SAB could help identify the best location and opportunities for SuDS.

4. Replacement LDP Site Allocations and Site Assessments

- 4.1 The site assessments for the Replacement LDP Deposit Plan are detailed in the Site Assessments background paper (June 2018) Document SD46. These site assessments were undertaken in accordance with the previous statutory regime for drainage and drainage connections i.e. where SuDS and green infrastructure opportunities existed, these were identified.
- 4.2 In addition, where previous studies have indicated that on site attenuation would be required, (e.g. due to topography, known ground conditions and local infrastructure), costs for these works were included in the case study sites used in the broad level LDP development viability assessment (SD34).
- 4.3 As there is now a requirement to apply the statutory sustainable drainage standards, and for SAB approval, this background paper has reviewed the likely on-site opportunities for sustainable drainage in consultation with the Sustainable drainage Approval Board, and concluded whether allocated sites can remain viable in regard to delivering the number of housing units anticipated in the Replacement LDP.
- 4.4 With regards to strategic planning and Local Development Plans, the Sustainable Drainage Statutory Guidance advises that sustainable drainage is considered at an early stage so that developments can accommodate surface features which are more likely to provide multiple benefits (paragraph 2.18). The guidance goes on to recommend consultation with relevant local expertise, such as catchment and coastal partnerships, local wildlife trusts and ecologists. The best results will be obtained if this is initially undertaken at the master planning stage, if there is one, or otherwise at the pre-application stage (paragraph 2.23).
- 4.5 The Council's engineers have advised that if designed in line with the standards and the SAB is engaged at an early design stage, SuDS can be integrated through a development with multiple SuDS features that provide multiple benefits (biodiversity, amenity etc). Pipe to pond type systems are no longer acceptable and if designed correctly future schemes could result in more developable land when compared to simple pipe to pond type systems. Where possible, the use of public open spaces should be used to act as storage during extreme events and

the use of landscaped SuDS components that take up little space and are easily maintainable should be encouraged.

- 4.6 The review process has identified the implications, and a number of site specific recommendations, of the new drainage regime for each Replacement LDP site allocation where construction has not commenced.
- 4.7 Appendix 1 analyses the housing and employment allocations included in the Replacement LDP in regard to their potential to incorporate an appropriate drainage solution, and still be able to deliver the proposed development on the site (e.g. the number of dwellings proposed, or an appropriate mass of employment buildings).
- 4.8 The analysis takes into account comments from stakeholders such as the Council's Countryside and Engineering sections, and identifies any drainage implications and recommendations for the sites. The Council considers that a number and range of SUDs measures can be included within development at the standard net density of approximately 30 dwellings per hectare assumed for housing allocations within the LDP. However, in order to maximise the likelihood of sites delivering the anticipated number of dwellings, and an appropriate drainage solution, the assessments in Appendix 1 have examined the gross area of the allocated sites.
- 4.9 It should also be noted that these findings have been based on the best information available at the present time and are without prejudice to future SAB applications. In order to firmly identify drainage solutions for any developments, appropriate surveys, such as a full ground investigation report, will be required.

5. Development Viability

- 5.1 The Statutory Welsh Government guidance indicates that the incorporation of SuDS can be costs beneficial to developers and Welsh Government has indicated that compliance with the SUDS standards will be costs neutral.
- 5.2 There is currently limited baseline cost information available due to there being no local examples of approved schemes that have progressed through the system to date. While cost information may become available to incorporate into the Plan's development viability assessment, these are unlikely to be representative of typical SuDS costs during the Plan period, at least in the short term, whilst developer and design practices in meeting the Sustainable Drainage Standards develop.
- 5.3 Furthermore, there is likely to be large variance in scheme costs as these will respond to individual site characteristics and development proposals. For example, the commuted sums required to maintain and/or replace the drainage system will vary dependent on the exact nature of the drainage system proposed.
- 5.4 Notwithstanding this, costs for physical attenuation works have been assumed for 5 out of the 11 case study sites, where these were considered necessary due to the characteristics of the site. Page 4 of Appendix 1 of the Viability Report lists additional infrastructure costs that were considered in the assessments such as

attenuation, ground stabilisation works and dealing with ground contamination. The assessments of these sites indicate that, where drainage attenuation works would be required, the development site remained financially viable. These sites are located at a variety of locations across the County Borough, and are of differing sizes, therefore giving a reasonable indication, at this point in time, of the financial cost of any potential drainage works required.

- 5.5 There will be some additional application and development costs which are summarised below. The Council considers that much of the development costs of incorporating SuDs into development proposals will become cost neutral as practice develops.
- 5.6 The local authority is required to adopt sustainable drainage infrastructure and there are instances where commuted sums will be required to cover the future costs of maintenance and replacement where hard infrastructure is proposed.

- Commuted Sums

The use of commuted sums for maintenance is well established. However, there has been considerable variation in their use across Welsh Local Authorities.

Securing a sustainable funding mechanism for the lifetime of development will be a key objective of the SAB. SABs have a responsibility for the management and maintenance of SuDS assets. Commuted sums aim to ensure that the SAB has the resources to cover the upkeep and (where appropriate) the replacement of the assets they have adopted. The effectiveness of SuDS and the associated multiple benefits will rely on appropriate maintenance.

In order to ensure consistency throughout Wales we recommend the use of the industry standard guidance "Commuted Sums for Maintaining Infrastructure Assets" prepared by the CSS (County Surveyors Society), to calculate commuted sums for all drainage assets being adopted by the SAB

- Bond Payments

Non-performance bonds may be required by the SAB as a condition of approval to ensure the SAB has the financial means to remediate poorly constructed or incomplete SuDS.

Assessing the value of the bond is expected to be the subject of detailed discussions between the SAB and developer, before the bond value and its manner of release is set as a condition of approval. Where available industry standard guidance should be used to calculate costs.

The bond will be payable to the SAB if it certifies that the drainage system:

- has been constructed in a manner that is not in accordance with the approved proposals; or
- is unlikely to be completed.

Where the bond has not been drawn down and the SAB is satisfied that the drainage system has been constructed and functions in accordance with approved proposals, the SAB must release the bond:

- within 4 weeks beginning on the first day after the SAB has given notice of its decision to adopt, or
- within 4 weeks of its decision in response to a request to adopt

6. Conclusion

- 6.1 The new sustainable drainage consenting regime has come into place during the latter part of the preparation timescales of the Replacement LDP. Whilst the requirement for SAB approval has only come into place in January 2019, the Council had already considered the opportunities for SUDs through the assessment of Candidate Sites that were submitted as part of the LDP process.
- 6.2 This paper goes further than those initial site assessments and examines existing infrastructure and opportunities for each allocated site. The Council considers that the assessments in this paper demonstrate the sites allocated within the Replacement LDP can viably support sustainable drainage solutions, in terms of economic viability and physical capacity, and can realise the levels of growth in order to deliver the Replacement LDP strategy.
- 6.3 Where issues were identified in terms of the capacity of sites, changes have been proposed, either extending the boundary of the site to increase the flexibility of the site in terms of dealing with drainage issues and delivering the level of housing indicated, or reducing the number of dwellings in order to increase the scope for an acceptable drainage solution. In summary, these changes include:
- **SW3.8 – Land South of Castle Park**
The extension of the site boundary to include the remainder of a field to the south west of the site allocation (approx. 0.4ha) to increase the flexibility the site has in accommodating both the proposed number of dwellings, and a suitable drainage solution.
 - **SW3.15 - Goetre Primary School**
The Council considers that it is appropriate to extend the site boundary to include land to the west of the site (approx. 0.4ha) in order to increase the flexibility the site has in accommodating both the proposed number of dwellings, and a suitable drainage solution.
 - **SW3.19 – Twynyrodyn**
No changes are proposed to the site boundary however, the number of dwellings proposed will be reduced to 120.
 - **SW3.21 – Bradley Gardens 2, Penyard**
No changes are proposed to the site boundary however, the number of dwellings proposed will be reduced to 90.
- 6.4 These changes to the Replacement LDP will be contained in proposed Matters Arising Changes (MACs) as part of the Council's Hearing Statement for Matter 4: Strategic and Housing Site Allocations.

APPENDIX 1: Replacement LDP Allocations and SuDS Opportunities Assessment

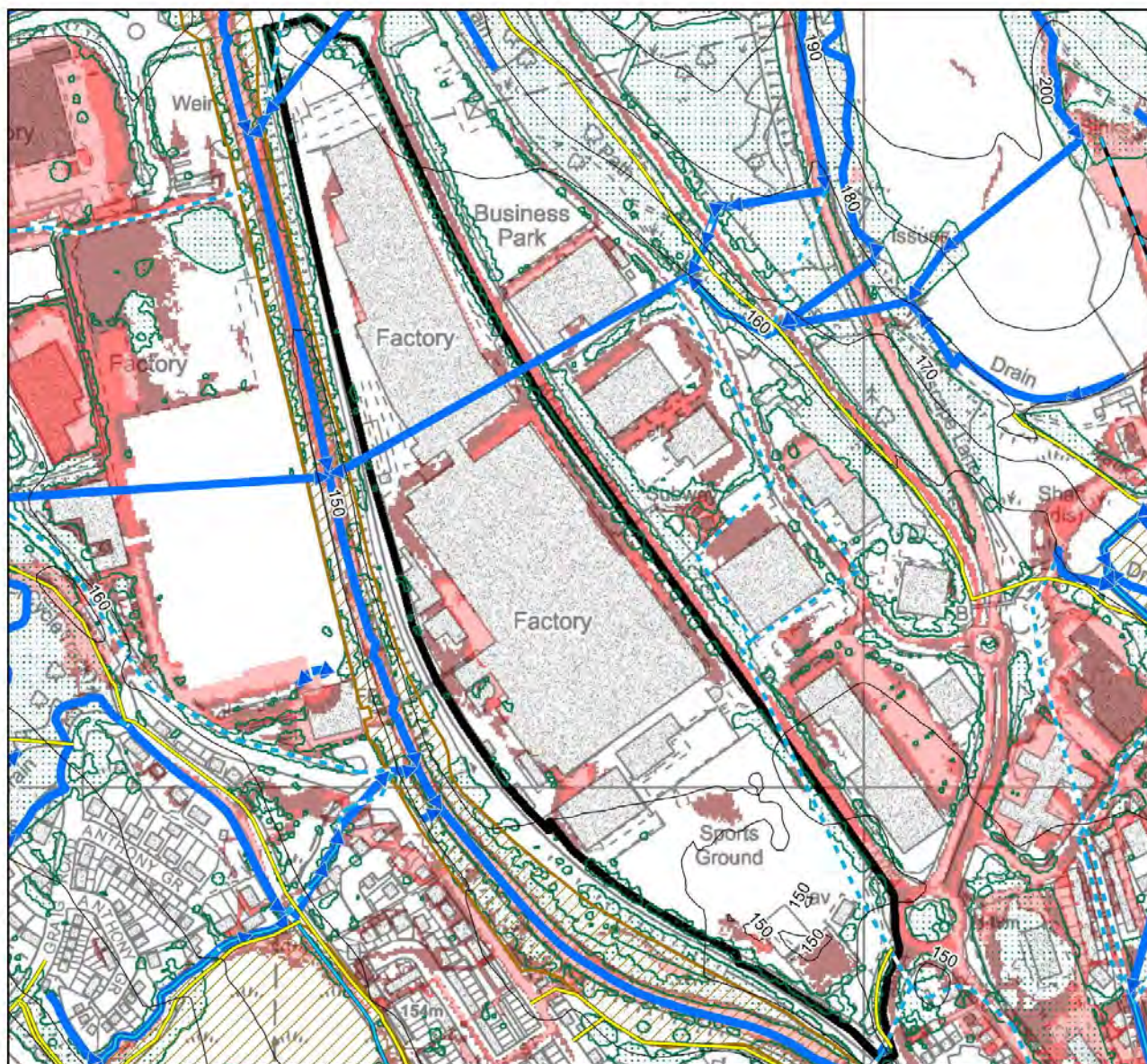


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Merthyr Tydfil Local Development Plan 2016-2031

Allocation Site Name Hoover Site 2

Allocation Site Number SW3-1



Ward: Plymouth

Scale: 1:5,000 / A4

0 40 80 120 160 200 Metres

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Legend

- Contours (10m interval)
- Existing Right Of Way
- Allocation
- SINCs
- Existing Woodland / Trees
- Outside Unitary Authority

Drainage assets / Water courses

- Culvert
- Culvert Assumed Route
- Open Channel
- OS Water Network Data

Risk of Flooding from Surface Water

- Extent 1 in 30
- Extent 1 in 100
- Extent 1 in 1000

Site Ref	SW3.1	Gross site area (ha)	14.42
Site Name	Hoover Factory Site	Net Developable Area (ha)	9
Number of dwellings	440	Undeveloped area (ha)	5.42
		Dwellings per hectare on net area	48.9
Site assessment and SUDS opportunities			
<p>A masterplan has been prepared to assist in delivering the site, and to inform the Replacement LDP. The Hoover Strategic Regeneration Area (HSRA) Masterplan contains a proving layout which demonstrates that the level of growth proposed (440 dwellings) can be accommodated on 9 hectares of land. The relatively high dwellings per hectare figure on the net area is due to the proposals for the development to incorporate higher density dwellings such as flats, apartments and townhouses, in order to capitalise on the sites public transport links.</p> <p>The masterplan has allowed for 4.01ha of functional green open space including green corridors and equipped play areas. Depending upon the precise nature of open space delivered on the site, there is likely to be sufficient scope to use the open space provided as part of the development in order address at least some of the drainage works required.</p> <p>The relatively flat nature of the site, and the fact that it is currently predominantly hard surface, should enable attenuation solutions to be achieved through a number of means such as permeable hard surfacing; surface run-off leading to peripheral rains gardens; and/or attenuation ponds with controlled outflow.</p>			
6Implications and Site Recommendations			
<ul style="list-style-type: none">Development of the site should be in accordance with the sustainable Placemaking design principles set out LDP Policy SW6. E.g. bringing “the River setting ‘into’ the site through incorporating water features/SUDS/watercourses in the public realm.”This should be informed by the HSRA concept plan and framework masterplan.No changes are proposed to the site boundary or to the number of dwellings proposed.			

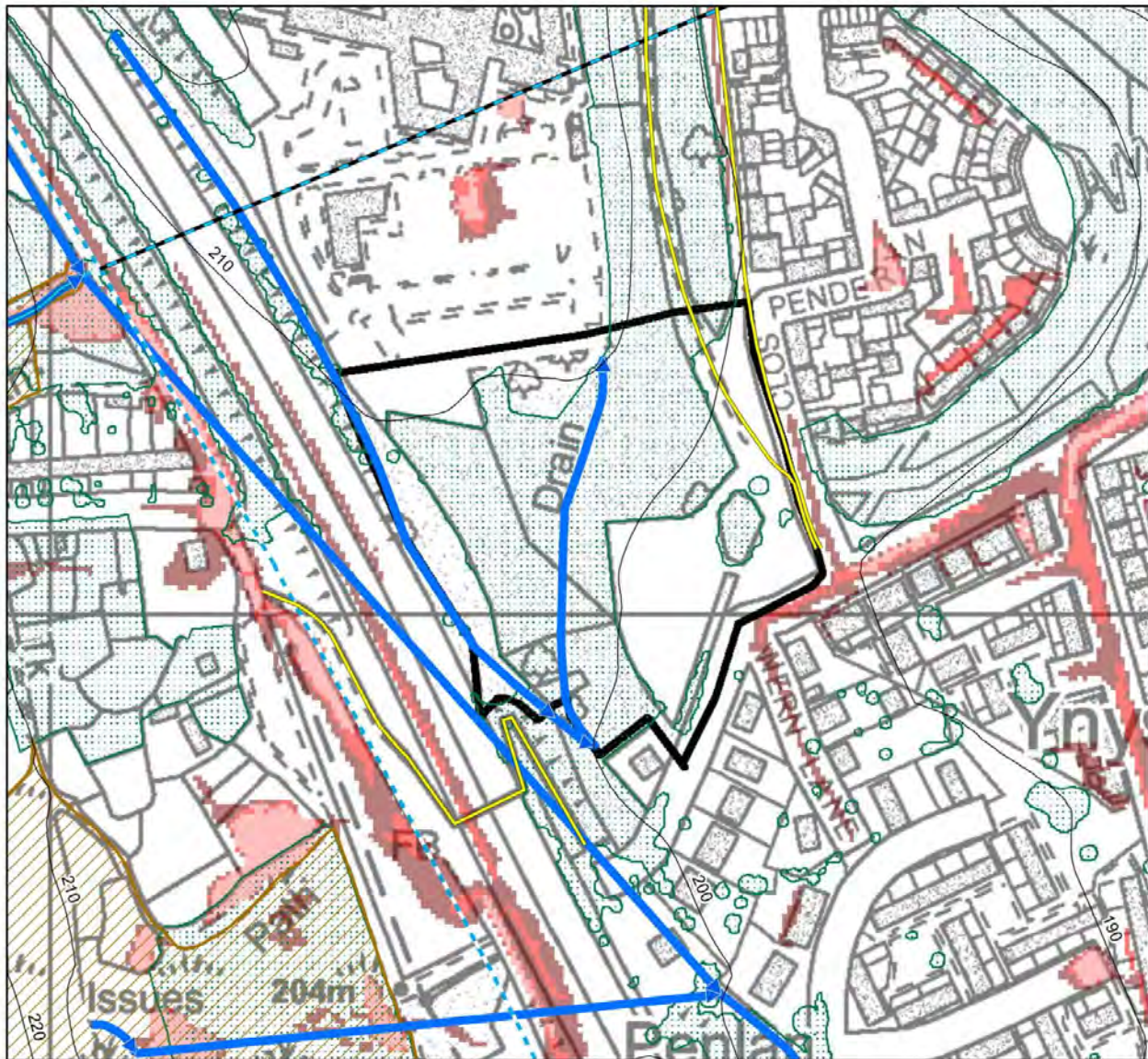


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Merthyr Tydfil Local Development Plan 2016-2031

Allocation Site Name Upper Georgetown Plateau

Allocation Site Number SW3-3



Ward: Cyfarthfa

G/N



Scale: 1:2,500 / A4

0 20 40 60 80 100 Metres

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- SINCs
- Existing Woodland / Trees
- Outside Unitary Authority

Drainage assets / Water courses

- Culvert
- Culvert Assumed Route
- Open Channel
- OS Water Network Data

Risk of Flooding from Surface Water

- Extent 1 in 30
- Extent 1 in 100
- Extent 1 in 1000

Site Ref	SW3.3	Gross site area (ha)	2.47
Site Name	Upper Georgetown Plateau	Net Developable Area (ha)	1.75
Number of dwellings	50	Undeveloped area (ha)	0.72
		Dwellings per hectare on net area	28.6

Site assessment and SUDS opportunities

The site is reclaimed land that previously consisted of industrial blast furnace waste. The site is well vegetated with good tree cover which serves as an important feature to slow down the rate of ingress and run off in its current format. As much tree cover as possible should be retained within the site boundary in order to maintain this function.

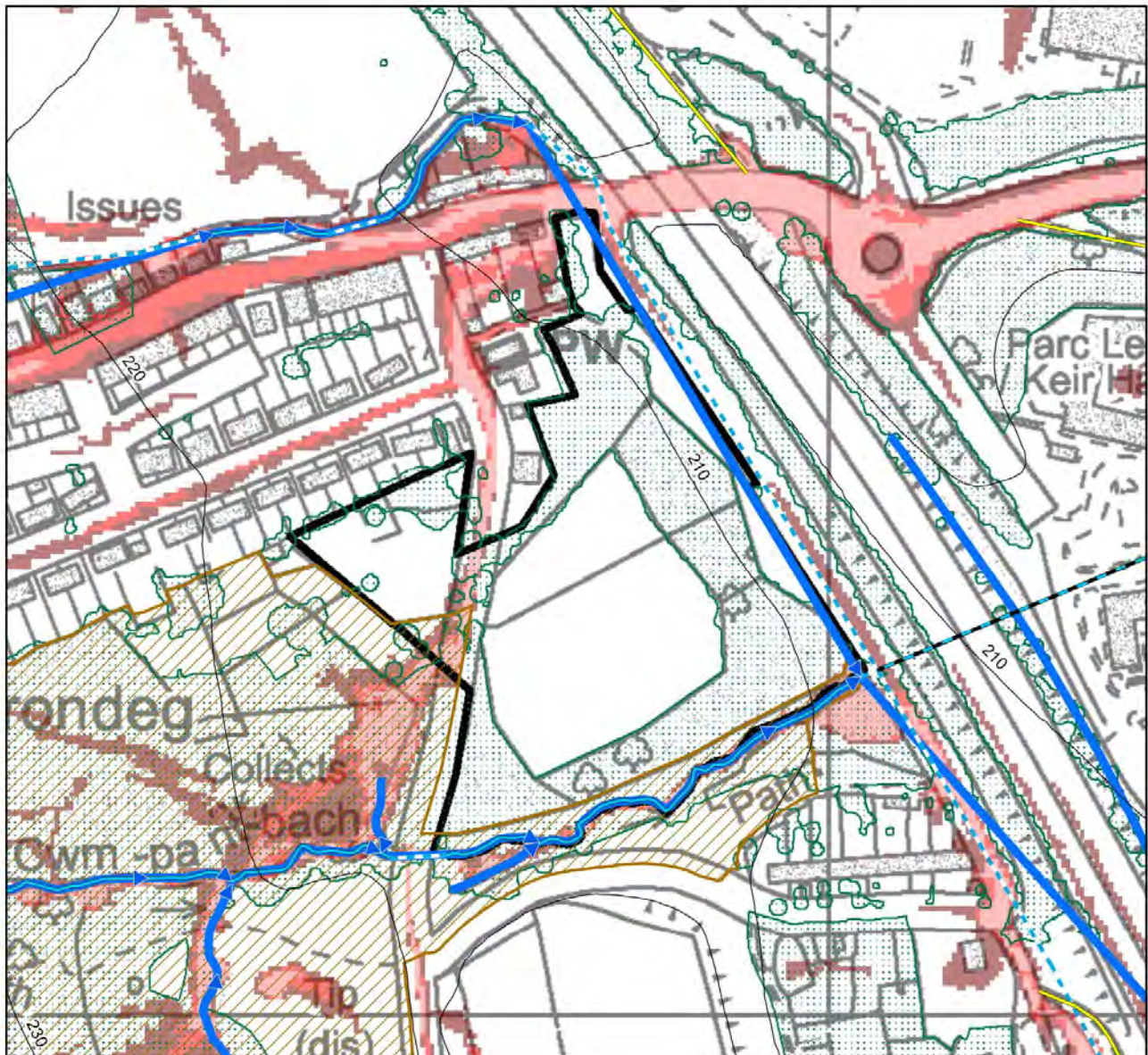
Developed areas of the site should drain to existing drainage channels, but the potential lack of porosity of the substrate and the likely intensity of the development if the vegetated / tree covered areas are not retained are likely to result in the need for other drainage features.

The net developable area of the site is 1.75ha, and depending on the precise nature of development, there should be sufficient scope in the remaining area (0.72ha) to deliver an appropriate drainage solution.

Implications and Site Recommendations

- Development should take place in accordance with Policies *SW11: Sustainable Design and Placemaking*, and *EnW4: Environmental Protection* with regard to issues concerning drainage and the water environment.
- Retention of as much vegetation cover as possible will assist in finding a drainage solution for the development.
- Potential issues with porosity may result in solutions such as swales/attenuation ponds being more appropriate.
- No changes are proposed to the site boundary or to the number of dwellings proposed.

Allocation Site Number SW3-4



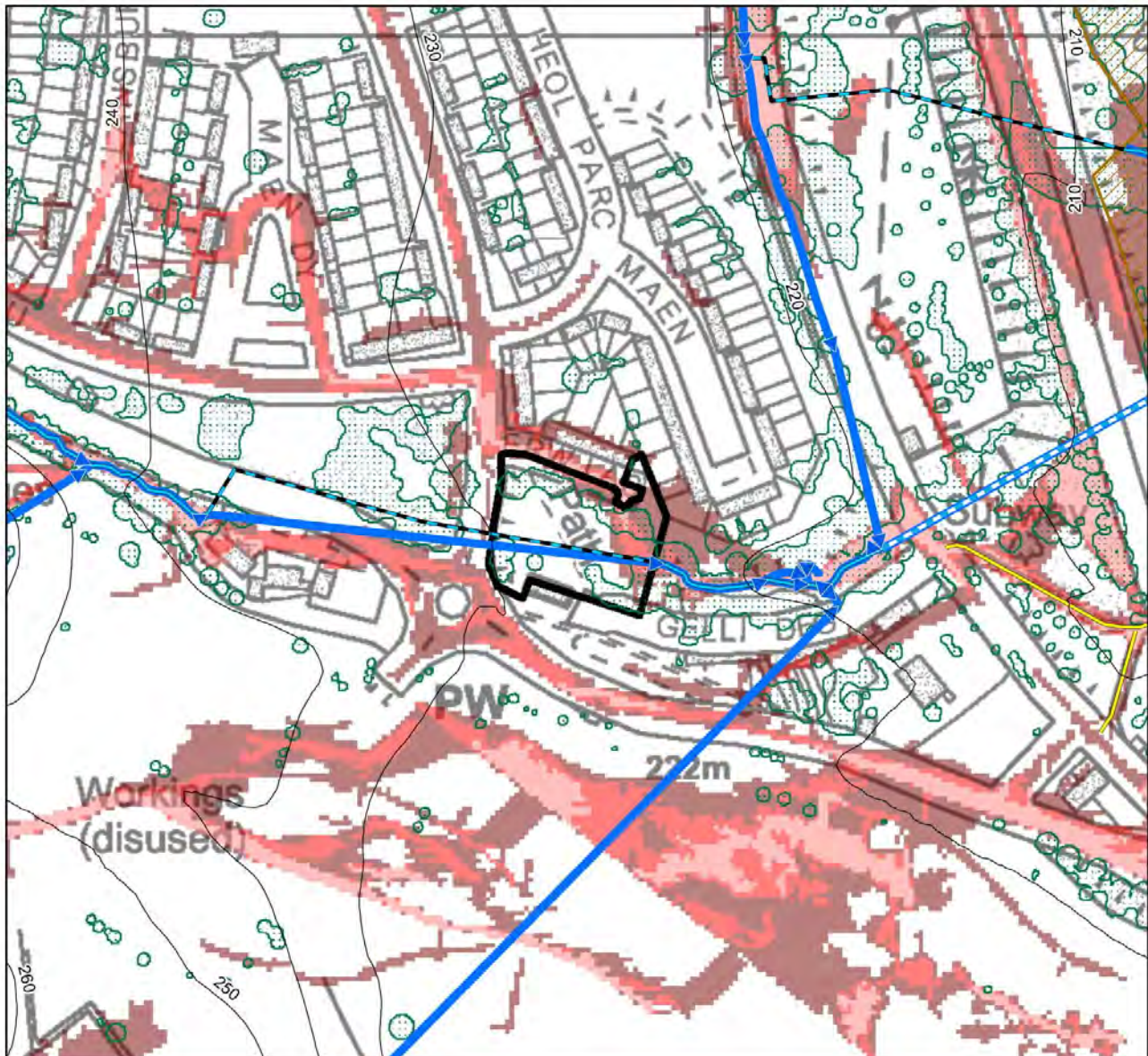
Site Ref	SW3.4	Gross site area (ha)	2.75
Site Name	Brondeg	Net Developable Area (ha)	1.8
Number of dwellings	50	Undeveloped area (ha)	0.95
		Dwellings per hectare on net area	27.8
Site assessment and SUDS opportunities			
<p>The site is reclaimed land that previously consisted of coal spoil waste. The site is well vegetated (particularly around the perimeter of the site) with good tree cover which serves as an important feature to slow down the rate of ingress and run off in its current format. As much tree cover as possible should be retained within the site boundary in order to maintain this function.</p> <p>Developed areas of the site should drain to existing drainage channels at the South and East of the site, but there remains the likelihood that other drainage features may still be required. A central open space that acts as a surface water drain may be appropriate.</p> <p>The net developable area of the site is 1.8ha, and depending on the precise nature of development, there should be sufficient scope in the remaining area (0.95ha) to deliver an appropriate drainage solution.</p>			
Implications and Site Recommendations			
<ul style="list-style-type: none">• Development should take place in accordance with Policies SW11: Sustainable Design and Placemaking, and EnW4: Environmental Protection with regard to issues concerning drainage and the water environment.• Retention of as much vegetation cover as possible will assist in finding a drainage solution for the development, and watercourses to the east and south of the site should be considered for incorporation.• Potential issues with porosity may result in water collection features being more appropriate, potentially as part of a central open space within the development• No changes are proposed to the site boundary or to the number of dwellings proposed.			



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Allocation Site Name Land at Erw Las, Gellideg

Allocation Site Number SW3-5



Ward: Cyfarthfa

Scale: 1:2,500 / A4

0 20 40 60 80 100 Metres

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Legend

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- Allocation
- SINC's
- Existing Woodland / Trees
- Outside Unitary Authority

Drainage assets / Water courses

- Culvert
- Culvert Assumed Route
- Open Channel
- OS Water Network Data

Risk of Flooding from Surface Water

- Extent 1 in 30
- Extent 1 in 100
- Extent 1 in 1000

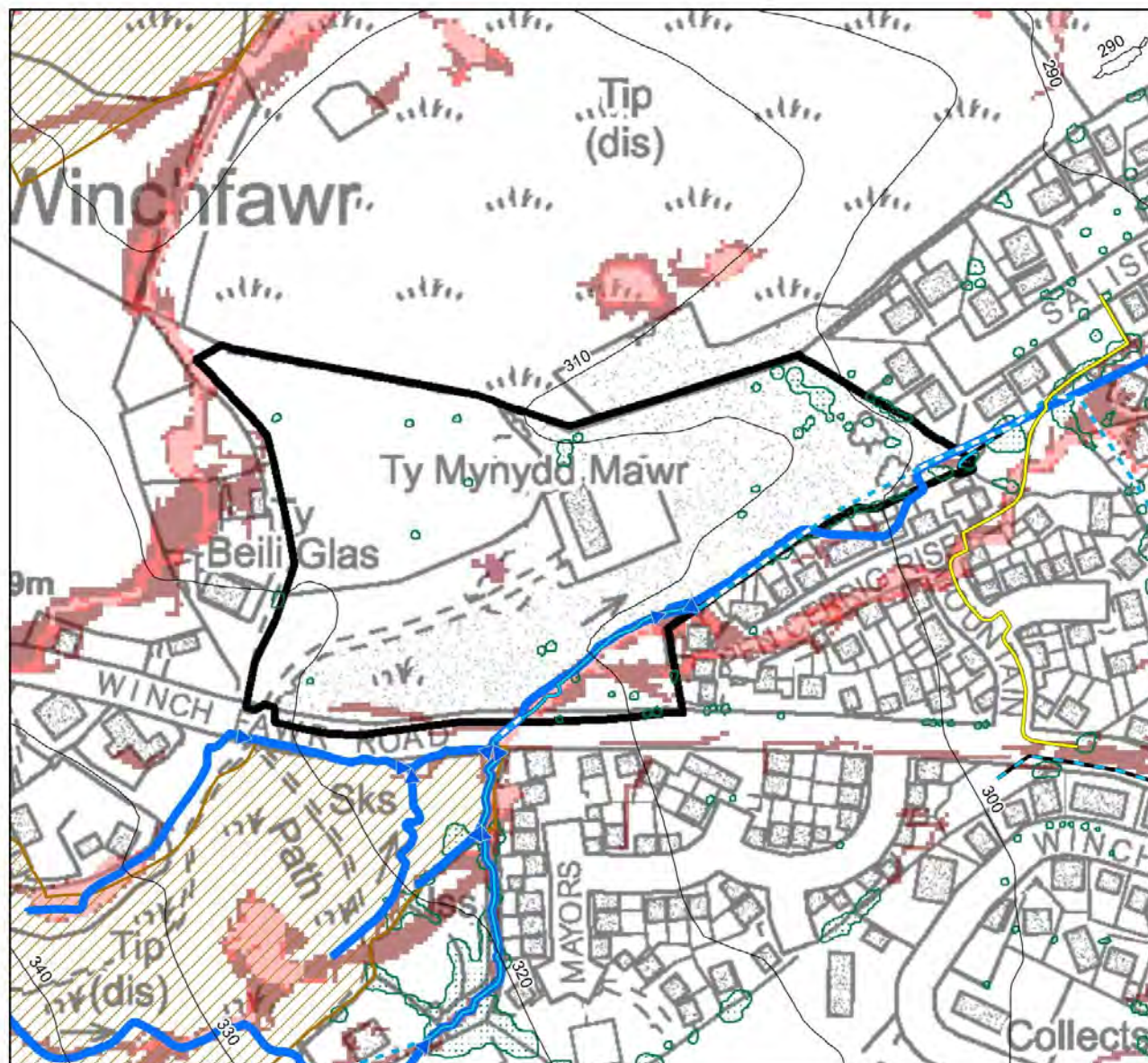
Site Ref	SW3.5	Gross site area (ha)	0.35
Site Name	Erw Las, Gellideg	Net Developable Area (ha)	0.35
Number of dwellings	10	Undeveloped area (ha)	0.0
		Dwellings per hectare on net area	28.6
Site assessment and SUDS opportunities			
The site is well vegetated (particularly around the perimeter of the site), which serves as an important feature to slow down the rate of ingress and run off in its current format. As much tree cover as possible should be retained (in addition to new planting) within the site boundary in order to maintain this function.			
Developed areas of the site should drain to existing drainage channels to the East of the site, but there remains the likelihood that other drainage features may still be required on-site. These measures may be more appropriate on an individual dwellings scale, rather than dealing with the site as a whole, given that the net developable area covers all of the site.			
Implications and Site Recommendations			
<ul style="list-style-type: none">• Development should take place in accordance with Policies SW11: Sustainable Design and Placemaking, and EnW4: Environmental Protection with regard to issues concerning drainage and the water environment.• Retention of as much vegetation cover as possible will assist in finding a drainage solution for the development, and the watercourse to the east of the site should be considered for incorporation.• Surface attenuation is most likely through attenuation tanks and permeable paving.• No changes are proposed to the site boundary or to the number of dwellings proposed.			



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Allocation Site Name Winchfawr

Allocation Site Number SW3-7



Ward: Cyfarthfa

G/N



Scale: 1:2,500 / A4

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Drainage assets / Water courses

- Culvert
- Culvert Assumed Route
- Open Channel
- OS Water Network Data

Risk of Flooding from Surface Water

- Extent 1 in 30
- Extent 1 in 100
- Extent 1 in 1000

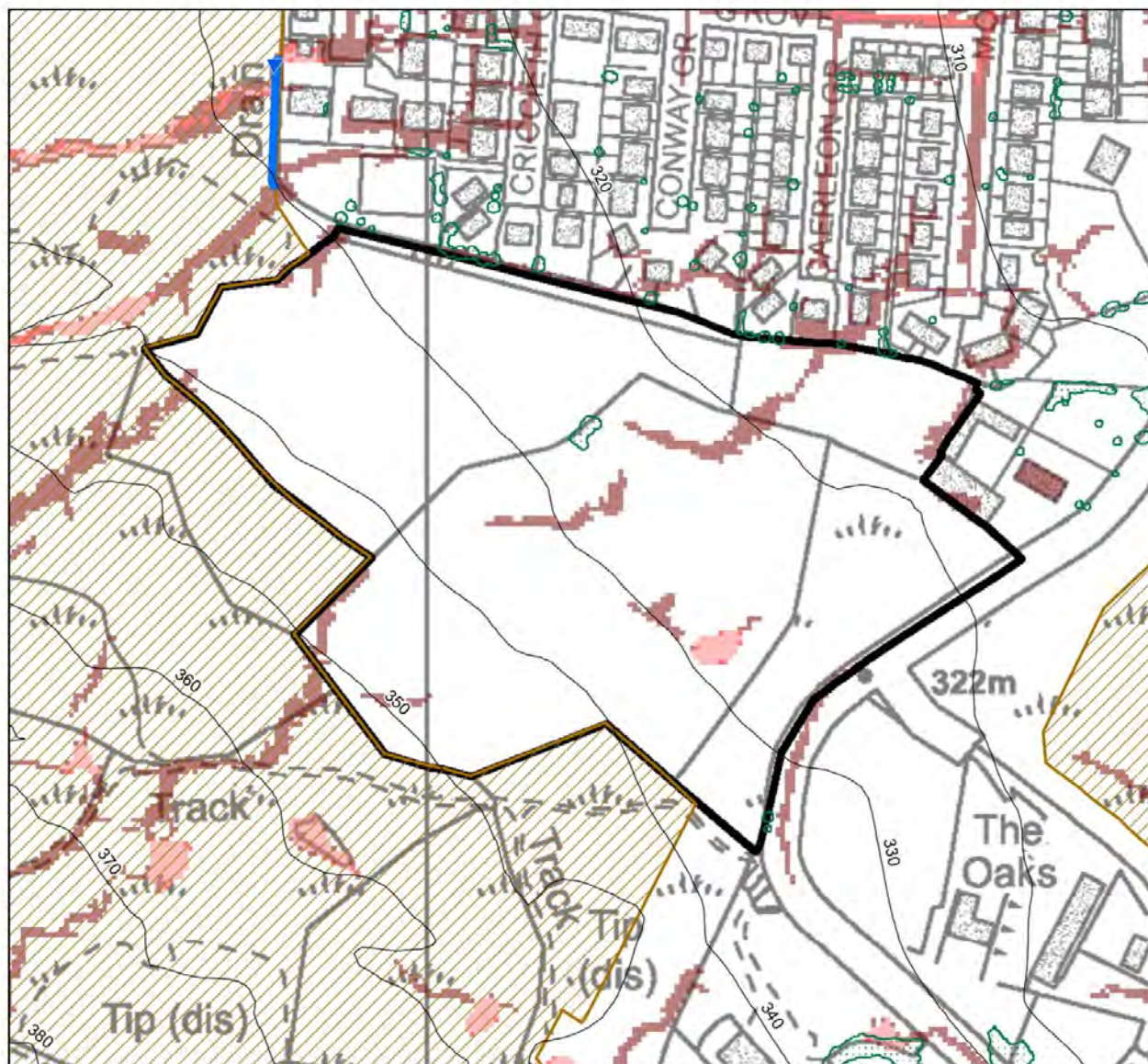
Site Ref	SW3.7	Gross site area (ha)	3.13
Site Name	Winchfawr	Net Developable Area (ha)	1.65
Number of dwellings	20	Undeveloped area (ha)	1.48
		Dwellings per hectare on net area	12.1
Site assessment and SUDS opportunities			
The site lies is situated over two levels which are separated by an existing watercourse.			
Developed areas of the site should drain to this existing channel where appropriate, but there remains the likelihood that other drainage features may still be required on-site. These measures may be more appropriate on an individual dwellings scale as the development proposed will consist of larger, self-build plots, which will physically have enough room to accommodate a variety of measures.			
Potential re-profiling of the site could make use of channels running along contours to capture runoff, slowing the flow from the site.			
Implications and Site Recommendations			
<ul style="list-style-type: none">Development should take place in accordance with Policies <i>SW11: Sustainable Design and Placemaking</i>, and <i>EnW4: Environmental Protection</i> with regard to issues concerning drainage and the water environment.Introduction of significant tree planting as a component of development would contribute to attenuating flows. Also scope to use existing and new topography on the site to incorporate drainage solutions.No changes are proposed to the site boundary or to the number of dwellings proposed.			



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Allocation Site Name Land South of Castle Park, Twyncarmel

Allocation Site Number SW3-8



Ward: Cyfarthfa

G/N



Scale: 1:2,500 / A4

0 20 40 60 80 100 Metres

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- Risk of Flooding from Surface Water**
- Extent 1 in 30
- Extent 1 in 100
- Extent 1 in 1000

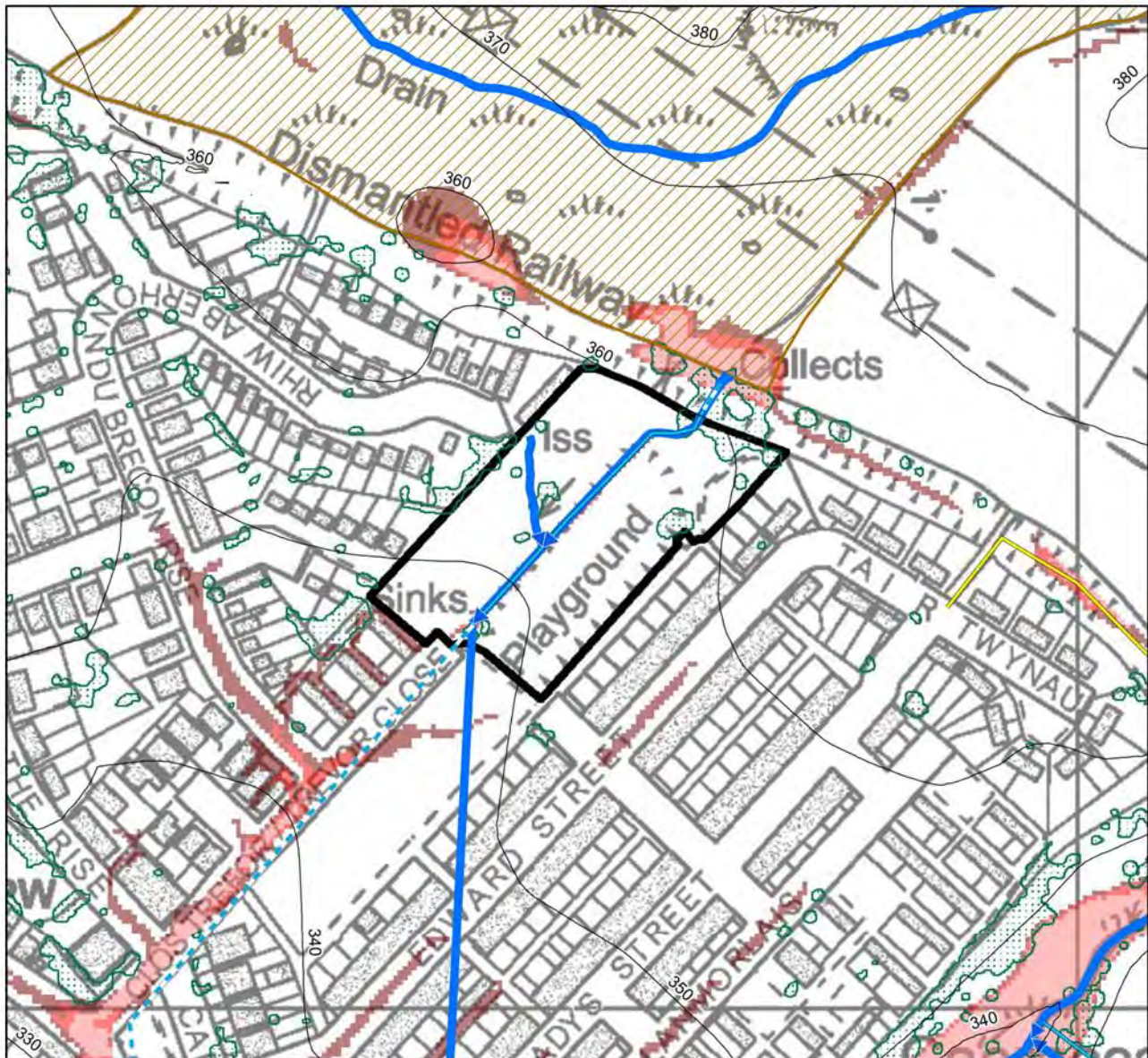
Site Ref	SW3.8	Gross site area (ha)	5.3
Site Name	South of Castle Park	Net Developable Area (ha)	5.3
Number of dwellings	160	Undeveloped area (ha)	0.0
		Dwellings per hectare on net area	30.2
Site assessment and SUDS opportunities			
The proposed density of the site does at present give significant scope to incorporate drainage solutions into any proposed open space on site.			
The site needs to allow for through flow of drainage in a south-west to north-east direction. A central pond or basin within the development could prove an effective solution. The site currently has very little tree cover, which exacerbates any surface run off issues. Existing physical features on site such as hedgerows and field boundaries could also be referenced in drainage solutions.			
Implications and Site Recommendations			
<ul style="list-style-type: none">Development should take place in accordance with Policies <i>SW11: Sustainable Design and Placemaking</i>, and <i>EnW4: Environmental Protection</i> with regard to issues concerning drainage and the water environment.Introduction of significant planting as a component of development would contribute to attenuating flows. Also scope to use existing and new topography on the site to incorporate drainage solutions. A central pond/basin, alongside swales that reflect existing linear features, could provide an effective solution.The Council considers that it is appropriate to extend the site boundary to include the remainder of a field at the south west of the site (approx. 0.4ha) in order to increase the flexibility the site has in accommodating both the proposed number of dwellings, and a suitable drainage solution. A proposed Matters Arising Change will be set out in the Council's Hearing Statement for Matter 4: Strategic and Housing Site Allocations.			



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Allocation Site Name Trevor Close, Pant

Allocation Site Number SW3-10



Ward: Dowlais

Scale: 1:2,500 / A4

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- Outside Unitary Authority

Drainage assets / Water courses

- Culvert
- Culvert Assumed Route
- Open Channel
- OS Water Network Data

Risk of Flooding from Surface Water

- Extent 1 in 30
- Extent 1 in 100
- Extent 1 in 1000

Site Ref	SW3.10	Gross site area (ha)	1.15
Site Name	Trevor Close, Pant	Net Developable Area (ha)	1.15
Number of dwellings	20	Undeveloped area (ha)	0.0
		Dwellings per hectare on net area	17.4
Site assessment and SUDS opportunities			
<p>Whilst all of the site is included in the net developable area, there remains scope to incorporate drainage solutions into the design of the scheme due to the lower density of dwellings proposed.</p> <p>An existing watercourse that runs through the centre of the site provides an opportunity to create an area of green space that is integrated with a drainage solution appropriate for the proposed development. There is then scope for this area to integrate with an area of open space immediately to the South of the site and create a larger green space that provides a drainage solution, and an area of recreational benefit for the wider community.</p>			
Implications and Site Recommendations			
<ul style="list-style-type: none">Development should take place in accordance with Policies SW11: Sustainable Design and Placemaking, and EnW4: Environmental Protection with regard to issues concerning drainage and the water environment.The existing watercourse that runs through the centre of the site should feature linear landscape features that also provide attenuation. The adjacent open space could also be used to develop a wetland/wildlife area that also provides a drainage solution.No changes are proposed to the site boundary or to the number of dwellings proposed.			

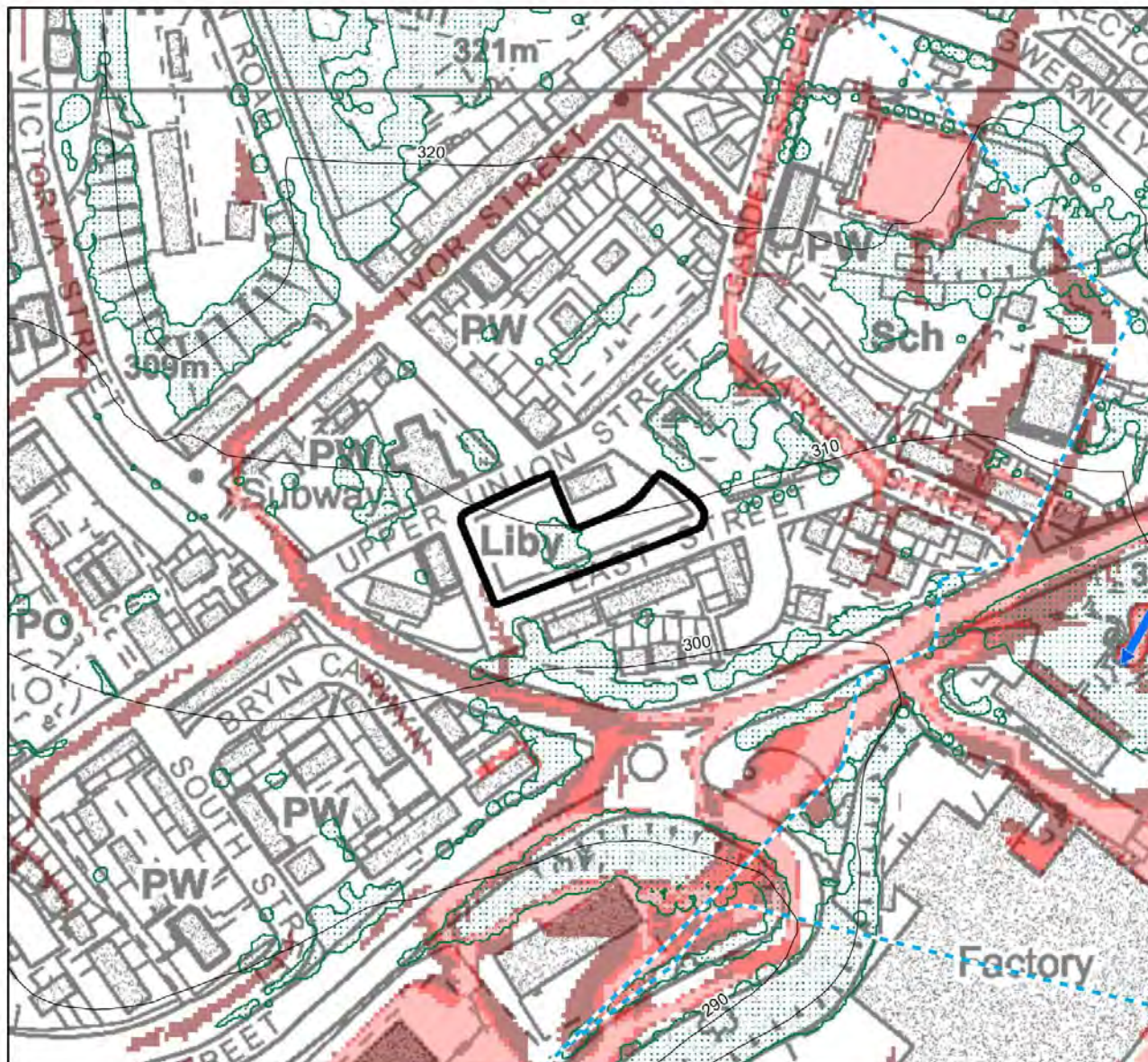


Cynllun Datblygu Lleol Merthyr Tudful 2016-2031

Merthyr Tydfil Local Development Plan 2016-2031

Allocation Site Name East Street, Dowlais

Allocation Site Number SW3-11



Ward: Dowlais

G/N



Scale: 1:2,500 / A4

0 20 40 60 80 100 Metres

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Legend

- Contours (10m interval)
- Existing Right Of Way
- Allocation
- SINCs
- Existing Woodland / Trees
- Outside Unitary Authority

Drainage assets / Water courses

- Culvert
- Culvert Assumed Route
- Open Channel
- OS Water Network Data

Risk of Flooding from Surface Water

- Extent 1 in 30
- Extent 1 in 100
- Extent 1 in 1000

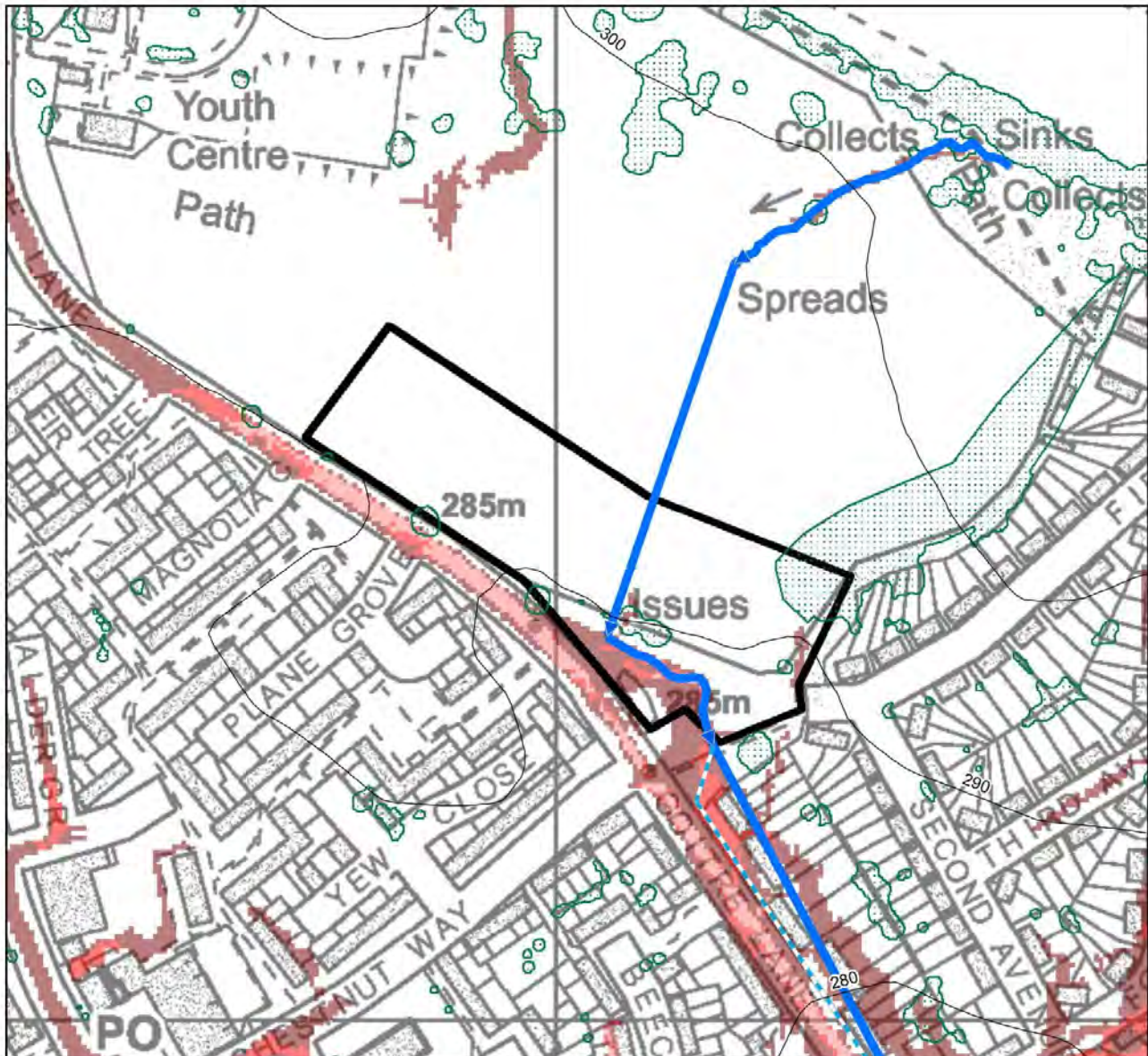
Site Ref	SW3.11	Gross site area (ha)	0.29
Site Name	East Street, Dowlais	Net Developable Area (ha)	0.29
Number of dwellings	10	Undeveloped area (ha)	0.0
		Dwellings per hectare on net area	34.5
Site assessment and SUDS opportunities			
Site is constrained by its size and topography, however drainage issues could be addressed by ensuring that hard surface areas are to be made permeable with infiltration to subterranean attenuation tanks.			
Rain gardens that utilise urban tree planting could also provide a solution, as well as the use of hollow cell subterranean structures to act as attenuation storage in combination with street tree planting.			
Implications and Site Recommendations			
<ul style="list-style-type: none">Development should take place in accordance with Policies SW11: Sustainable Design and Placemaking, and EnW4: Environmental Protection with regard to issues concerning drainage and the water environment.Site is constrained, however subterranean storage and permeable hard surfacing measure should enable a suitable solution for the site.No changes are proposed to the site boundary or to the number of dwellings proposed.			



Cynllun Datblygu Lleol Merthyr Tudful 2016-2031 Merthyr Tydfil Local Development Plan 2016-2031

Allocation Site Name Pen-y-dre

Allocation Site Number SW3-14



Ward: Gurnos

G/N

Scale: 1:2,500 / A4

0 20 40 60 80 100 Metres

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Legend

- Contours (10m interval)
- Existing Right Of Way
- Allocation
- SINCs
- Existing Woodland / Trees
- Outside Unitary Authority

Drainage assets / Water courses

- Culvert
- Culvert Assumed Route
- Open Channel
- OS Water Network Data

Risk of Flooding from Surface Water

- Extent 1 in 30
- Extent 1 in 100
- Extent 1 in 1000

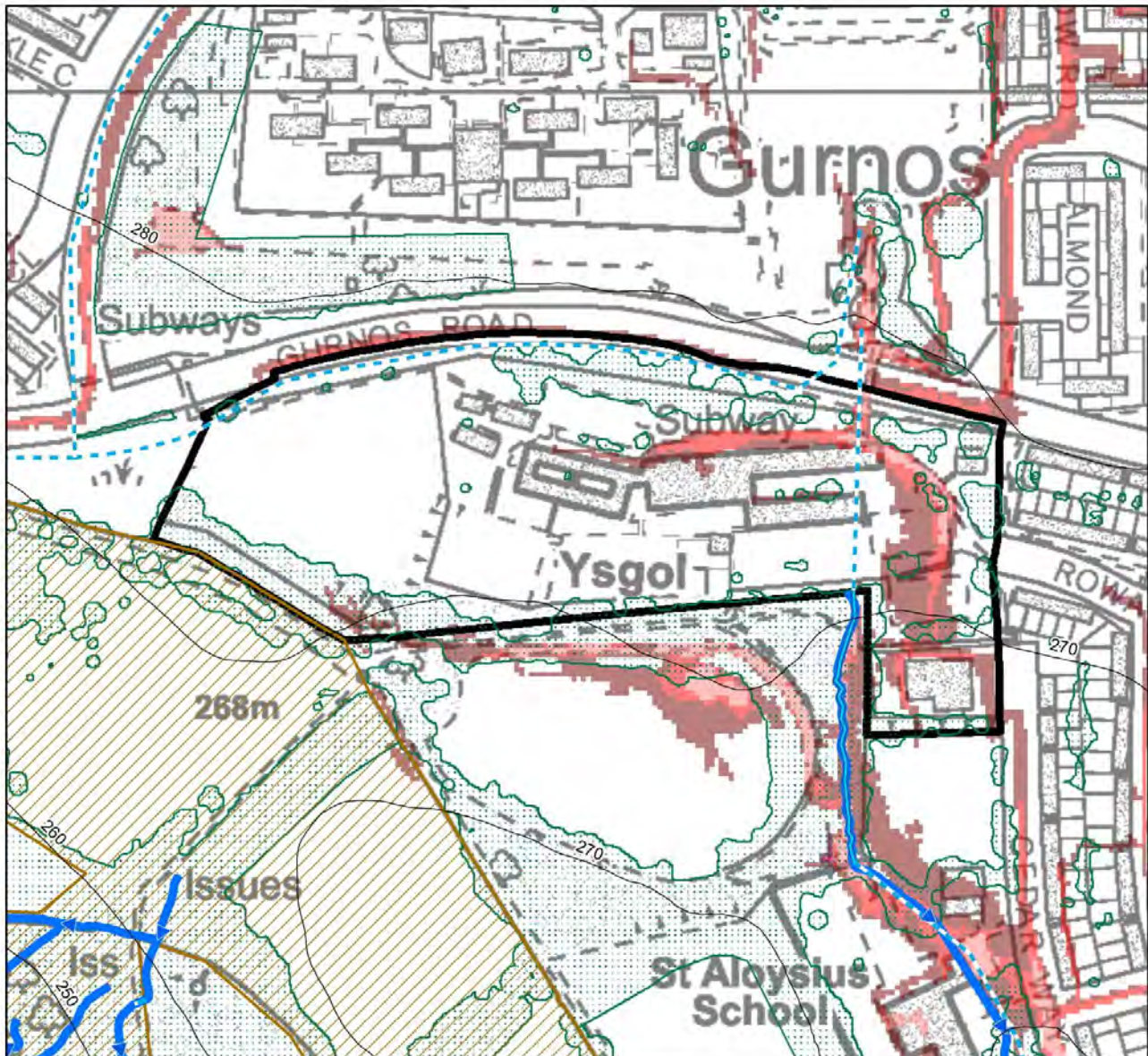
Site Ref	SW3.14	Gross site area (ha)	1.55
Site Name	Pen y Dre Fields, Gurnos	Net Developable Area (ha)	1.55
Number of dwellings	40	Undeveloped area (ha)	0.0
		Dwellings per hectare on net area	25.8
Site assessment and SUDS opportunities			
The proposed density of the site potentially limits the scope to incorporate drainage solutions into any proposed open space on the site however an area at the south eastern corner is situated at a lower level and may lend itself to providing the drainage solution for the development.			
Land adjacent to the site is also under the same ownership and has the potential to be incorporated into any potential drainage measures.			
Implications and Site Recommendations			
<ul style="list-style-type: none">Development should take place in accordance with Policies SW11: Sustainable Design and Placemaking, and EnW4: Environmental Protection with regard to issues concerning drainage and the water environment.Linear swales or an attenuation ditch along the southern boundary of the site could prove a suitable solution, capitalising on the area at the south east corner of the site.No changes are proposed to the site boundary or to the number of dwellings proposed.			



Cynllun Datblygu Lleol Merthyr Tudful 2016-2031 Merthyr Tydfil Local Development Plan 2016-2031

Allocation Site Name Goetre, Gurnos and St Aloysius school sites

Allocation Site Number SW3-15



Ward: Gurnos

G/N

Scale: 1:2,500 / A4

0 20 40 60 80 100 Metres

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Drainage assets / Water courses

- Culvert
- Culvert Assumed Route
- Open Channel
- OS Water Network Data

Risk of Flooding from Surface Water

- Extent 1 in 30
- Extent 1 in 100
- Extent 1 in 1000

Site Ref	SW3.15	Gross site area (ha)	3.82
Site Name	Goetre Primary School	Net Developable Area (ha)	3.82
Number of dwellings	120	Undeveloped area (ha)	0.0
		Dwellings per hectare on net area	31.4
Site assessment and SUDS opportunities			
<p>The proposed density of the site potentially limits the scope to incorporate drainage solutions into any proposed open space on the site, however there are still a number of drainage solution possible.</p> <p>The site is located adjacent to Cyfarthfa Park, and the tree cover and existing watercourses that run through the park could be factored in to any drainage solutions proposed as part of development of this site.</p> <p>Development of the site should make use of the southern boundary of the site by retaining as much vegetation as possible.</p>			
Implications and Site Recommendations			
<ul style="list-style-type: none">• Development should take place in accordance with Policies SW11: Sustainable Design and Placemaking, and EnW4: Environmental Protection with regard to issues concerning drainage and the water environment.• A series of attenuation ponds/ditches coupled with an increased level of tree cover throughout the site, could provide an appropriate drainage solution.• The Council considers that it is appropriate to extend the site boundary to include land to the west of the site (approx. 0.4ha) in order to increase the flexibility the site has in accommodating both the proposed number of dwellings, and a suitable drainage solution. A proposed Matters Arising Change will be set out in the Council's Hearing Statement for Matter 4: Strategic and Housing Site Allocations.			

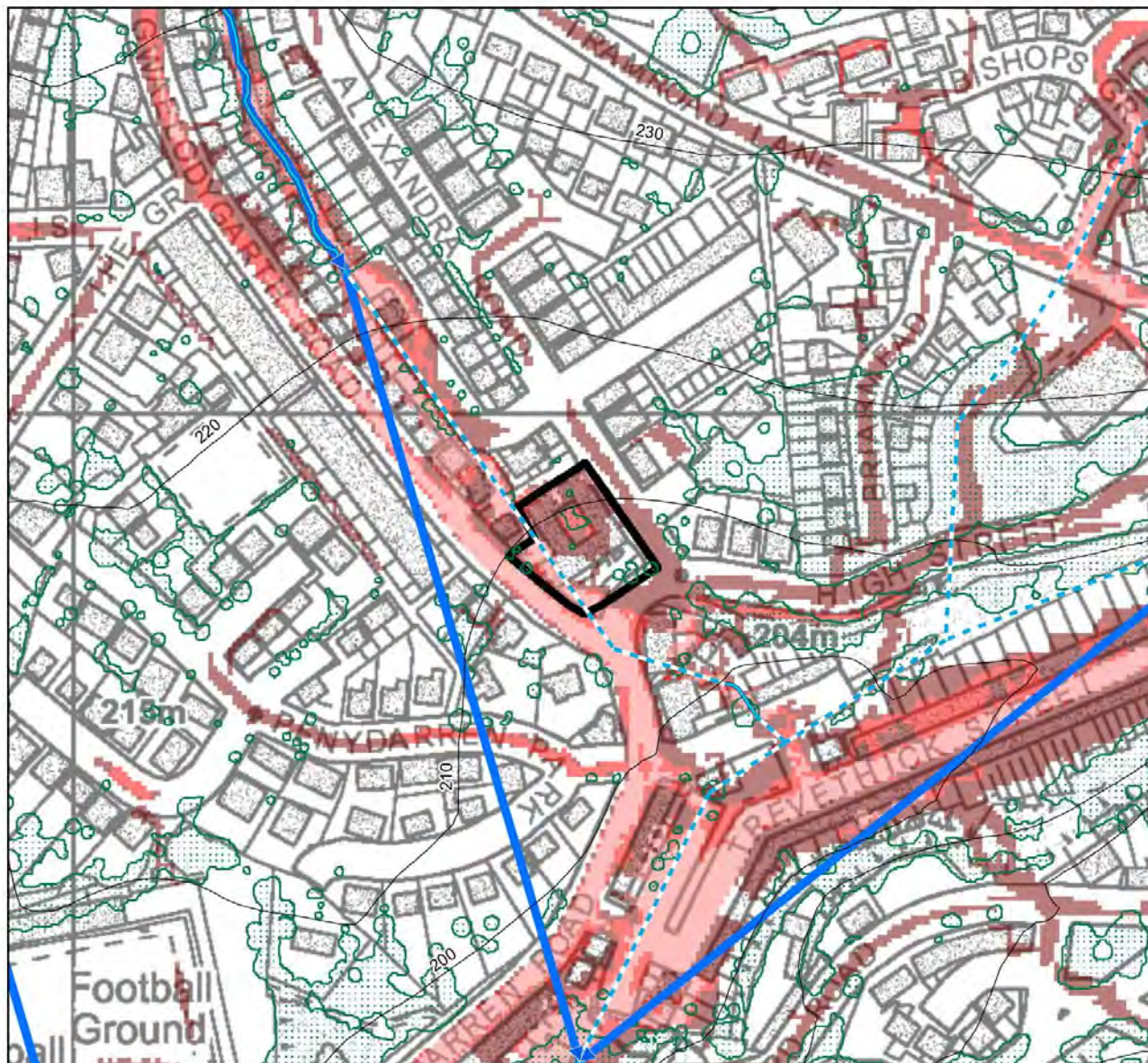


Cynllun Datblygu Lleol Merthyr Tudful 2016-2031

Merthyr Tydfil Local Development Plan 2016-2031

Allocation Site Name Former Merthyr Care Home,

Allocation Site Number SW3-16



Ward: Park



Scale: 1:2,500 / A4

0 20 40 60 80 100 Metres

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- Existing Woodland / Trees
- Outside Unitary Authority

Drainage assets / Water courses

- Culvert
- Culvert Assumed Route
- Open Channel
- OS Water Network Data

Risk of Flooding from Surface Water

- Extent 1 in 30
- Extent 1 in 100
- Extent 1 in 1000

Site Ref	SW3.16	Gross site area (ha)	0.2
Site Name	Former Merthyr Care Home	Net Developable Area (ha)	0.2
Number of dwellings	20	Undeveloped area (ha)	0.0
		Dwellings per hectare on net area	100
Site assessment and SUDS opportunities			
The proposed high density of the site limits the scope to incorporate drainage solutions into any proposed open space on the site. If development of the site takes the form of converting the existing building, then SAB approval would not be required.			
Implications and Site Recommendations			
<ul style="list-style-type: none">Development should take place in accordance with Policies SW11: Sustainable Design and Placemaking, and EnW4: Environmental Protection with regard to issues concerning drainage and the water environment.Rain gardens and street trees would be the most likely options to provide a drainage solution.No changes are proposed to the site boundary or to the number of dwellings proposed.			

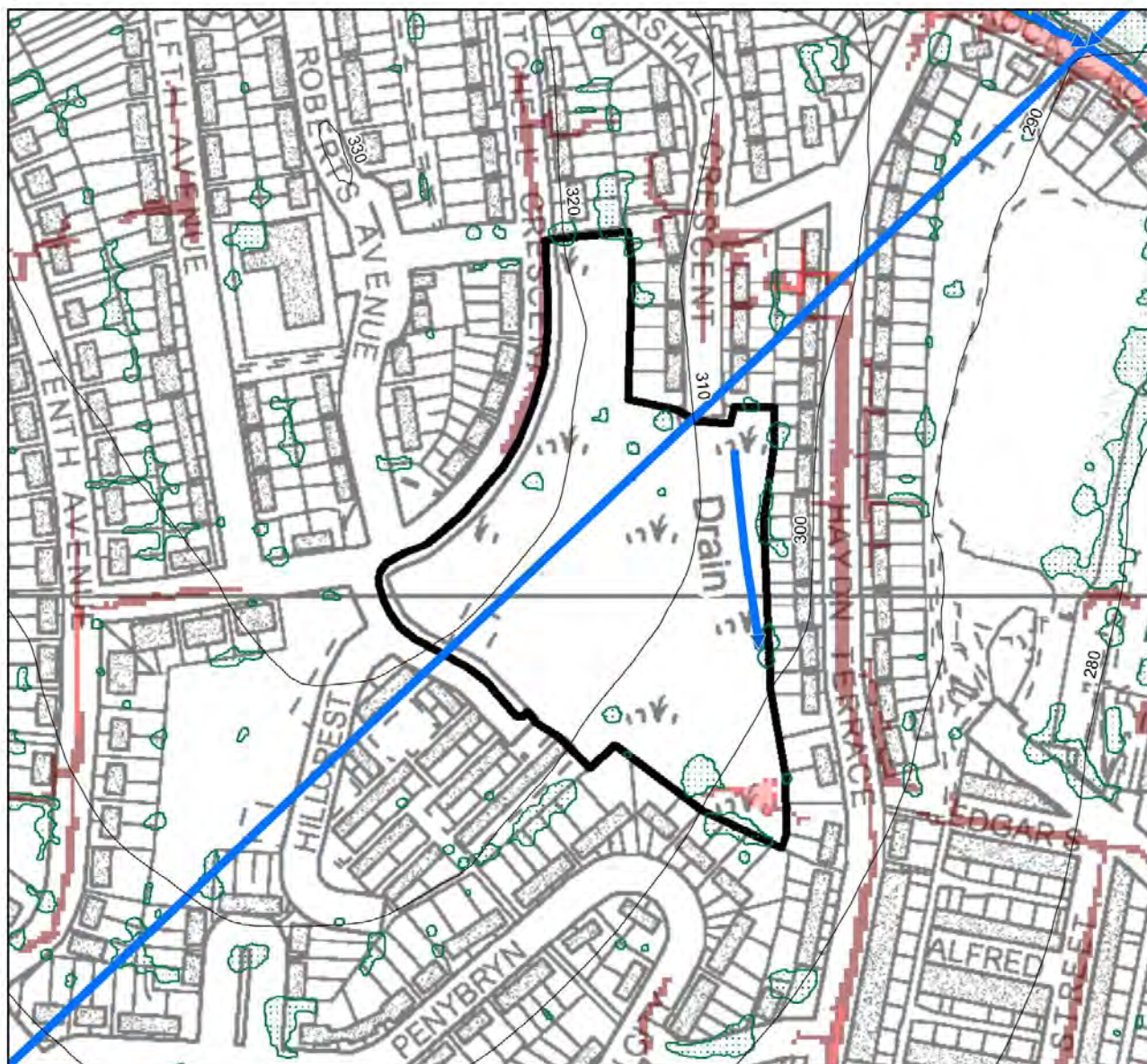


Cynllun Datblygu Lleol Merthyr Tudful 2016-2031

Merthyr Tydfil Local Development Plan 2016-2031

Allocation Site Name Hillcrest Park/Haydn Terrace

Allocation Site Number SW3-17



Ward: Penydarren

G/N



Scale: 1:2,500 / A4

0 20 40 60 80 100 Metres

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- Existing Woodland / Trees
- Outside Unitary Authority

Drainage assets / Water courses

- Culvert
- Culvert Assumed Route
- Open Channel
- OS Water Network Data

Risk of Flooding from Surface Water

- Extent 1 in 30
- Extent 1 in 100
- Extent 1 in 1000

Site Ref	SW3.17	Gross site area (ha)	2.24
Site Name	Haydn Terrace, Penydarren	Net Developable Area (ha)	1.3
Number of dwellings	40	Undeveloped area (ha)	0.94
		Dwellings per hectare on net area	30.8
Site assessment and SUDS opportunities			
The site slopes steeply from west to east and has limited tree/vegetation cover.			
There is little hard surface treatment on site, and therefore the site is able to provide some attenuation in heavy periods of rainfall. An attenuation pond/basin at the south east corner of the site may provide a suitable drainage solution whilst capitalising on the topography of the site. Increased planting is also recommended in order to slow down rates of surface run off.			
Implications and Site Recommendations			
<ul style="list-style-type: none">Development should take place in accordance with Policies SW11: Sustainable Design and Placemaking, and EnW4: Environmental Protection with regard to issues concerning drainage and the water environment.A series of swales and ponds would potentially make the most efficient use of the site in regard to a drainage solution.No changes are proposed to the site boundary or to the number of dwellings proposed.			

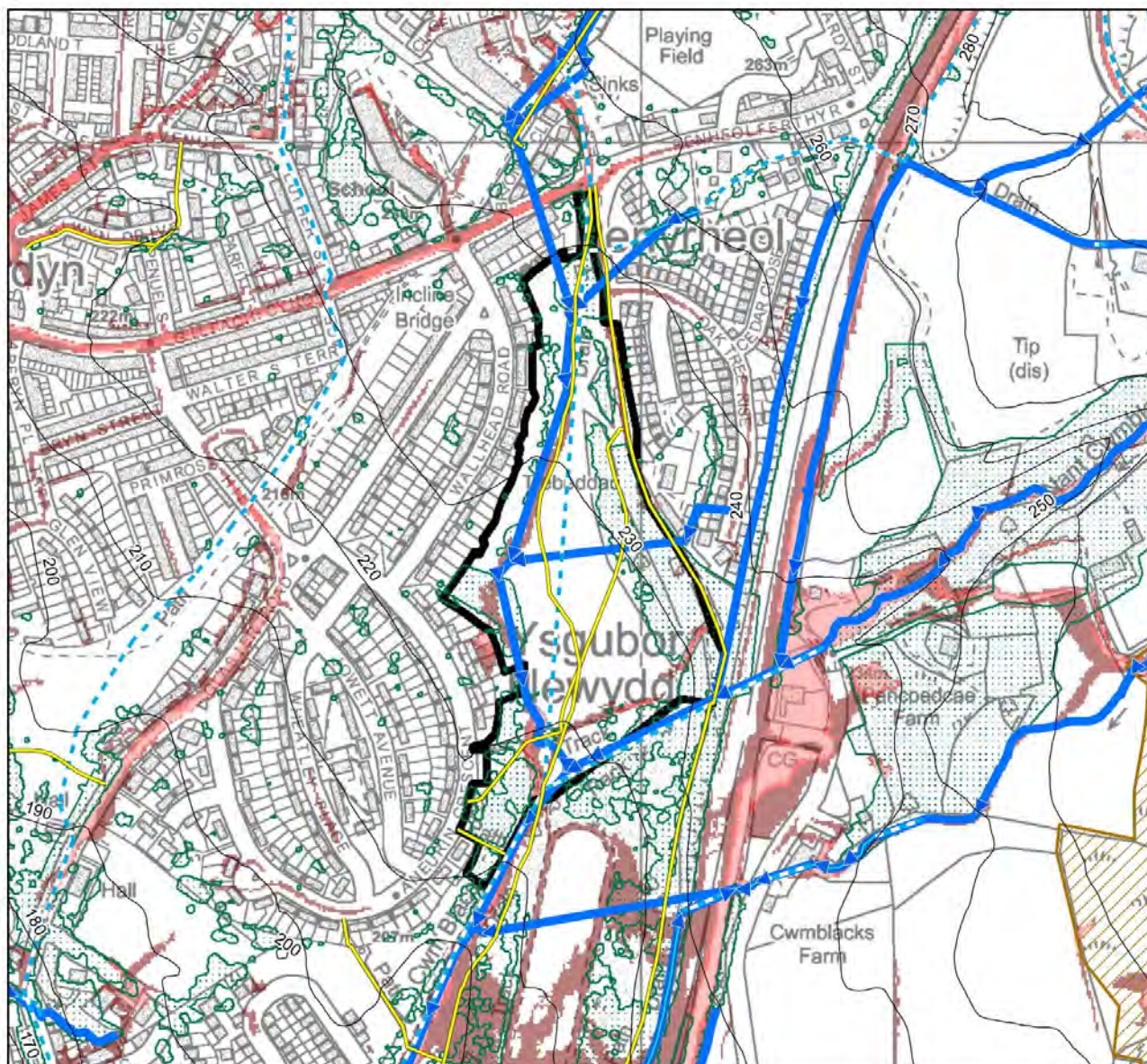


Cynllun Datblygu Lleol Merthyr Tudful 2016-2031

Merthyr Tydfil Local Development Plan 2016-2031

Allocation Site Name Penheolferthyr, Twynyrodyn

Allocation Site Number SW3-19



Ward: Town



Scale: 1:5,000 / A4

0 40 80 120 160 200 Metres

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Legend

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- SINCs
- Existing Woodland / Trees
- Outside Unitary Authority

Drainage assets / Water courses

- Culvert
- Culvert Assumed Route
- Open Channel
- OS Water Network Data

Risk of Flooding from Surface Water

- Extent 1 in 30
- Extent 1 in 100
- Extent 1 in 1000

Site Ref	SW3.19	Gross site area (ha)	5.76
Site Name	Twynyrodyn	Net Developable Area (ha)	4.2
Number of dwellings	150	Undeveloped area (ha)	1.56
		Dwellings per hectare on net area	35.7
Site assessment and SUDS opportunities			
<p>The site slopes from north to south and is traversed by several existing watercourses. There is significant tree/vegetation cover along the east and west perimeter of the sites which should be incorporated into the layout of development. An indicative layout has been submitted to the Council by a national housebuilder that indicates that 120 dwellings are able to be accommodated on the site.</p>			
<p>There is little hard surface treatment on site, and therefore the site is able to provide some attenuation in heavy periods of rainfall. An attenuation pond/basin at the south of the site may provide a suitable drainage solution whilst capitalising on the topography of the site. Increased planting is also recommended in order to slow down rates of surface run off.</p>			
<p>The development needs to make use of drainage as a feature, and incorporate open space as a place where a natural landscape will provide the necessary attenuation through good design practice.</p>			
Implications and Site Recommendations			
<ul style="list-style-type: none">Development should take place in accordance with Policies <i>SW11: Sustainable Design and Placemaking</i>, and <i>EnW4: Environmental Protection</i> with regard to issues concerning drainage and the water environment.A series of swales and ponds would potentially make the most efficient use of the site in regard to a drainage solution. Rain gardens that front onto open watercourses and free draining paved areas may also be appropriate.No changes are proposed to the site boundary however, the number of dwellings proposed will be reduced to 120. This change will be reflected in proposed Matters Arising Changes to be included in the Council's Hearing Statement for Matter 4: Strategic and Housing Site Allocations.			

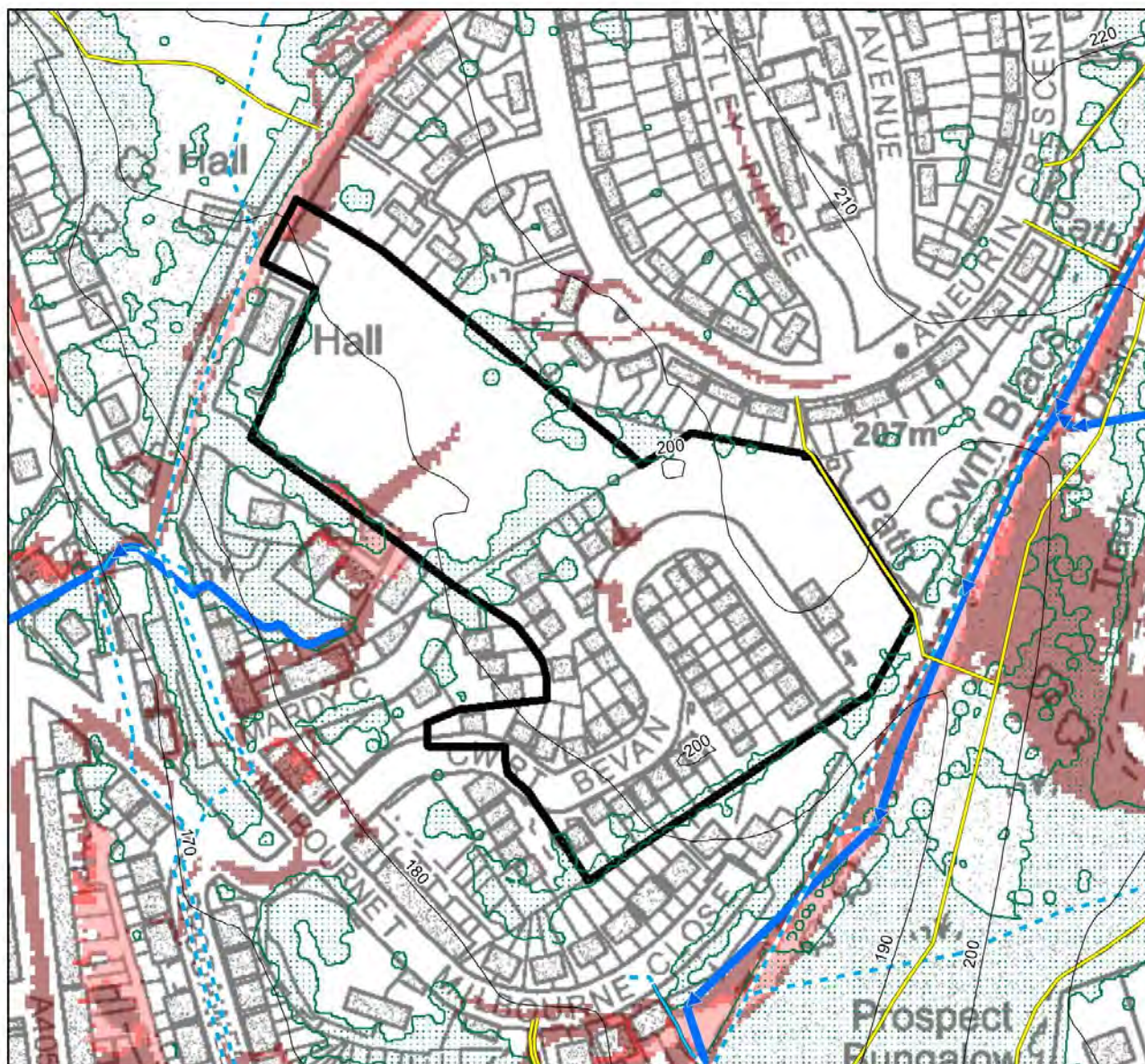


Cynllun Datblygu Lleol Merthyr Tudful 2016-2031

Merthyr Tydfil Local Development Plan 2016-2031

Allocation Site Name Former Mardy Hospital, Twynyrodyn

Allocation Site Number SW3-20



Ward: Town

G/N



Scale: 1:2,500 / A4

0 20 40 60 80 100 Metres

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Legend

- Contours (10m interval)
- Existing Right Of Way
- Allocation
- SINCs
- Existing Woodland / Trees
- Outside Unitary Authority

Drainage assets / Water courses

- Culvert
- Culvert Assumed Route
- Open Channel
- OS Water Network Data

Risk of Flooding from Surface Water

- Extent 1 in 30
- Extent 1 in 100
- Extent 1 in 1000

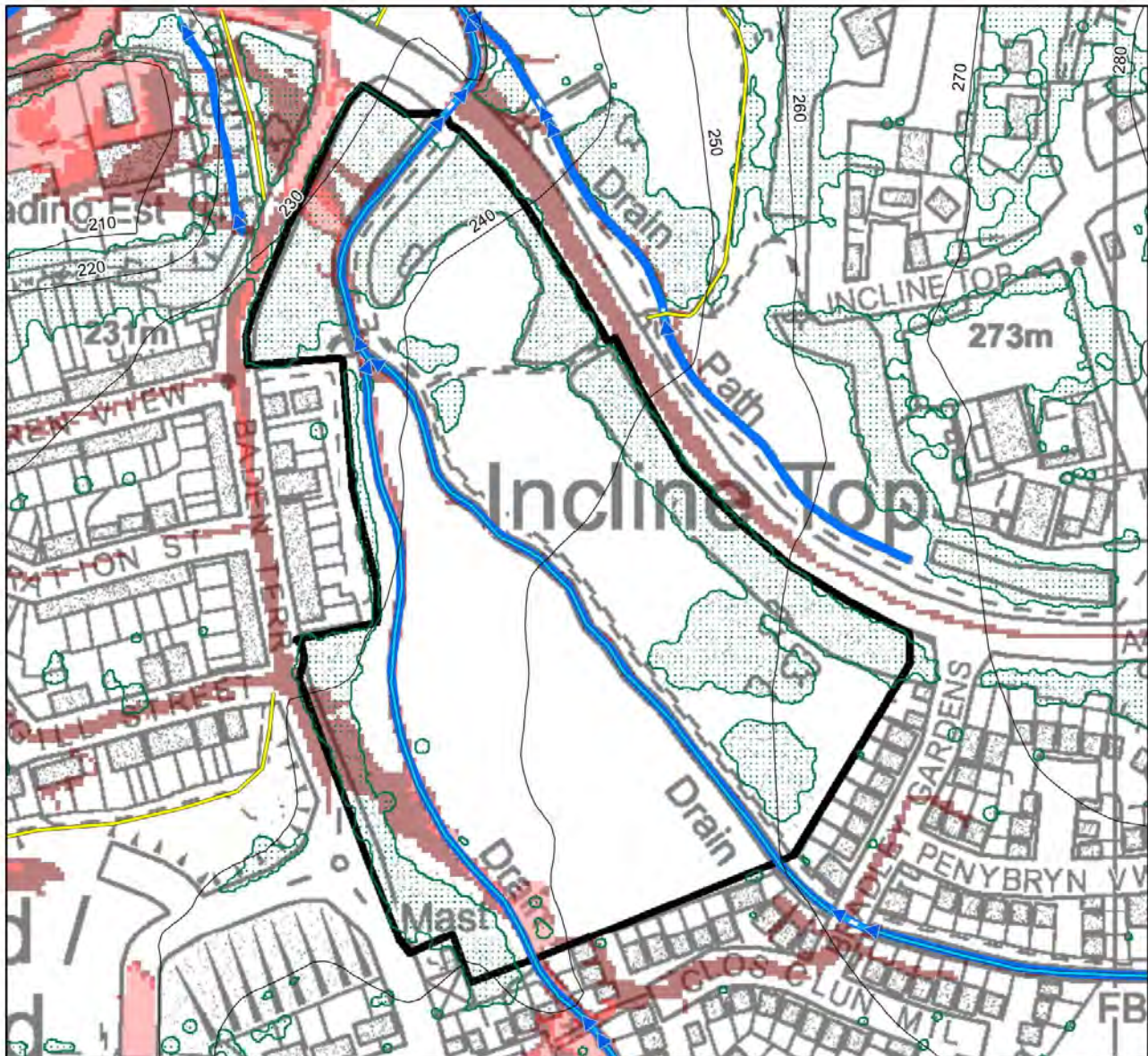
Site Ref	SW3.20	Gross site area (ha)	3.41
Site Name	Former Mardy Hospital, Twynyrolyn	Net Developable Area (ha)	1.41
Number of dwellings	114 (50 units remaining)	Undeveloped area (ha)	0.0
		Dwellings per hectare on net area	35.5
Site assessment and SUDS opportunities			
The site slopes from north-east to south-west and has significant tree cover along the southern boundary, and along the boundary with the part of the site that has already been developed.			
Retaining the existing tree/vegetation cover on site will assist in mitigating the effect of surface water run-off. New planting, and appropriate location of open/green space within the site, could provide an appropriate drainage solution for the proposed development.			
The development needs to make use of drainage as a feature and incorporate open space as a place where a natural landscape will provide the necessary attenuation through good design practice.			
Implications and Site Recommendations			
<ul style="list-style-type: none">Development should take place in accordance with Policies SW11: Sustainable Design and Placemaking, and EnW4: Environmental Protection with regard to issues concerning drainage and the water environment.A central area of open space has the potential to capitalise on the site characteristics in terms of drainage, and provide an improved area of open space that serves the entire development.No changes are proposed to the site boundary or to the number of dwellings proposed.			



Cynllun Datblygu Lleol Merthyr Tudful 2016-2031 Merthyr Tydfil Local Development Plan 2016-2031

Allocation Site Name Bradley Gardens Two

Allocation Site Number SW3-21



Ward: Town



Scale: 1:2,500 / A4

0 20 40 60 80 100 Metres

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Legend

- Contours (10m interval)
- Existing Right Of Way
- Allocation
- SINCs
- Existing Woodland / Trees
- Outside Unitary Authority

Drainage assets / Water courses

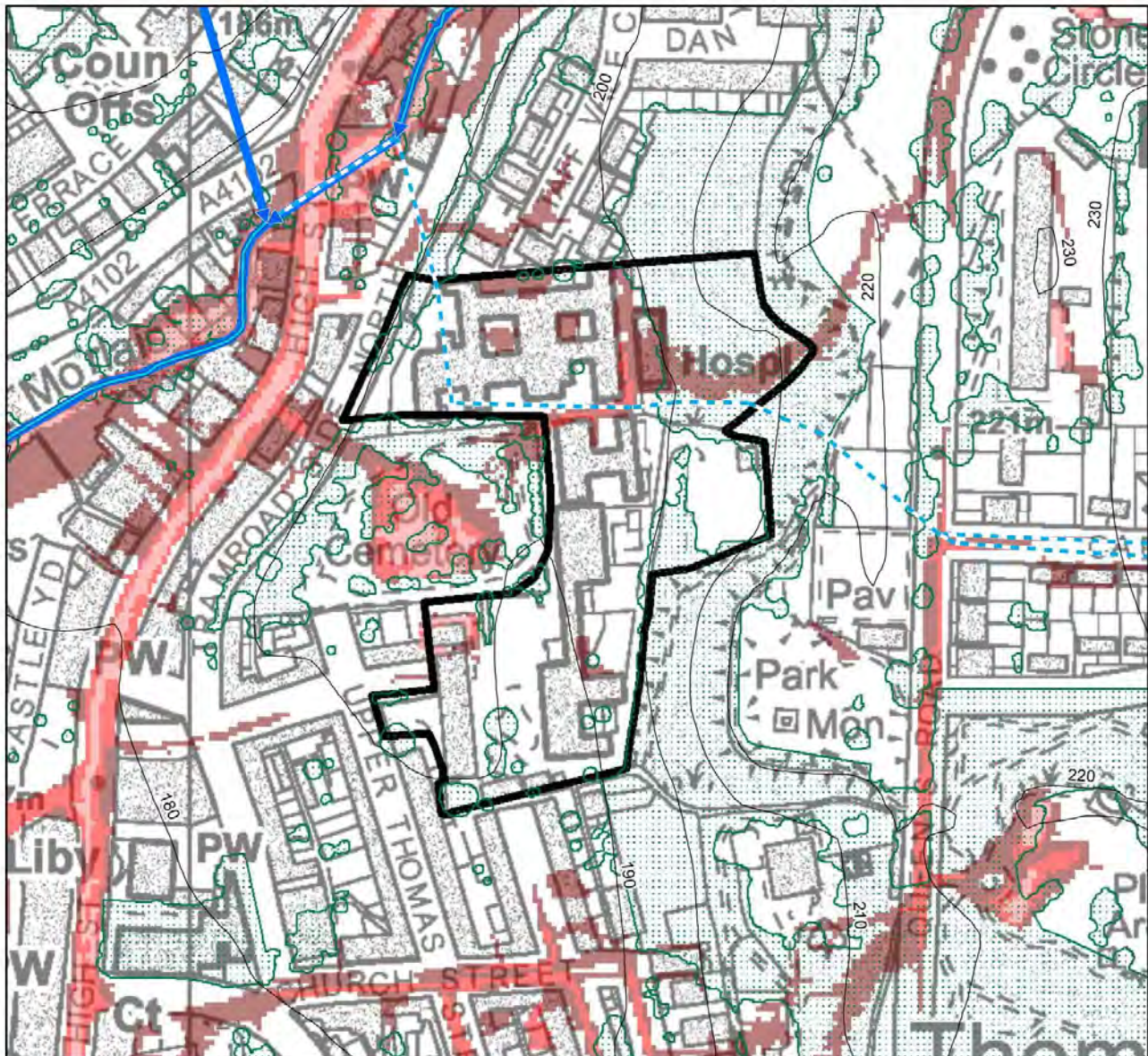
- Culvert
- Culvert Assumed Route
- Open Channel
- OS Water Network Data

Risk of Flooding from Surface Water

- Extent 1 in 30
- Extent 1 in 100
- Extent 1 in 1000

Site Ref	SW3.21	Gross site area (ha)	5.54
Site Name	Bradley Gardens 2, Penyard	Net Developable Area (ha)	2.6
Number of dwellings	100	Undeveloped area (ha)	2.94
		Dwellings per hectare on net area	38.5
Site assessment and SUDS opportunities			
<p>The site slopes from east to west and has significant tree cover along its east and west perimeter. An indicative layout has been submitted to the Council by a national housebuilder that indicates that 90 dwellings are able to be accommodated on the site.</p> <p>The site offers opportunities for the creation of a wet woodland alongside existing above ground drainage lines as an integral design component of the site and as a central open space. The topography of the site, and the location of existing watercourse are likely to influence the layout of development and any potential drainage solutions.</p> <p>The development needs to make use of drainage as a feature, and incorporate open space as a place where a natural landscape will provide the necessary attenuation through good design practice.</p>			
Implications and Site Recommendations			
<ul style="list-style-type: none">Development should take place in accordance with Policies SW11: Sustainable Design and Placemaking, and EnW4: Environmental Protection with regard to issues concerning drainage and the water environment.A central area of open space has the potential to capitalise on the site characteristics in terms of drainage. Rain gardens fronting onto open water channels, and free draining paved areas may also be appropriate.No changes are proposed to the site boundary however, the number of dwellings proposed will be reduced to 90. This change will be reflected in proposed Matters Arising Changes to be included in the Council's Hearing Statement for Matter 4: Strategic and Housing Site Allocations.			

Allocation Site Number SW3-22



Site Ref	SW3.22	Gross site area (ha)	2.42
Site Name	Former St Tydfils Hospital	Net Developable Area (ha)	1.8
Number of dwellings	50	Undeveloped area (ha)	0.62
		Dwellings per hectare on net area	27.8
Site assessment and SUDS opportunities			
The site is predominantly flat, although there are areas of the site that are situated on different levels.			
The former hospital site offers areas of potential drainage towards the northern part of the site as a final destination for collection. Maximum efforts should also be made to enable permeable, hard surfacing solutions across the site, in order to reflect the sites urban character.			
Implications and Site Recommendations			
<ul style="list-style-type: none">Development should take place in accordance with Policies SW11: Sustainable Design and Placemaking, and EnW4: Environmental Protection with regard to issues concerning drainage and the water environment.Rain gardens and attenuation pits beneath street trees will contribute towards the site's drainage solution. An area of soft landscaping at the north of the site should provide a significant element of the sites drainage measures.No changes are proposed to the site boundary or to the number of dwellings proposed.			

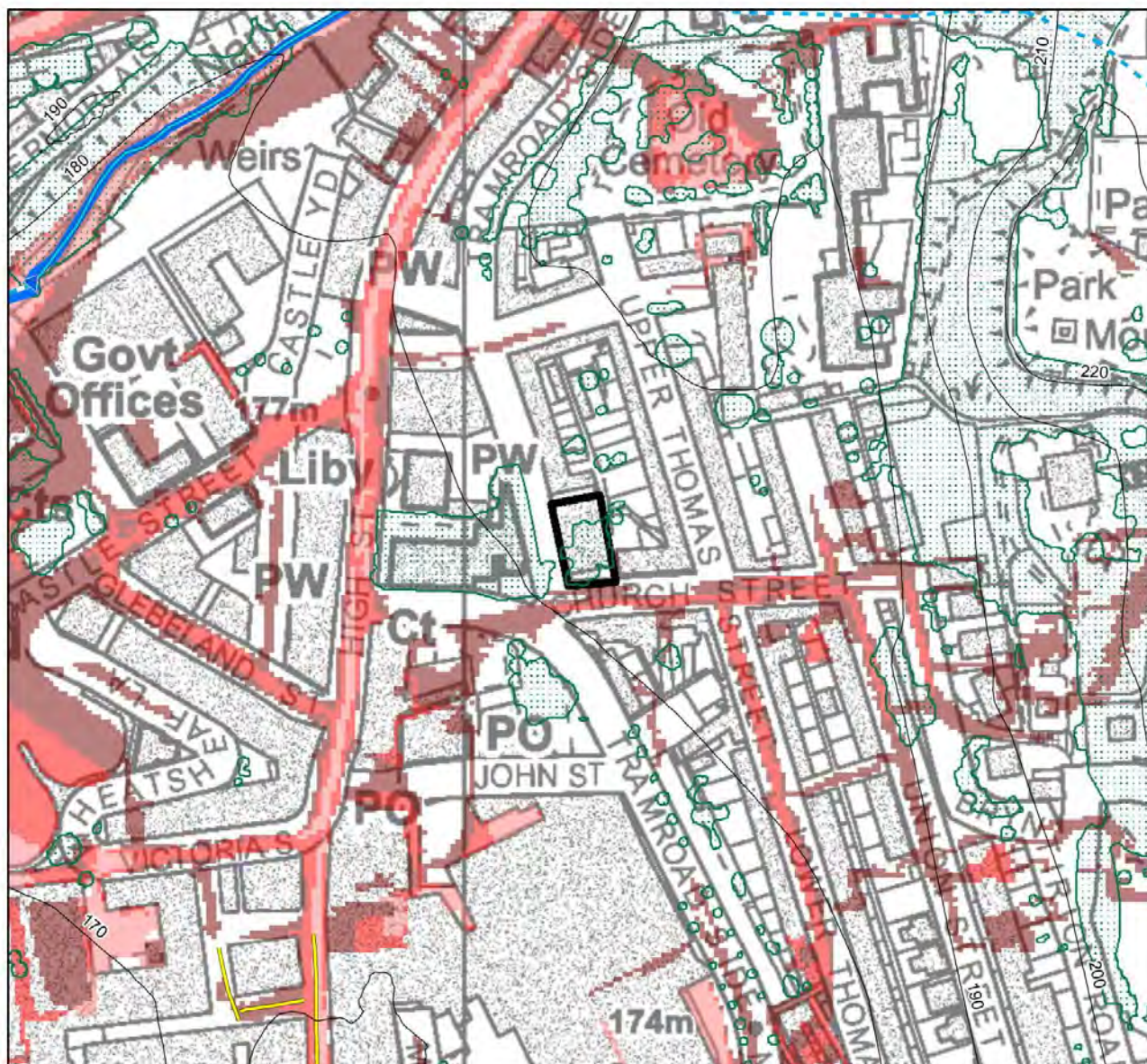


Cynllun Datblygu Lleol Merthyr Tudful 2016-2031

Merthyr Tydfil Local Development Plan 2016-2031

Allocation Site Name Former Miners Hall

Allocation Site Number SW3-23



Ward: Town

G/N



Scale: 1:2,500 / A4

0 20 40 60 80 100 Metres

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Legend

- Contours (10m interval)
- Existing Right Of Way
- Allocation
- SINCs
- Existing Woodland / Trees
- Outside Unitary Authority

Drainage assets / Water courses

- Culvert
- Culvert Assumed Route
- Open Channel
- OS Water Network Data

Risk of Flooding from Surface Water

- Extent 1 in 30
- Extent 1 in 100
- Extent 1 in 1000

Site Ref	SW3.23	Gross site area (ha)	0.07
Site Name	Former Miners Hall	Net Developable Area (ha)	0.07
Number of dwellings	12	Undeveloped area (ha)	0.0
		Dwellings per hectare on net area	171.4
Site assessment and SUDS opportunities			
The proposed high density of the site limits the scope to incorporate drainage solutions into any open space on the site. If development of the site takes the form of converting the existing building, then SAB approval would not be required.			
Redevelopment of the site would need to maximise rain water harvesting and other features for permeability wherever possible before discharge to existing surface water drainage system is considered.			
Implications and Site Recommendations			
<ul style="list-style-type: none">Development should take place in accordance with Policies SW11: Sustainable Design and Placemaking, and EnW4: Environmental Protection with regard to issues concerning drainage and the water environment.Attenuation pits beneath street trees and permeable drainage features leading to subterranean attenuation tanks are likely to be the most suitable drainage solutions.No changes are proposed to the site boundary or to the number of dwellings proposed.			

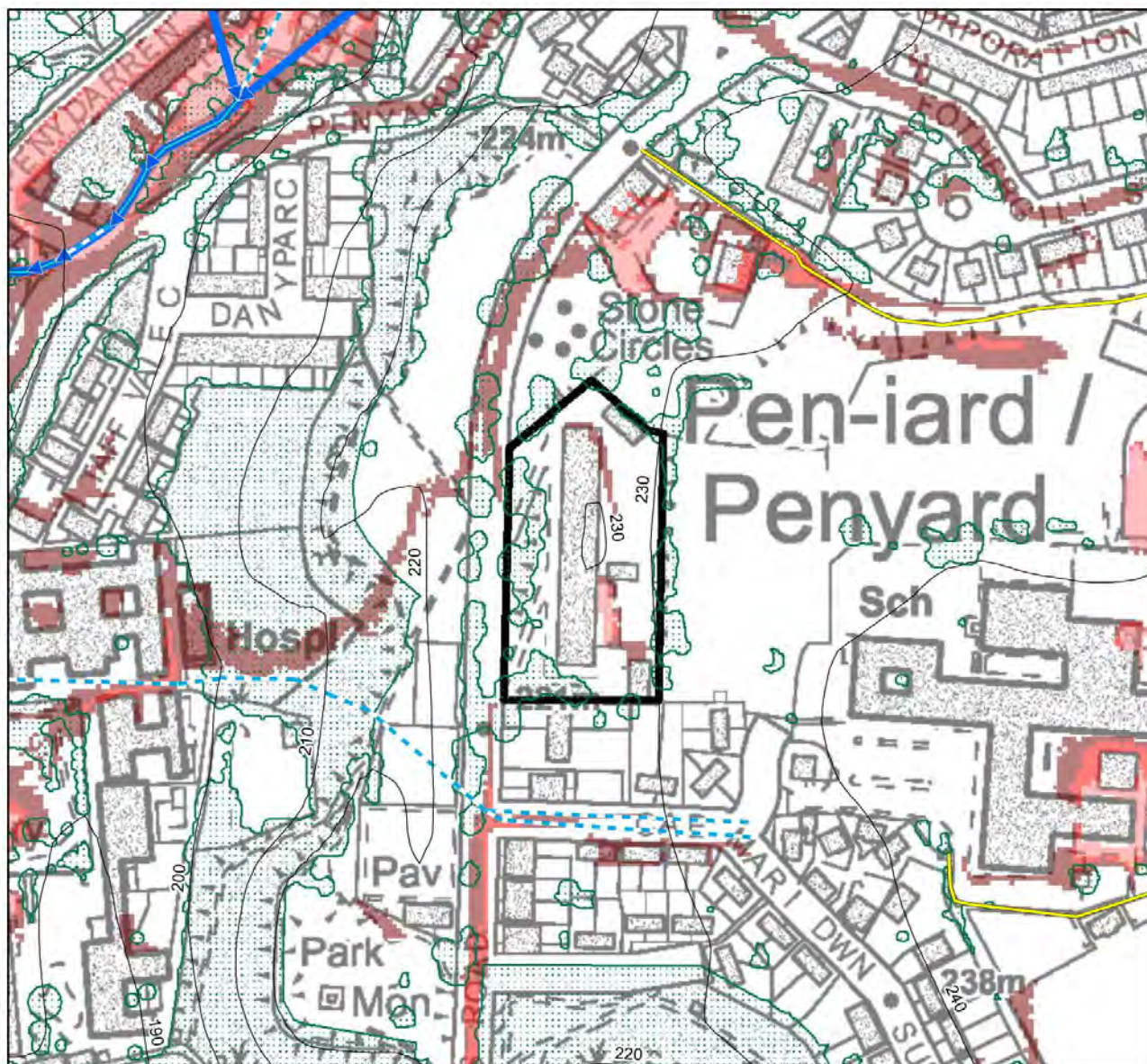


Cynllun Datblygu Lleol Merthyr Tudful 2016-2031

Merthyr Tydfil Local Development Plan 2016-2031

Allocation Site Name Former Ysgol Santes Tydfil Site

Allocation Site Number SW3-24



Ward: Town

G/N



Scale: 1:2,500 / A4

0 20 40 60 80 100 Metres

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Legend

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- Existing Right Of Way
- Allocation
- SINCs
- Existing Woodland / Trees
- Outside Unitary Authority

Drainage assets / Water courses

- Culvert
- Culvert Assumed Route
- Open Channel
- OS Water Network Data

Risk of Flooding from Surface Water

- Extent 1 in 30
- Extent 1 in 100
- Extent 1 in 1000

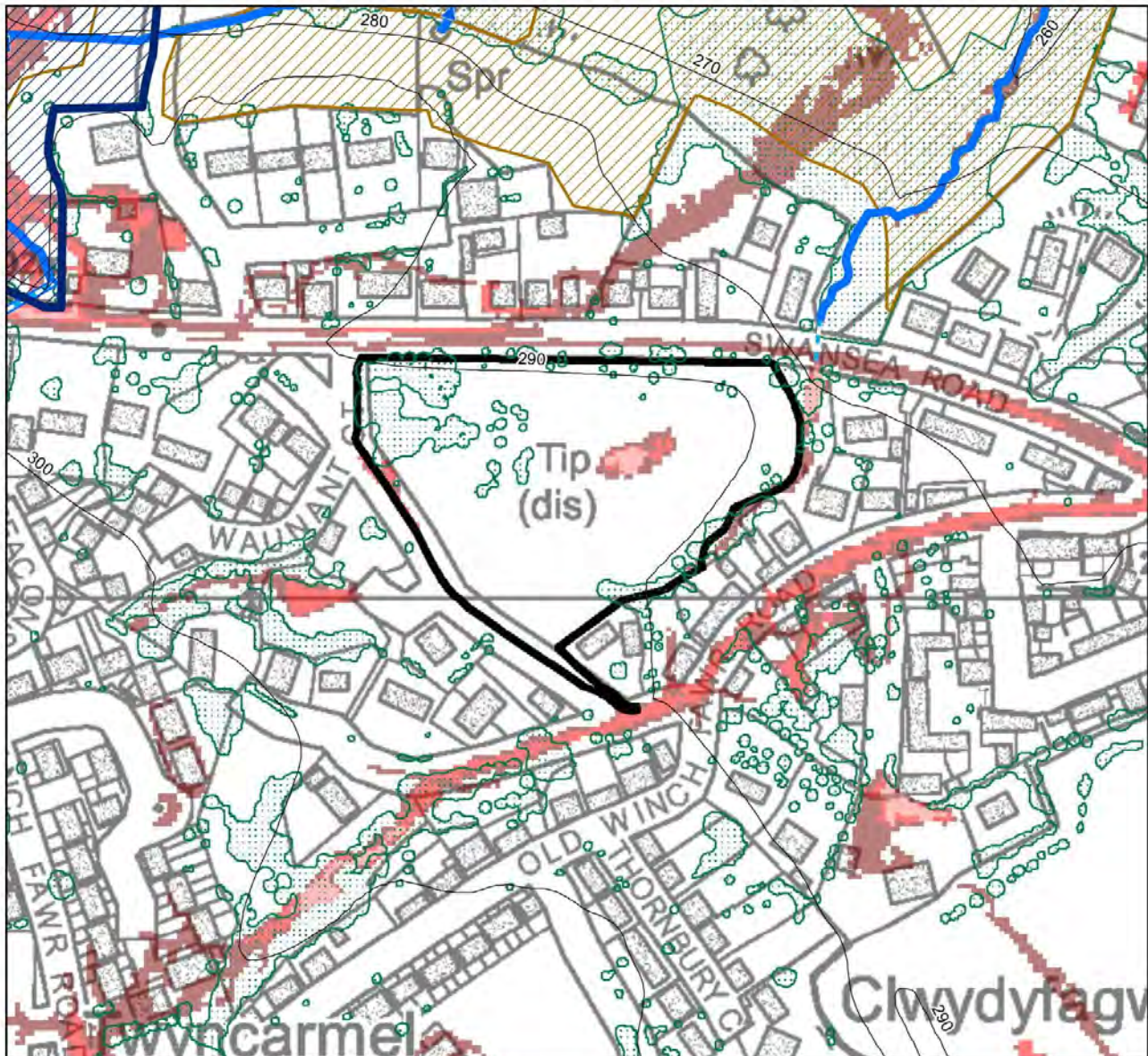
Site Ref	SW3.24	Gross site area (ha)	0.78
Site Name	Former Ysgol Santes Tudful	Net Developable Area (ha)	0.53
Number of dwellings	10	Undeveloped area (ha)	0.25
		Dwellings per hectare on net area	18.9
Site assessment and SUDS opportunities			
The site has good peripheral tree cover which should be retained as part of any proposed development. The relatively low density of the site should enable appropriate drainage solutions to be provided on site, potentially on an individual plot basis.			
There is potential to incorporate the nearby Cae Mari Dwn watercourse into the sites drainage solution.			
Implications and Site Recommendations			
<ul style="list-style-type: none">Development should take place in accordance with Policies SW11: Sustainable Design and Placemaking, and EnW4: Environmental Protection with regard to issues concerning drainage and the water environment.Attenuation pits beneath street trees and permeable hard surfacing are likely to provide the most appropriate drainage solution on any proposed development.No changes are proposed to the site boundary or to the number of dwellings proposed.			



Cynllun Datblygu Lleol Merthyr Tudful 2016-2031 Merthyr Tydfil Local Development Plan 2016-2031

Allocation Site Name Clwydyfagwr

Allocation Site Number SW3-35



Ward: Cyfarthfa

Scale: 1:2,500 / A4

0 20 40 60 80 100 Metres

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Legend

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- Outside Unitary Authority

Drainage assets / Water courses

- Culvert
- Culvert Assumed Route
- Open Channel
- OS Water Network Data

Risk of Flooding from Surface Water

- Extent 1 in 30
- Extent 1 in 100
- Extent 1 in 1000

Site Ref	SW3.35	Gross site area (ha)	1.79
Site Name	Clwydyfagwr, Swansea Road	Net Developable Area (ha)	1.35
Number of dwellings	40	Undeveloped area (ha)	0.44
		Dwellings per hectare on net area	29.6
Site assessment and SUDS opportunities			
The site consists of heavily compacted mineral waste and is likely to offer poor permeability. There is potential to incorporate an attenuation pond/basin centrally within the site, forming part of an open space.			
An existing watercourse runs along the south eastern perimeter of the site. There is potential to use the existing topography of the site to incorporate drainage channels along the banking on the site in order to reduce the rate of run off into any watercourses.			
Implications and Site Recommendations			
<ul style="list-style-type: none">Development should take place in accordance with Policies SW11: Sustainable Design and Placemaking, and EnW4: Environmental Protection with regard to issues concerning drainage and the water environment.An attenuation pond/basin and rain gardens are likely to provide appropriate drainage solutions. Using the topography around the site perimeter could also provide drainage measures for the proposed development.No changes are proposed to the site boundary or to the number of dwellings proposed.			

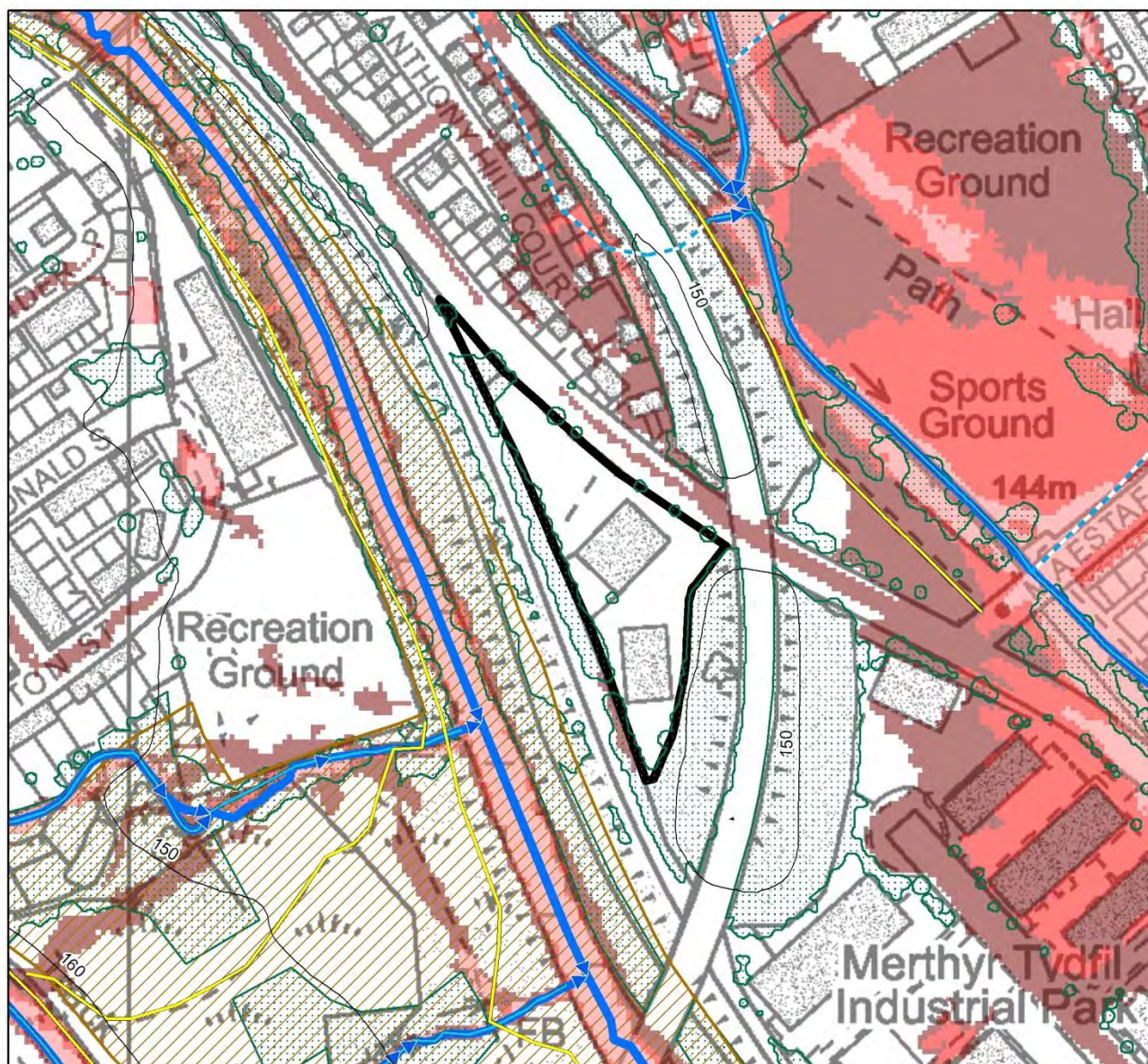


Cynllun Datblygu Lleol Merthyr Tudful 2016-2031

Merthyr Tydfil Local Development Plan 2016-2031

Allocation Site Name P & R Motors, Pentrebach

Allocation Site Number SW3-36



Ward: Plymouth

G/N



Scale: 1:2,500 / A4

0 20 40 60 80 100 Metres

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Legend

- Contours (10m interval)
- Existing Right Of Way
- Allocation
- SINCs
- Existing Woodland / Trees
- Outside Unitary Authority

Drainage assets / Water courses

- Culvert
- Culvert Assumed Route
- Open Channel
- OS Water Network Data

Risk of Flooding from Surface Water

- Extent 1 in 30
- Extent 1 in 100
- Extent 1 in 1000

Site Ref	SW3.36	Gross site area (ha)	0.63
Site Name	P and R Motors, Pentrebach	Net Developable Area (ha)	0.63
Number of dwellings	22	Undeveloped area (ha)	0.0
		Dwellings per hectare on net area	34.9
Site assessment and SUDS opportunities			
The site is bounded by three significant transport routes and is a flat site, where permeable drainage to hard surface features may offer a solution to reducing the rate of run off.			
New tree planting will improve the landscape and may also assist in reducing run-off rates on the site.			
Implications and Site Recommendations			
<ul style="list-style-type: none">Development should take place in accordance with Policies <i>SW11: Sustainable Design and Placemaking</i>, and <i>EnW4: Environmental Protection</i> with regard to issues concerning drainage and the water environment.Permeable hard surfacing may provide the most effective drainage solution as part of any development. Subterranean storage systems and urban tree cell storage might also provide alternative solutionsNo changes are proposed to the site boundary or to the number of dwellings proposed.			

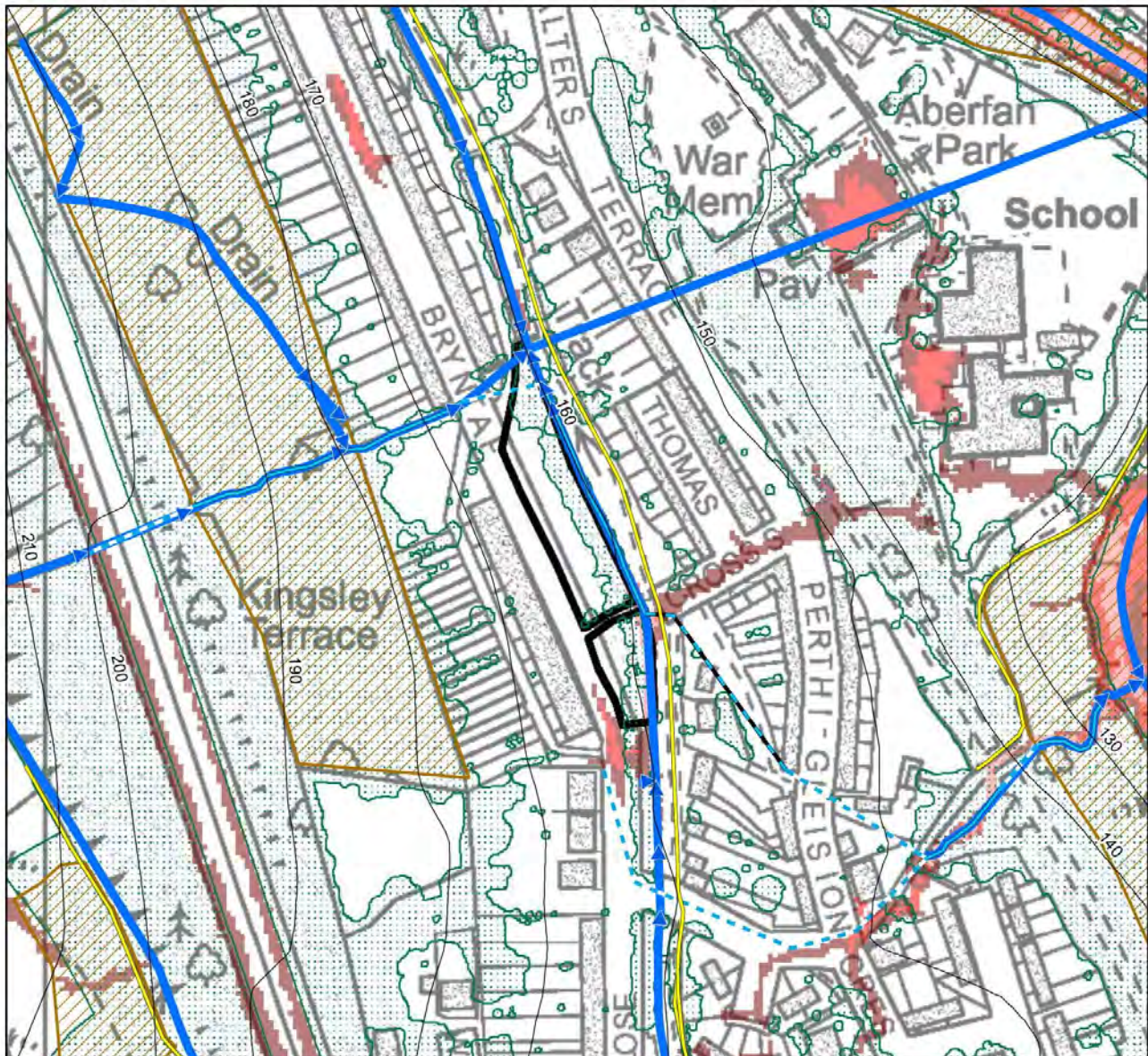


Cynllun Datblygu Lleol Merthyr Tudful 2016-2031

Merthyr Tydfil Local Development Plan 2016-2031

Allocation Site Name Land opposite Kingsley Terrace, Aberfan

Allocation Site Number SW3-28



Ward: Merthyr Vale

Scale: 1:2,500 / A4

0 20 40 60 80 100 Metres

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Legend

- Contours (10m interval)
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- SINCs
- Existing Woodland / Trees
- Outside Unitary Authority

Drainage assets / Water courses

- Culvert
- Culvert Assumed Route
- Open Channel
- OS Water Network Data

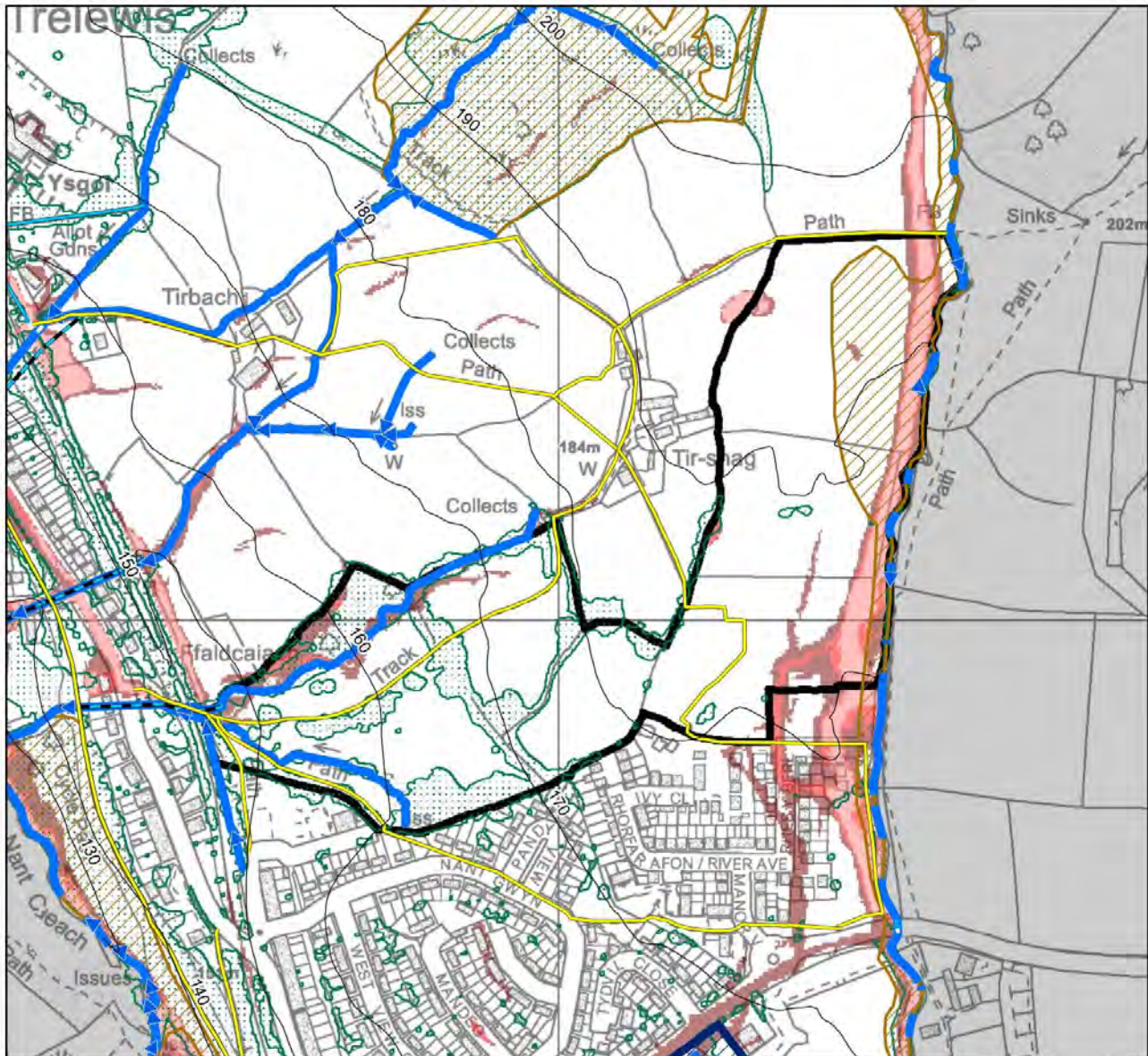
Risk of Flooding from Surface Water

- Extent 1 in 30
- Extent 1 in 100
- Extent 1 in 1000

Site Ref	SW3.28	Gross site area (ha)	0.34
Site Name	Opposite Kingsley Terrace, Aberfan	Net Developable Area (ha)	0.34
Number of dwellings	12	Undeveloped area (ha)	0.0
		Dwellings per hectare on net area	35.3
Site assessment and SUDS opportunities			
The site currently has full planning permission and has limited opportunities for a SUDS scheme apart from a drainage channel along the eastern boundary of the site. If current permission is implemented, SAB approval will not be required.			
Retention of as much existing vegetation as possible, and any opportunities for new planting should be explored in order to reduce run-off rates on the site.			
Implications and Site Recommendations			
<ul style="list-style-type: none">Development should take place in accordance with Policies SW11: Sustainable Design and Placemaking, and EnW4: Environmental Protection with regard to issues concerning drainage and the water environment.Individual plot attenuation, incorporating the existing drainage channel to the east of the site, is likely to provide the most appropriate drainage solution on any proposed development (if required)No changes are proposed to the site boundary or to the number of dwellings proposed.			



Allocation Site Number SW3-29



G/N

Legend

Drainage assets / Water courses

— — — Culvert

 Culvert Assumed Route

— Open Channel

OS Water Network Data

Risk of Flooding from Surface Water

Extent 1 in 30

Extent 1 in 100

Extent 1 in 100
Extent 1 in 1000

Site Ref	SW3.29	Gross site area (ha)	12.73 (9.68 remaining)
Site Name	Adjacent to Manor View, Trelewis	Net Developable Area (ha)	7
Number of dwellings	248 (198 remaining)	Undeveloped area (ha)	2.68
		Dwellings per hectare on net area	28.2
Site assessment and SUDS opportunities			
<p>The site is a large site that possesses an extensive network of green infrastructure in its current format, with a network of hedgerows and wooded areas. These features will provide opportunities to incorporate the existing landscape into any drainage solutions for the proposed development.</p> <p>A masterplan was prepared as part of the original outline application for the site, and highlights the value of the green infrastructure, particularly on the western part of the site. Existing watercourses on the eastern part of the site, and the Nant Caiach watercourse along the eastern boundary also provide opportunities to include drainage measure within the development layout.</p> <p>A large area of SINC exists in the north eastern corner of the site and should be used to maximum effect as an area for attenuation. As the proposal is for a housing estate the network of roads and driveways should make use of free draining materials.</p> <p>The development needs to make use of drainage as a feature and open space as a place where a natural landscape will provide the necessary attenuation through good design practice. There is sufficient scope on the remaining undeveloped area of the site to incorporate a variety of drainage solutions as part of the development.</p>			
Implications and Site Recommendations			
<ul style="list-style-type: none">Development should take place in accordance with Policies <i>SW11: Sustainable Design and Placemaking</i>, and <i>EnW4: Environmental Protection</i> with regard to issues concerning drainage and the water environment.A variety of measures could be appropriate on this site, including; free draining paving and highways; the creation of attenuation basins and swales; street trees with water retaining root cells; and controlled flows into existing watercourses.No changes are proposed to the site boundary or to the number of dwellings proposed.			

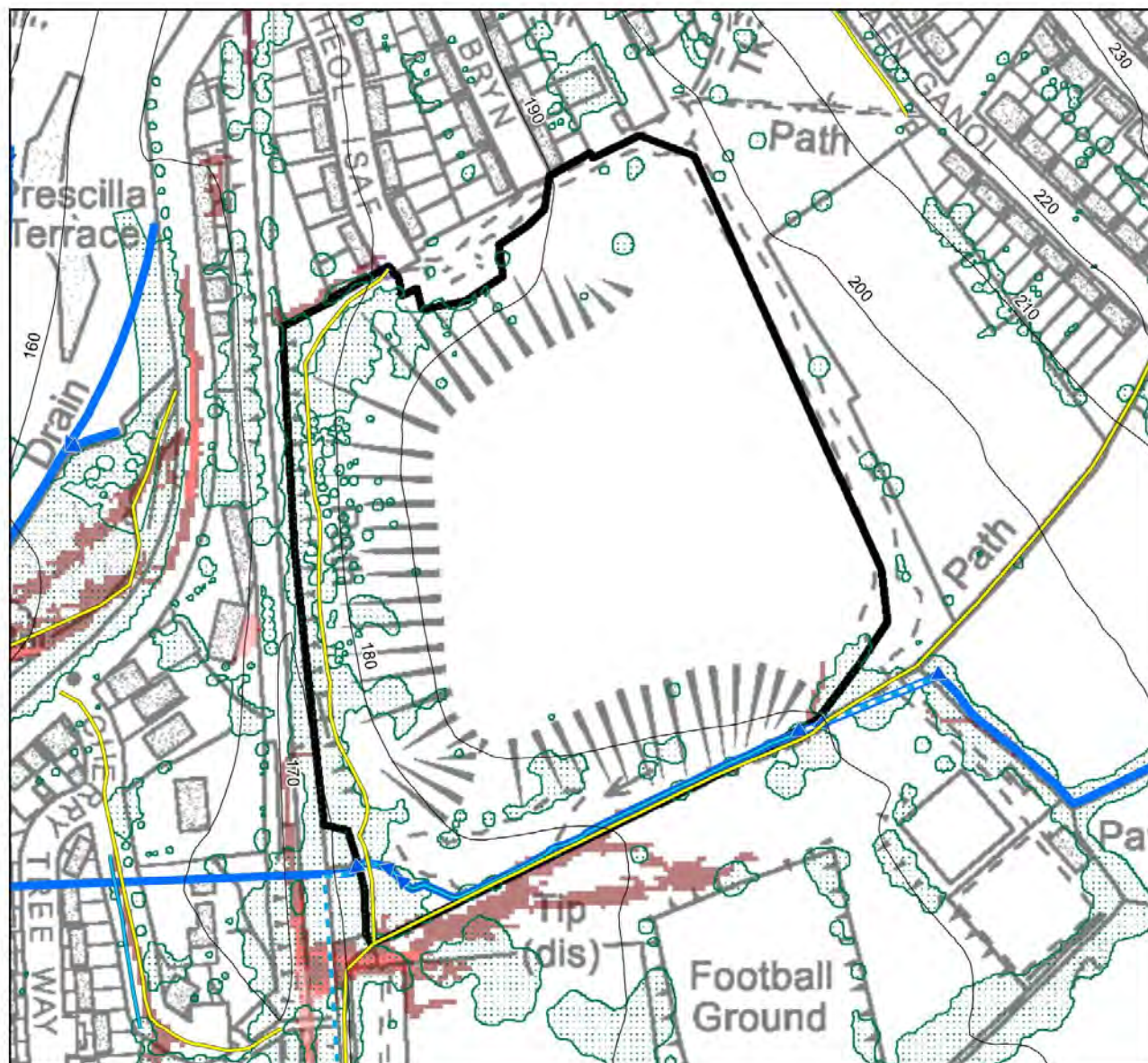


Cynllun Datblygu Lleol Merthyr Tudful 2016-2031

Merthyr Tydfil Local Development Plan 2016-2031

Allocation Site Name Stormtown, Trelewis

Allocation Site Number SW3-30



Ward: Bedlinog

G/N

Scale: 1:2,500 / A4

0 20 40 60 80 100 Metres

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Legend

- Contours (10m interval)
- Existing Right Of Way
- Allocation
- SINCs
- Existing Woodland / Trees
- Outside Unitary Authority

Drainage assets / Water courses

- Culvert
- Culvert Assumed Route
- Open Channel
- OS Water Network Data

Risk of Flooding from Surface Water

- Extent 1 in 30
- Extent 1 in 100
- Extent 1 in 1000

Site Ref	SW3.30	Gross site area (ha)	5.54
Site Name	Stormtown, Trelewis	Net Developable Area (ha)	2.8
Number of dwellings	80	Undeveloped area (ha)	2.74
		Dwellings per hectare on net area	28.6

Site assessment and SUDS opportunities

The developable plateau of the site consists of heavily compacted mineral waste and there is potential to incorporate an attenuation pond/basin centrally within the site, forming part of an open space.

An existing watercourse runs along the southern perimeter of the site. There is potential to use the existing topography of the site to incorporate drainage channels along the banking on the site in order to reduce the rate of run off into any watercourses.

The development needs to make use of drainage as a feature and incorporate open space as a place where a natural landscape will provide the necessary attenuation through good design practice. There is sufficient scope on the remaining undeveloped area of the site (approx. half of the total site area) to incorporate a variety of drainage solutions as part of the development.

Implications and Site Recommendations

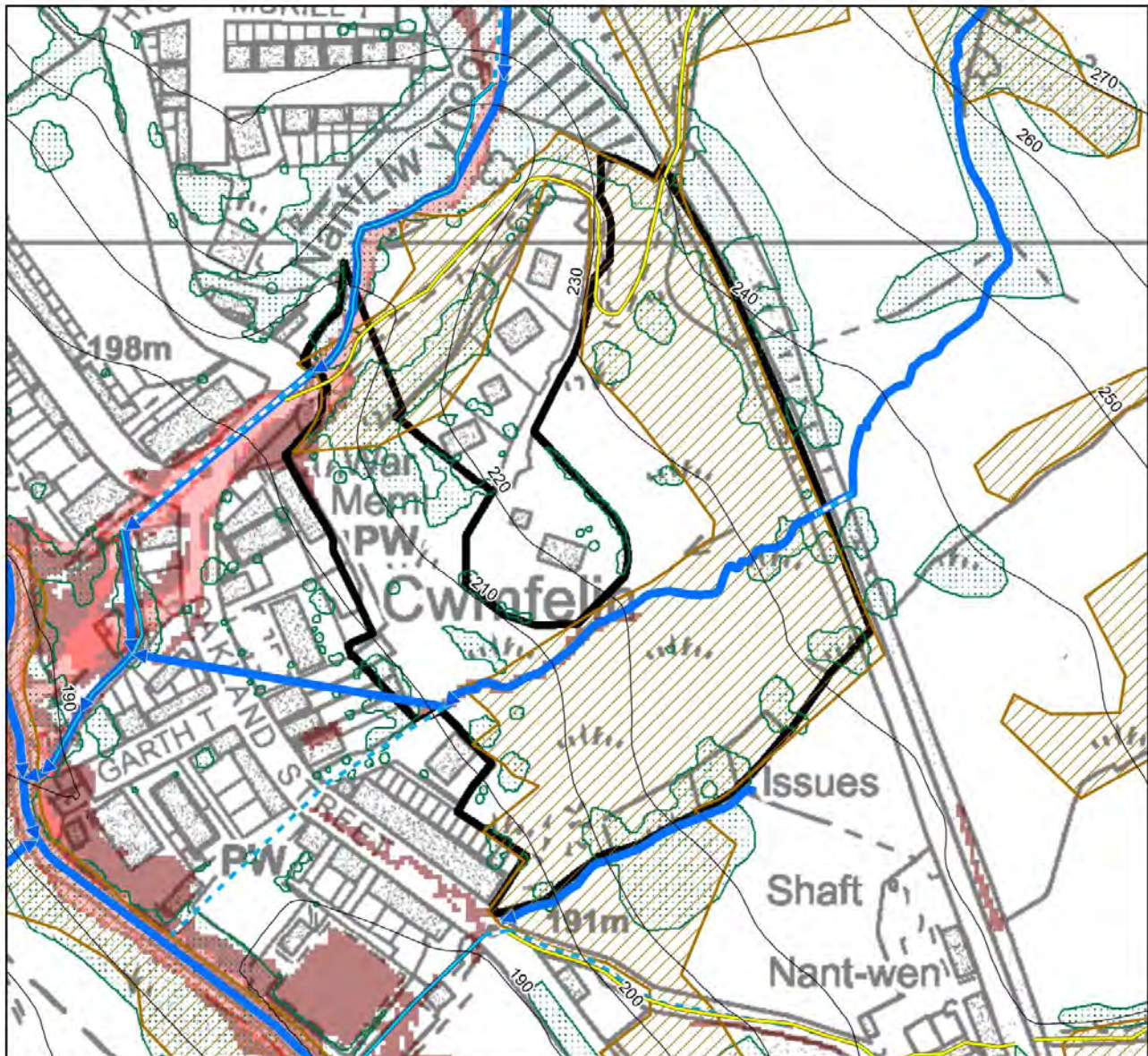
- Development should take place in accordance with Policies *SW11: Sustainable Design and Placemaking*, and *EnW4: Environmental Protection* with regard to issues concerning drainage and the water environment.
- Ditches/ new channels could act as drainage collects for the upper plateau. An attenuation pond/basin and rain gardens are likely to provide appropriate drainage solutions in the developable area. Using the topography around the site perimeter could also provide drainage measures for the proposed development.
- No changes are proposed to the site boundary or to the number of dwellings proposed.



Cynllun Datblygu Lleol Merthyr Tudful 2016-2031 Merthyr Tydfil Local Development Plan 2016-2031

Allocation Site Name Cwmfelin, Bedlinog

Allocation Site Number SW3-31



Ward: Bedlinog



Scale: 1:2,500 / A4

0 20 40 60 80 100 Metres

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Legend

- Contours (10m interval)
- Existing Right Of Way
- Allocation
- SINCs
- Existing Woodland / Trees
- Outside Unitary Authority

Drainage assets / Water courses

- Culvert
- Culvert Assumed Route
- Open Channel
- OS Water Network Data

Risk of Flooding from Surface Water

- Extent 1 in 30
- Extent 1 in 100
- Extent 1 in 1000

Site Ref	SW3.31	Gross site area (ha)	3.57
Site Name	Cwmfelin, Bedlinog	Net Developable Area (ha)	1.7
Number of dwellings	30	Undeveloped area (ha)	1.87
		Dwellings per hectare on net area	17.6
Site assessment and SUDS opportunities			
<p>The site currently consists of a number of collects, streams and associated trees predominantly oaks. Ideally suited to wet upland woodland and naturally would revert to this. If the existing flows were to be interrupted as part of developing the site then the solution would be to include a number of swales along the contour lines to enable the speed of water flow to be slowed from the site and also to allow the introduction of native trees along such swales.</p>			
<p>The development needs to make use of drainage as a feature and incorporate open space as a place where a natural landscape will provide the necessary attenuation through good design practice. There is sufficient scope on the remaining undeveloped area of the site (approx. half of the total site area) to incorporate a variety of drainage solutions as part of the development.</p>			
Implications and Site Recommendations			
<ul style="list-style-type: none">• Development should take place in accordance with Policies <i>SW11: Sustainable Design and Placemaking</i>, and <i>EnW4: Environmental Protection</i> with regard to issues concerning drainage and the water environment.• Creation of a number of swales along the existing contours (as well as any new contours resulting from any re-profiling works), is likely to be the most effective drainage solution forming part of any proposed development.• No changes are proposed to the site boundary or to the number of dwellings proposed.			

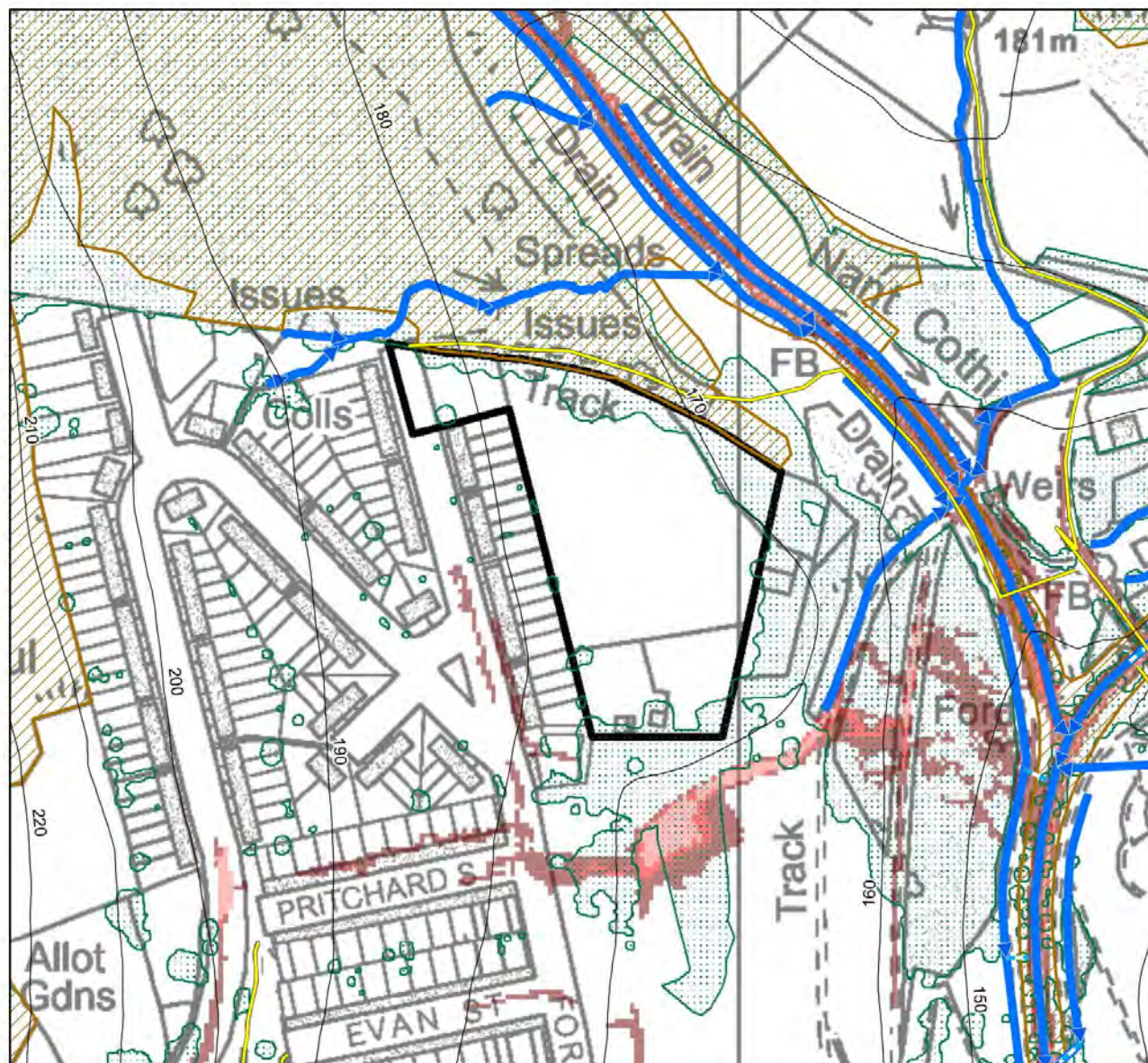


Cynllun Datblygu Lleol Merthyr Tudful 2016-2031

Merthyr Tydfil Local Development Plan 2016-2031

Allocation Site Name Cilhaul

Allocation Site Number SW3-33



Ward: Treharris

G/N

Scale: 1:2,500 / A4

0 20 40 60 80 100 Metres

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Legend

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- SINCs
- Existing Woodland / Trees
- Outside Unitary Authority

Drainage assets / Water courses

- Culvert
- Culvert Assumed Route
- Open Channel
- OS Water Network Data

Risk of Flooding from Surface Water

- Extent 1 in 30
- Extent 1 in 100
- Extent 1 in 1000

Site Ref	SW3.33	Gross site area (ha)	1.36
Site Name	Cilhaul, Treharris	Net Developable Area (ha)	1.0
Number of dwellings	30	Undeveloped area (ha)	0.36
		Dwellings per hectare on net area	30.0
Site assessment and SUDS opportunities			
The site is a greenfield site which as grassland, permits a slower rate of run off. Increased surface flow through hard development will increase this.			
Natural areas of drainage both north and south of the site would be the areas where flows might be channelled. It would be here that the principle areas of tree planting should be increased or modified to allow a slower rate of run of as water exits the site. Within the site infrastructure street trees would allow the use of root tree cells as attenuation for water also.			
Implications and Site Recommendations			
<ul style="list-style-type: none">Development should take place in accordance with Policies SW11: Sustainable Design and Placemaking, and EnW4: Environmental Protection with regard to issues concerning drainage and the water environment.Channelling surface water flows to areas at the north and south of the site likely to provide most effective solution. New planting/introduction of street trees could also help with attenuation.No changes are proposed to the site boundary or to the number of dwellings proposed.			

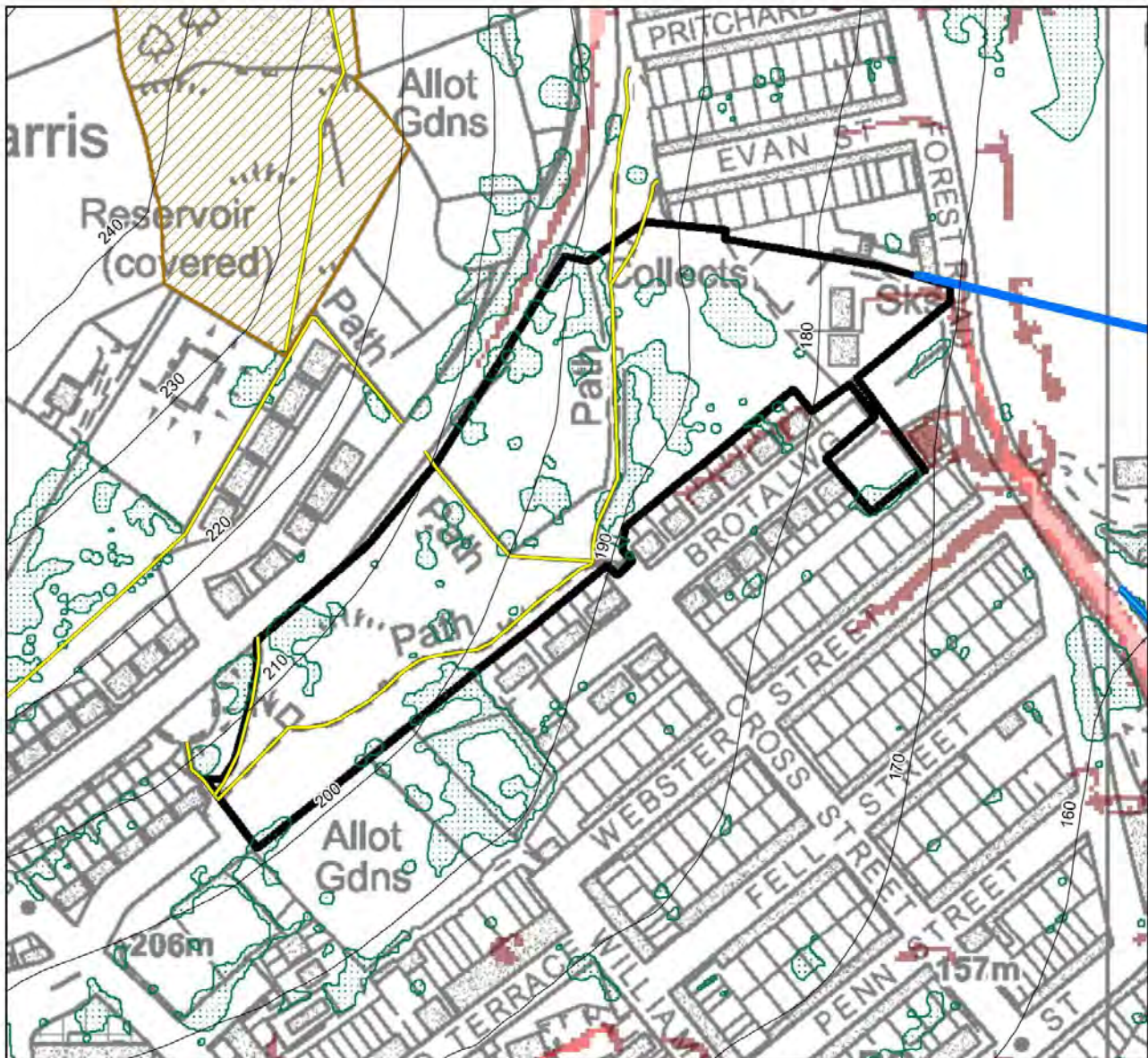


Cynllun Datblygu Lleol Merthyr Tudful 2016-2031

Merthyr Tydfil Local Development Plan 2016-2031

Allocation Site Name Oaklands, Treharris

Allocation Site Number SW3-34



Ward: Treharris



Scale: 1:2,500 / A4

0 20 40 60 80 100 Metres

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Legend

- Contours (10m interval)
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- Existing Woodland / Trees
- Outside Unitary Authority

Drainage assets / Water courses

- Culvert
- Culvert Assumed Route
- Open Channel
- OS Water Network Data

Risk of Flooding from Surface Water

- Extent 1 in 30
- Extent 1 in 100
- Extent 1 in 1000

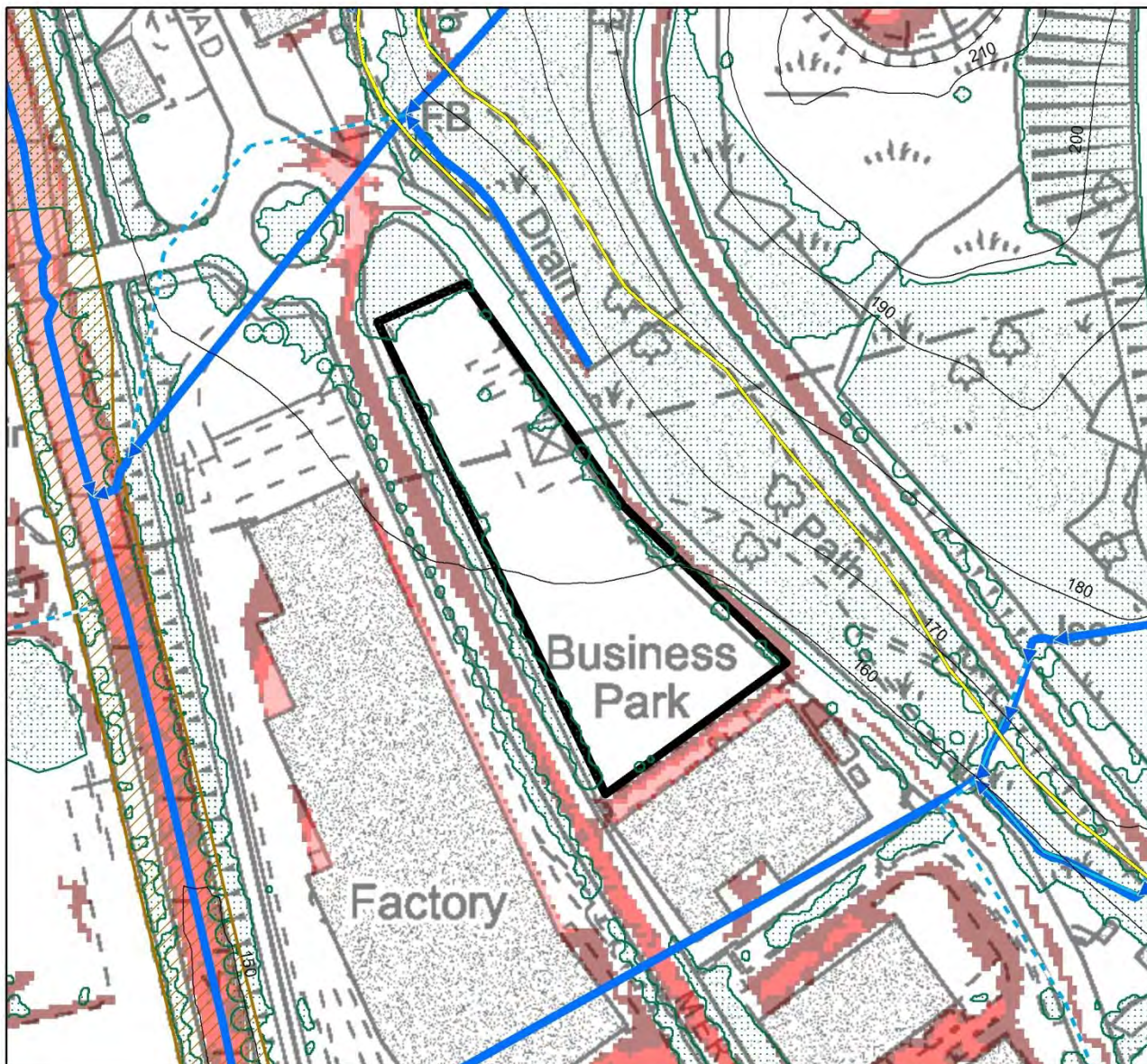
Site Ref	SW3.34	Gross site area (ha)	2.79
Site Name	Oaklands, Treharris	Net Developable Area (ha)	1.7
Number of dwellings	50	Undeveloped area (ha)	1.09
		Dwellings per hectare on net area	29.4
Site assessment and SUDS opportunities			
Trees to the north east and periphery of the site should be retained as part of any development. The site slopes towards the south/ south east, and there is potential to use this topography to find a drainage solution.			
Lines of development should take place along the contours with water catchments following likewise, and the potential for collects on the eastern part of the site. Additional planting would also help the drainage on the site.			
Implications and Site Recommendations			
<ul style="list-style-type: none">Development should take place in accordance with Policies <i>SW11: Sustainable Design and Placemaking</i>, and <i>EnW4: Environmental Protection</i> with regard to issues concerning drainage and the water environment.Linked swales that follow the contours of the site, then collect in a pond/basin at the east of the site are likely to provide the most effective drainage solution as part of any development. Street trees with subterranean storage would also provide an effective drainage measure.No changes are proposed to the site boundary or to the number of dwellings proposed.			



Cynllun Datblygu Lleol Merthyr Tudful 2016-2031 Merthyr Tydfil Local Development Plan 2016-2031

Allocation Site Name Hoover Site 1

Allocation Site Number EcW 1.1



Date: 21/05/2019

Ward: Plymouth

Scale: 1:2,500 / A4

0 10 20 30 40 50 60
Metres

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Legend

- Contours (10m interval)
- Right Of Way
- Allocation
- SINC
- Woodland / Trees
- Outside Unitary Authority

Drainage assets / Water courses

- Culvert
- Culvert Assumed Route
- Open Channel
- OS Water Network Data

Risk of Flooding from Surface Water

- Extent 1 in 30
- Extent 1 in 100
- Extent 1 in 1000

Site Ref	EcW1.1	Gross site area (ha)	1.5
Site Name	Former Hoover factory car park	Net Developable Area (ha)	1.5
		Undeveloped area (ha)	0.0
Site assessment and SUDS opportunities			
The site is relatively flat and currently predominantly hard surfaced. Attenuation of water on the site could be achieved through a number of means.			
A standard employment site plot ratio of 40% would indicate that 0.6 ha of land would be developed for buildings, leaving 0.9 ha of land for access roads, parking landscaping etc.			
The Council considers that the remaining 60% of the site will be able to incorporate an appropriate drainage solution in addition to the other site requirements.			
Implications and Site Recommendations			
<ul style="list-style-type: none">Development should take place in accordance with Policies SW11: Sustainable Design and Placemaking, and EnW4: Environmental Protection with regard to issues concerning drainage and the water environment.Permeable hard surfaces leading to subterranean attenuation tanks and/or an attenuation pond with controlled outflow may be the most appropriate drainage solution.No changes are proposed to the site boundary.			

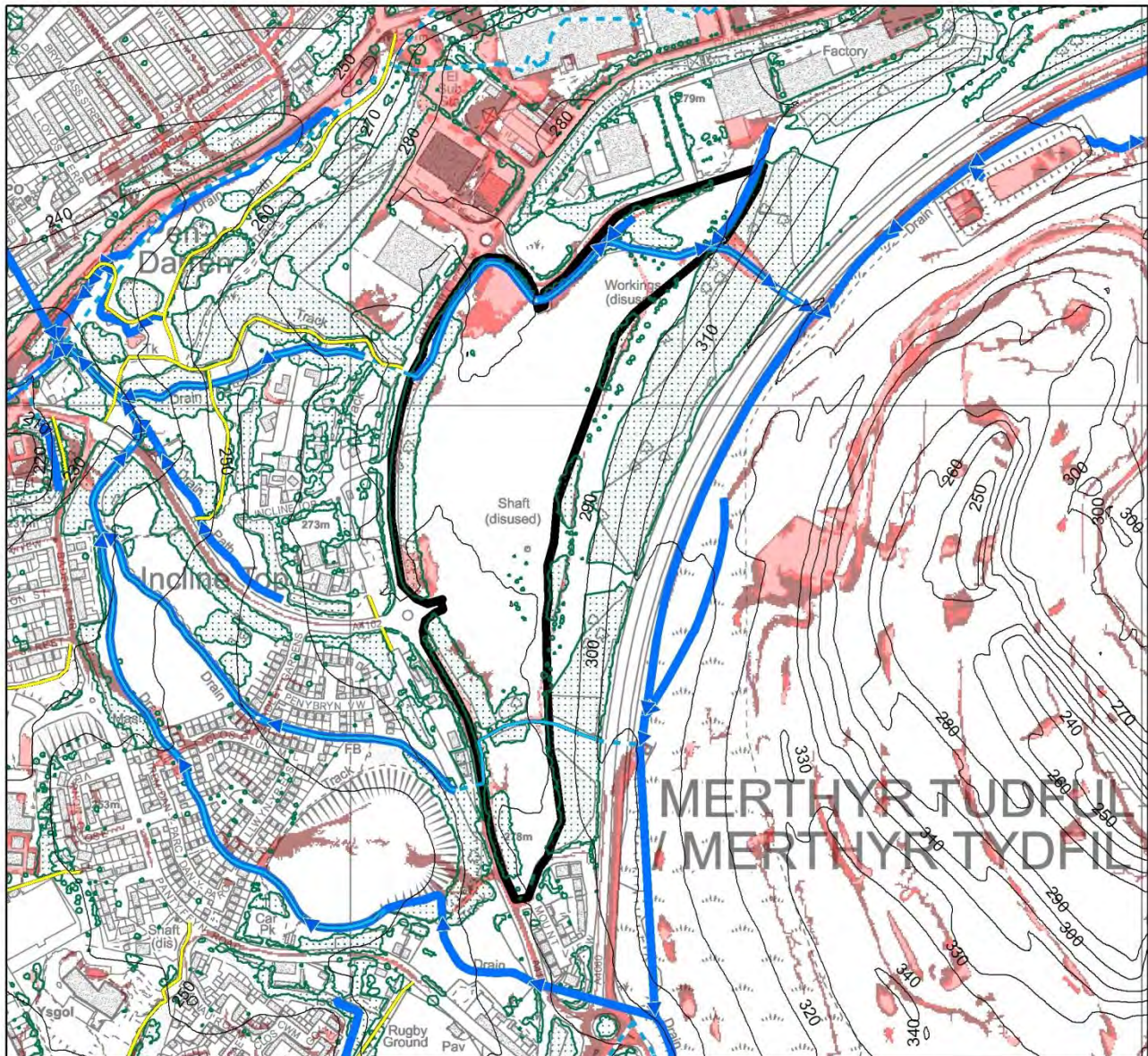


Cynllun Datblygu Lleol Merthyr Tudful 2016-2031

Merthyr Tydfil Local Development Plan 2016-2031

Allocation Site Name Goatmill Road

Allocation Site Number EcW 1.2



Date: 21/05/2019

Ward: Dowlais

Scale: 1:7,500 / A4

0 50 100 150 200 250 300
Metres

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Legend

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- Allocation
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- Woodland / Trees
- Outside Unitary Authority

Drainage assets / Water courses

- Culvert
- Culvert Assumed Route
- Open Channel
- OS Water Network Data

Risk of Flooding from Surface Water

- Extent 1 in 30
- Extent 1 in 100
- Extent 1 in 1000

Site Ref	EcW1.2	Gross site area (ha)	16.98
Site Name	Goatmill Road	Net Developable Area (ha)	14.75
		Undeveloped area (ha)	2.23
Site assessment and SUDS opportunities			
<p>The site is relatively flat and is reclaimed land, consisting of compacted blast furnace waste material. Attenuation of water on the site could be achieved through a number of means although infiltration may prove difficult. Retention of existing trees and vegetation will assist in mitigating the impact of any proposed development.</p> <p>A standard employment site plot ratio of 40% would indicate that 5.9 ha of land would be developed for buildings, leaving 8.85 ha of land for access roads, parking landscaping etc.</p> <p>The Council considers that the remaining 60% of the site will be able to incorporate an appropriate drainage solution in addition to the other site requirements.</p>			
Implications and Site Recommendations			
<ul style="list-style-type: none">Development should take place in accordance with Policies SW11: Sustainable Design and Placemaking, and EnW4: Environmental Protection with regard to issues concerning drainage and the water environment.There are a number of potential options for a drainage solution of this site, including; extending the length of existing drainage channels to slow water flow; creating pond features on the lower areas of the site; the creation of hard surfacing that is permeable; and maximising the incorporation of soft planted areas to act as rain gardens.No changes are proposed to the site boundary.			

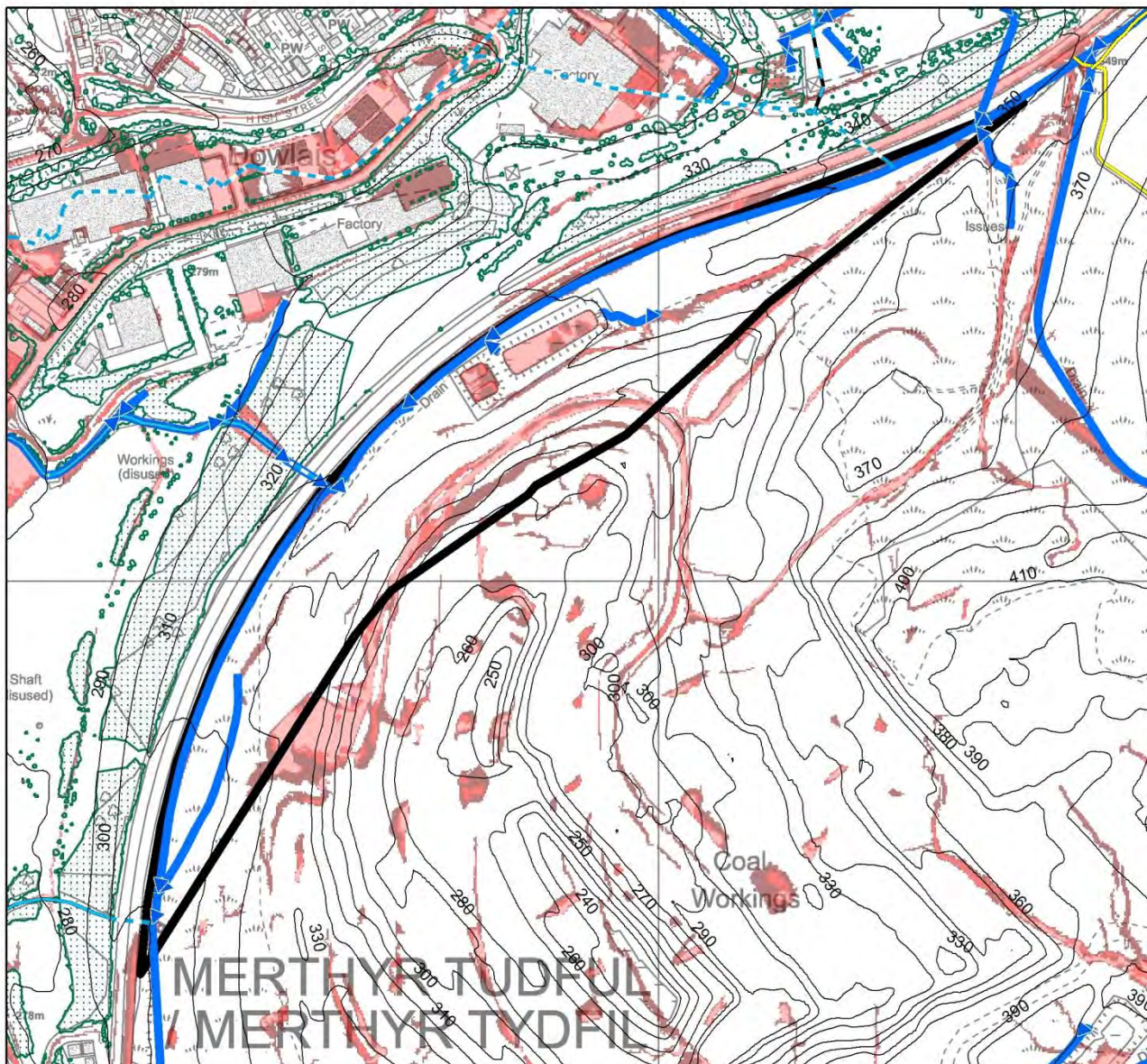


Cynllun Datblygu Lleol Merthyr Tudful 2016-2031

Merthyr Tydfil Local Development Plan 2016-2031

Allocation Site Name Land east of A4060 at Ffos Y Fran

Allocation Site Number EcW 1.3



Date: 21/05/2019

Ward: Dowlais

Scale: 1:7,500 / A4

0 50 100 150 200 250 300
Metres

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Legend

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- Woodland / Trees
- Outside Unitary Authority

Drainage assets / Water courses

- Culvert
- Culvert Assumed Route
- Open Channel
- OS Water Network Data

Risk of Flooding from Surface Water

- Extent 1 in 30
- Extent 1 in 100
- Extent 1 in 1000

Site Ref	EcW1.3	Gross site area (ha)	18.85
Site Name	Ffos y Fran	Net Developable Area (ha)	11.3
		Undeveloped area (ha)	7.55
Site assessment and SUDS opportunities			
<p>The site is currently part of an open cast mining and land reclamation scheme, and will consist of four development plateaus when fully restored. The exposed nature of the site may result in vegetation establishment proving difficult. There remains a number of measures that could provide a drainage solution for the proposed development.</p> <p>A standard employment site plot ratio of 40% would indicate that 4.52 ha of land would be developed for buildings, leaving 6.78 ha of land for access roads, parking landscaping etc.</p> <p>The Council considers that the remaining 60% of the site will be able to incorporate an appropriate drainage solution in addition to the other site requirements.</p>			
Implications and Site Recommendations			
<ul style="list-style-type: none">Development should take place in accordance with Policies SW11: Sustainable Design and Placemaking, and EnW4: Environmental Protection with regard to issues concerning drainage and the water environment.There are a number of potential options for a drainage solution of this site, including; lengthened swales to slow the rate of run-off; the creation of hard surfacing that is permeable; and the creation of pond/basin type features that could also have benefits for landscape and wildlife.No changes are proposed to the site boundary.			

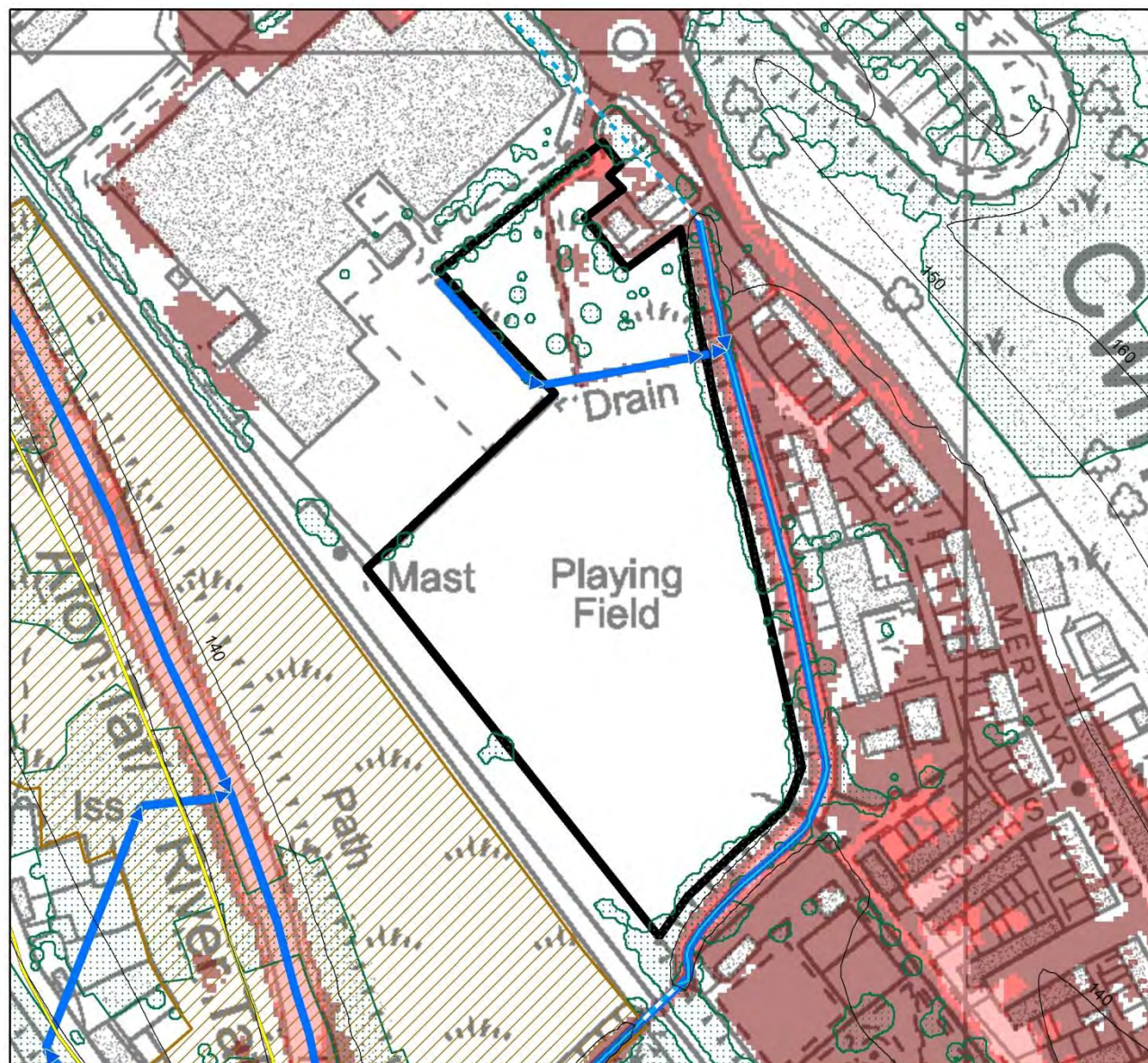


Cynllun Datblygu Lleol Merthyr Tudful 2016-2031

Merthyr Tydfil Local Development Plan 2016-2031

Allocation Site Name Land south of Merthyr Tydfil Industrial Park

Allocation Site Number EcW 1.4



Date: 21/05/2019

Ward: Plymouth

Scale: 1:2,500 / A4

0 10 20 30 40 50 60
Metres



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Legend

- Contours (10m interval)
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- SINCs
- Woodland / Trees
- Outside Unitary Authority

Drainage assets / Water courses

- Culvert
- Culvert Assumed Route
- Open Channel
- OS Water Network Data

Risk of Flooding from Surface Water

- Extent 1 in 30
- Extent 1 in 100
- Extent 1 in 1000

Site Ref	EcW1.4	Gross site area (ha)	3.1
Site Name	Land South of Merthyr Tydfil Industrial Park,	Net Developable Area (ha)	3.1
		Undeveloped area (ha)	0.0
Site assessment and SUDS opportunities			
The site is a former playing field and is situated immediately to the west of an existing channelled watercourse.			
A standard employment site plot ratio of 40% would indicate that 1.24 ha of land would be developed for buildings, leaving 1.86 ha of land for access roads, parking landscaping etc.			
The Council considers that the remaining 60% of the site will be able to incorporate an appropriate drainage solution in addition to the other site requirements.			
Implications and Site Recommendations			
<ul style="list-style-type: none">Development should take place in accordance with Policies SW11: Sustainable Design and Placemaking, and EnW4: Environmental Protection with regard to issues concerning drainage and the water environment.The introduction of an attenuation pond to slow the rate of flow before it enters the watercourse, and incorporating a proportion of the site as a wet meadow, may provide the most effective drainage solution for the proposed development.No changes are proposed to the site boundary.			