

# Ty Nos, Holt Road, Wrexham

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Drainage Statement for Planning

Document No: 20269/E03 Rev A

February 2021



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## 1. INTRODUCTION

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Datrys have been commissioned by Clwyd Alyn to prepare an outline drainage statement in support of a pre-planning application for the construction of a 18 (+ 1 office) unit residential development on Holt Road, Wrexham at grid reference SH 341 507. The apartments are split across five separate blocks with the buildings consisting of two floors. The existing site was a homeless shelter and the building currently lies vacant. To the rear of the site are four temporary housing 'pods' used to house the homeless. The entire site is tarmacked and the front of the site is used as an informal car park. The levels around the site boundaries are relatively flat though the site has a depression in the middle an elevation difference of approximately 0.7m. The site is accessed via the A534 Holt Road and the entrance affords entry to the adjacent Quaker House.

This document will set out the possible solutions to address the surface water runoff associated with the development whilst also offering solution for the foul drainage.

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## 2. FLOOD RISK

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Flood risk maps for the area classify the site as being within Zone A however is indicated as being subject to low/medium risk of surface water flooding (**Appendix A**). The pluvial flood mapping suggests water could enter the site from the north east, conveyed across the adjacent Quaker land, though is deemed as a low risk. The site itself, given its in a topographical depression is consequently shown as medium risk purely as a result that water would not be able to escape until flood waters exceeded the south western boundary, approximately 500mm higher than the low point on site. A query has been directed to NRW in relation to understanding how their surface water flood risk map has been compiled in order to further understand the perceived risk and how it can be addressed.

### NRW

NRW have been contacted with regards the flood risk and have confirmed that from their perspective a FCA would not be required. They advised that the LLFA should be contacted with regards the risk and management of surface water.

### LLFA

Having discussed the flood risk with the LLFA, they have communicated that they have records of numerous incidents of surface water flooding on the adjacent Holt Road. 3 incidents relate to blocked highway gullies and 2 other incidences which do not detail a causation.

Whilst they advised there are no records of the site flooding, as the site is located within a topographical low point, with reported incidents of flooding on the adjacent Holt Road, they recommend the flood risk is better defined in relation to blockage of local drainage infrastructure and surface water runoff and proposals for mitigation put forward to minimise the impact of any future flooding to the development and surroundings.

### DCWW

DCWW have advised there are no recorded instances of flooding in the last 5 years whilst their historic records indicate 3 instances of sewer blockages relative to the postcode.

### **Initial Assessment**

Initial review of levels suggests that the Holt Road channel line level is between 74.22 – 74.01 with much of the site siting lower in the mid 73s. The entrance and pedestrian entrance sit approximately 200-250mm above the highway with these levels visible from the topographic survey. The highway has a gradient from east to west and any flooding on the highway is unlikely to enter the site given the boundary level relative to the road channel.

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The source of pluvial flood risk appears to be from the north east. Given the middle of the existing site has a depression some 500mm lower than the highway and its boundaries, the water would not have an escape route. Should waters enter the site from offsite pluvial sources, measures will be required to ensure water does not pool on site.

Consideration is to be given to raising the site levels to remove the low point and will also include preventative measures at the entrance to mitigate against inundation from the highway. A raised table crossing has initially been illustrated across the entrance which may afford protection to the site from any potential highway flooding

The Quaker building is also served by the same access as the proposal site, with its entrance being at approx. 74.00m A.O.D so it is envisaged that the proposal site will be filled to match this level. As such, any flood waters conveyed onto the site will merely continue down grade, and no longer pool on site. Given the introduction of a formal surface water network on site, which will connect to the surface water drainage network, the volume of water associated with any pluvial flooding would be significantly reduced.

### 3. SURFACE WATER DRAINAGE HIERARCHY

#### Sustainable Drainage Philosophy

The surface water design has been undertaken in accordance with the SuDS drainage hierarchy given in the SuDS Manual published by CIRIA and accepted and adopted by the Lead Local Flood Authority (LLFA).

The drainage hierarchy is:

| SuDS Priority Level | Design approach                                                                                        |
|---------------------|--------------------------------------------------------------------------------------------------------|
| Level 1             | Surface water runoff is collected for re-use                                                           |
| Level 2             | Surface water runoff is infiltrated to ground                                                          |
| Level 3             | Surface water runoff is discharged to a surface water body                                             |
| Level 4             | Surface water runoff is discharged to a surface water sewer, highway drain, or another drainage system |
| Level 5             | Surface water runoff is discharged to a combined sewer                                                 |

**Table 1 - SuDS drainage hierarchy**

Priority Level 1 is the preferred (highest priority) and that 4 and 5 should only be used in exceptional circumstances.

#### Application of SuDS hierarchy to proposals

The following considerations are relevant to the application of the above to the proposed development.

##### Priority Level 1 – Re-use

Re-use will be considered where possible including possible inclusion of raised planters and water butts. Rainwater harvesting is not viewed as feasible due to the nature of the development being individual dwellings. Regardless of re-use being incorporated into the design, a formal method for disposal must be provided to address excess volumes beyond that of which the above options provide, whilst the antecedent conditions are also unknown therefore may provide no storage capacity during a storm event.

##### Priority Level 2 – Infiltration to ground

Porosity testing has been undertaken by the G.I consultant and initial view was that infiltration would not be feasible. However, an analysis of the results will be undertaken for the purposes of ascertaining the infiltration capacity of the ground. If the infiltration rate is deemed to be favourable, then the use of soakaways will be used and there will be no need for an offsite solution to be considered.

Priority Level 3 – Discharge to surface water body

The River Gwenno is approximately 900m away from the site with no other watercourses within the vicinity. A connection to the River Gwenno is deemed to be unfeasible due to the distance.

Priority Level 4 – Surface water or highway sewer

Welsh Water asset maps (**Appendix B**) indicate the presence of a surface water sewer approximately 60m to the north east, with a chamber located on the junction of Holt Road/Montgomery Road. It would appear possible that a gravity connection to the site is possible but further investigation would be required to confirm.

It is unknown whether the highway run off from Holt Road enters a highway drain or one of the combined sewers within Holt Road. Further investigation would be required to determine the possibility of connecting into a highway drain.

Priority Level 5 – Disposal to combined sewer

There are two combined sewers located within Holt Road, though given the above options potentially available, there should to be no need to give this further consideration.

## 4. DESIGN CRITERIA

From the above, the most feasible option entails the discharge of the surface water flow into soakaways if possible. If this is not possible, the attenuated surface water flow will enter into a surface water sewer. The system is to be designed to the following criteria:

| Design element                                       | Criterion                                                                                         |
|------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| Rate of discharge                                    | TBA with SAB/DCWW though assumed to be peak discharge, associated with threshold event, of 6.5l/s |
| Climate change effects                               | + 30%                                                                                             |
| Urban Creep                                          | 0%                                                                                                |
| No uncontrolled surface flooding or off-site run-off | Up to 1 in 100 Year Return Period + 30% Climate Change                                            |

**Table 2 - Storm water design criteria**

The calculation of the storm water run-off is derived from the Wallingford Modified Rational method and in compliance with BS EN 752-4 *Drain and sewer systems outside buildings*.

Assuming infiltration will not be feasible, the rate of discharge has been determined from existing greenfield runoff calculations with no allowance for climate change as per standard practice. The difference between the design storm flow and the outflow will be stored temporarily in underground storage (i.e. porous paving reservoir). To avoid uncontrolled surface flooding, the attenuation will be designed to accommodate the full 1 in 100 year event plus climate change effects. Initial estimates indicate a storage requirement of approximately 60m<sup>3</sup>, which is intended to be afforded within the reservoir layer of the porous surfacing to the parking areas.

The following design criteria will apply for the surface water runoff of the site:

- Approved Document H, Building Regulations
- Sewers for Adoption, 7<sup>th</sup> Edition
- Rainfall runoff management for developments (SC030219)
- BRE Digest 365
- Statutory standards for sustainable drainage systems – designing, constructing, operating and maintaining surface water drainage systems.
- SuDS manual
- Non-Statutory SuDS Technical Standards for Sustainable Drainage: Practical Guidance

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## 5. SUSTAINABLE DRAINAGE

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### **Scheme Approach to Sustainable Drainage**

The design for surface water disposal from the site will be considered in line with the CIRIA SuDS manual. This approach seeks to manage the quantity and quality of surface water runoff on or as close to the surface and as close to the source of the runoff as possible as well as providing amenity and biodiversity to the end users and flora and fauna.

In order for the surface water design to be approved by SAB (SuDS Approval Body), the design has to show compliance with Statutory National Standards for Sustainable Drainage Systems. These Standards are:

- S1 – Surface water runoff destination
- S2 – Surface water runoff hydraulic control
- S3 – Water quality
- S4 – Amenity
- S5 – Biodiversity
- S6 – Design of drainage for Construction and Maintenance and Structural Integrity

#### S1 – Surface water runoff destination

Re-use will be considered where possible including possible raised planters and water butts. Rainwater harvesting was considered by the Client but deemed to be impractical for this site given the nature of the development as individual dwellings. Initial findings from the porosity testing have deemed that soakaways are unlikely to work. If soakaways are not feasible, then a connection into the nearby surface water sewer will be sought subject to agreement with SAB and Welsh Water. Various SuDS features will be incorporated on site prior to runoff exiting the site maximising the opportunity for evapotranspiration.

#### S2 – Surface water runoff hydraulic control

The proposed site discharge will be restricted to a suitable rate via a flow control device to match the existing site runoff. The peak run off rate is initially estimated as 6.5l/s. The additional surface water will be stored onsite in a reservoir layer within the permeable paving situated in the parking areas. The attenuation will be large enough to store on site all storms up to the threshold event (1 in 100 year event + 30% for climate change effects). Due to the type of development the proposed site is, an allowance for urban creep has not been factored into the attenuation calculations.

RWPs will be routed to SuDS planters where practical to slow the conveyance of flows and maximise the opportunity for evapotranspiration. Porous paving throughout the development

will also assist with reducing the rate of runoff at source and will consist of a type C arrangement, with the pipework connecting into the proposed surface water network. The shallow swale, rain garden and catchpits will help to reduce the conveyance rate and ensure there will be no discharge from the proposed site that results from the first 5mm of any rainfall event whilst maximising the opportunity for evapotranspiration.

### S3 – Water quality

A pollution risk may arise from petrol or oil spillage from vehicles using the development site. The drainage of the car parking will form a part of the general site surface water drainage system and will need to be subjected to some form of treatment, likely to be via a type C style porous paving arrangement with the pipework connecting into the adoptable network.

Table 26.2 of the SuDS Manual identifies the site as a low pollution hazard level with indices varying between 0.4 – 0.5. Table 26.3 suggests permeable paving offers a mitigation index of 0.6 - 0.7, while the other SuDS feature also offers the following mitigation indices; swale (0.5 – 0.6).

The sub-base reservoir layer of the permeable paving provides an effective measure to trap suspended solids and hydrocarbons thus improving the water quality before discharging into the onsite pipe network and subsequently offsite. The SuDS features in the scheme will aim to be connected in series to achieve a robust surface water management train providing effective treatment for contaminants by offering the chance for settlement of sediments and interception of hydrocarbons.

### S4 – Amenity

The use of permeable paving within the site will promote multi-functionality, whilst the allowance of climate change aids the developments resilience to future change. SUDS planters offer the opportunity for enhancement of the appearance of the gardens using the water as a valuable resource.

A rain garden provided along the northern boundary and a shallow swale in the north west corner of the site will assist with conveyance of waters through the site. Attenuation will be provided within the reservoir layer of the permeable paving given the lack of available space for above ground storage. The landscaped swale and raingarden will provide an aesthetically pleasing water feature in normal low flows.

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#### S5 - Biodiversity

The proposals will attempt to promote surface conveyance where possible providing opportunities for wildlife and potentially increase the number of species. Soft landscaping, where suitable, within the SuDS features will include a variety of planting of known wildlife value local to the area – providing habitat and food for insects, invertebrates and birds. A landscaping plan will also be produced accounting for appropriate vegetation.

The rain garden can provide habitats and feeding grounds for amphibians as well as birds, insects and small mammals whilst the use of SuDS Planters or raised planters at certain downpipes in individual plots will provide habitat and food for insects, invertebrates and birds.

#### S6 - Design of drainage for Construction and Maintenance and Structural Integrity

All SuDS features will be installed by a competent contractor and will be situated in locations and at shallow depths where they can be easily maintained. A maintenance plan will state the maintenance requirements for the SuDS features in order for them to remain at their optimum capacity.

All materials and components, where possible, will have a minimum design life equivalent to the design life of the development, including an appropriate factor of safety.

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## 6. FOUL WATER DRAINAGE

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The following design criteria will apply for the surface water runoff and foul discharge design of the site:

- Approved Document H, Building Regulations
- Sewers for Adoption 7<sup>th</sup> Edition
- BS EN 12056 Part 2.

The site is afforded to a connection to the nearby combined sewer through an existing 100mm diameter foul lateral serving the existing building on site. This foul connection enters the combined sewer within Holt Road. This 100mm diameter pipe will be replaced with a new 150mm diameter pipe thus requiring a new connection into the Highway. The private drainage on site has been surveyed and will be removed as part of the proposal works.

This new connection could be made to the sewer subject to agreement of the Section 104 and the subsequent Section 106. The general arrangements of the on-site drainage will be largely to adoptable standards and will require liaison with DCWW during the technical vetting procedure and the collation of information for the formal agreement. When the agreement is in place the Section 106 will be required to formalise the sewer connection.

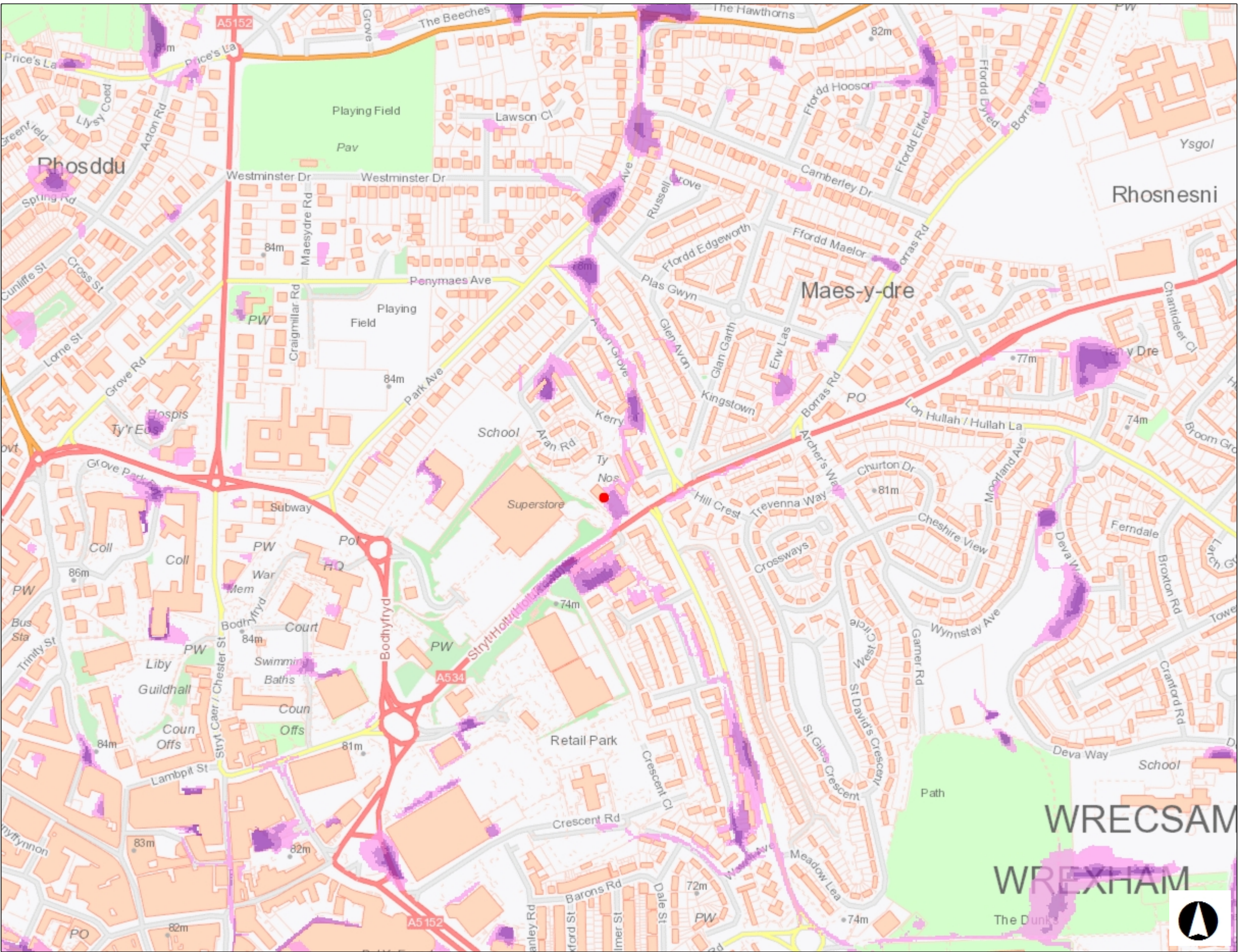
A DCWW pre-application, PPA0005338, has received favourable comments from DCWW indicating they envisage no capacity issues with the network nor the local waste water treatment works (**Appendix C**).

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## **APPENDICES**

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### **APPENDIX A – NRW FLOOD RISK MAPPING**



**Map Perygl Llifogydd / Flood Risk Map -  
Surface Water Flooding**

**Allwedd / Map Key**

 Risk Level Under Review

Flood Risk from the Sea - Extent

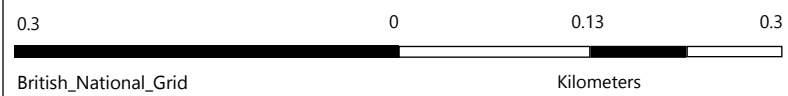
-  High
-  Medium
-  Low

Flood Risk from Surface Water & Small Watercourses - Extent

-  High
-  Medium
-  Low

**Graddfa / Scale at A3** 1: 5,000

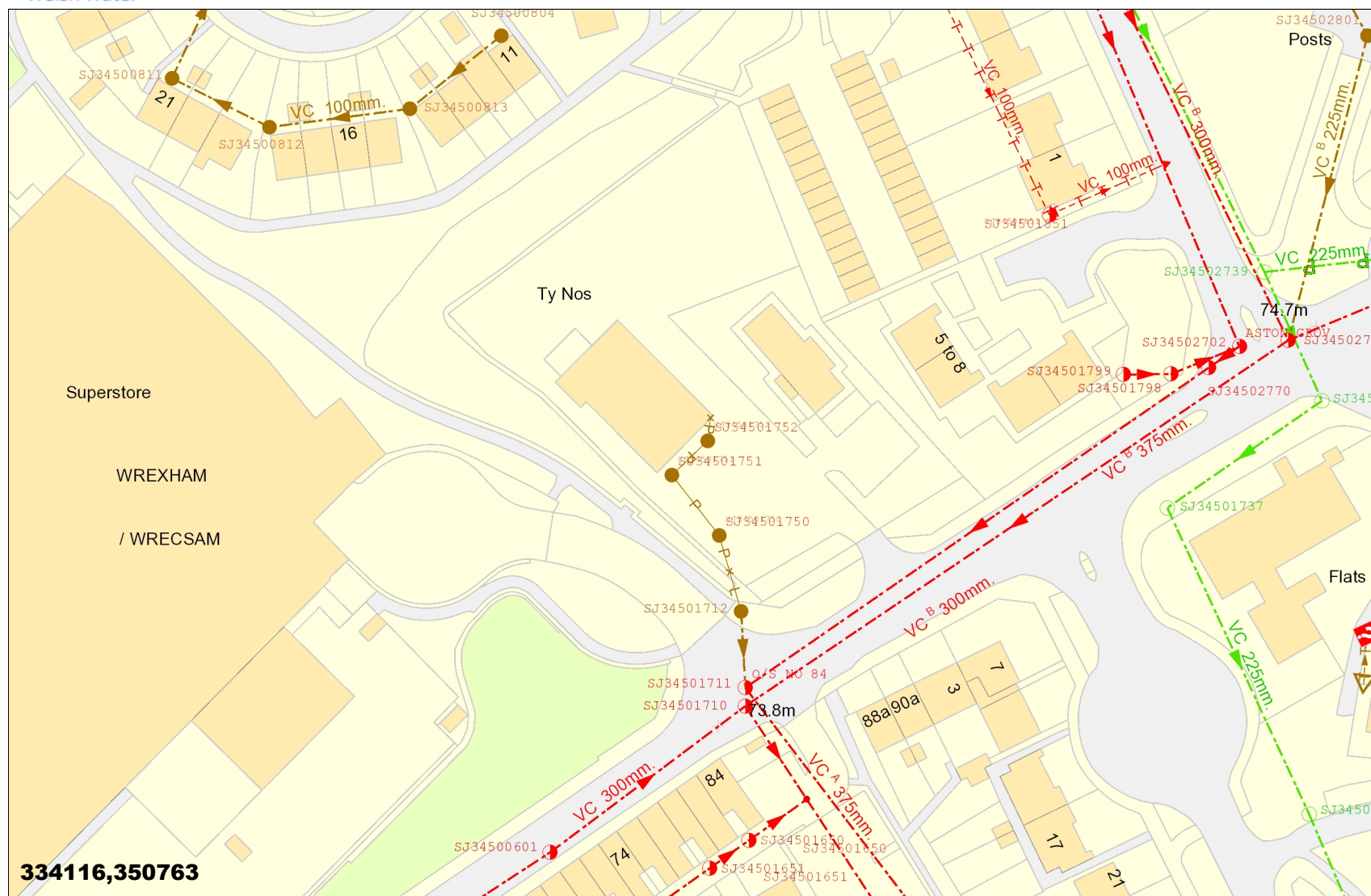
**Dyddiad / Date**  
19/11/2020



## **APPENDIX B – WELSH WATER UTILITY MAPS**



Scale: 1: 1000



#### LEGEND

##### Clean Water

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

##### Sewerage External

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

**334116,350763**

Dŵr Cymru Cyfyngedig ('the Company') gives this information as to the position of its underground apparatus by way of general guidance only and on the strict understanding that it is based on the best information available and no warranty as to its correctness is relied upon in the event of excavations or other works made in the vicinity of the company's apparatus and any onus of locating the apparatus before carrying out any excavations rests entirely on you. The information which is supplied hereby the company, is done so in accordance with statutory requirements of sections 198 and 199 f the water industry Act 1991 based upon the best information available and in particular, but without prejudice to the generality of the foregoing, it should be noted that the records that are available to the Company may not disclose the existence of a drain sewer or disposal main laid before 1 September 1989, or if they do, the particulars thereof including their position underground may not be accurate. It must be understood that the furnishing of this information is entirely without prejudice to the provision of the New Roads and Street Works Act 1991 and the company's right to be compensated for any damage to its apparatus.

**EXACT LOCATION OF  
ALL APPARATUS TO  
BE DETERMINED ON  
SITE**

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

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## **APPENDIX C – DCWW PRE-APPLICATION RESPONSE**

Mr Stuart Hughes  
Clwyd Alyn  
72 Ffordd William Morgan  
St Asaph Business Park  
St Asaph  
Denbighshire  
LL17 0JD

**Date: 04/12/2020**  
**Our Ref: PPA0005338**

Dear Mr Hughes

**Grid Ref: 334113 350780**  
**Site Address: Ty Nos, Holt Road, Wrexham**  
**Development: Residential**

I refer to your pre-planning enquiry received relating to the above site, seeking our views on the capacity of our network of assets and infrastructure to accommodate your proposed development. Having reviewed the details submitted I can provide the following comments which should be taken into account within any future planning application for the development.

### **APPRAISAL**

Firstly, we note that the proposal relates to 19 no. units at Ty Nos, Holt Road and acknowledge that the site comprises of a potential windfall development with no allocated status in the Local Development Plan (LDP). Accordingly, whilst it does not appear an assessment has been previously undertaken of the public sewerage system, we offer the following comments as part of our appraisal of this development.

Please note, notwithstanding the following assessment, we would advise there is also a mandatory requirement to undertake pre-application consultation with all 'Specialist Consultees', including Dwr Cymru Welsh Water as the statutory water and sewerage undertaker, in accordance with Schedule 4 of Town & Country Planning (Development Management Procedure) (Wales) (Amendment) Order 2016. As a major development, amounting to more than 10, you will be statutorily required to consult Welsh Water and a substantive response will be issued within 28 days from the date of the notice as per the requirements of Article 2E.

### **Public Sewerage Network**

The proposed development site is located in the immediate vicinity of a separate sewerage system, comprising combined, foul and surface water public sewers, which drains to Five Fords Wastewater Treatment Works (WwTW).



You are also advised that some public sewers and lateral drains may not be recorded on our maps of public sewers because they were originally privately owned and were transferred into public ownership by nature of the Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011. The presence of such assets may affect the proposal. In order to assist you may contact Dwr Cymru Welsh Water on 0800 085 3968 to establish the location and status of the apparatus in and around your site. Please be mindful that under the Water Industry Act 1991 Dwr Cymru Welsh Water has rights of access to its apparatus at all times.

### **Surface Water Drainage**

As of 7th January 2019, this proposed development is subject to Schedule 3 of the Flood and Water Management Act 2010. The development therefore requires approval of Sustainable Drainage Systems (SuDS) features, in accordance with the 'Statutory standards for sustainable drainage systems – designing, constructing, operating and maintaining surface water drainage systems'. As highlighted in these standards, the developer is required to explore and fully exhaust all surface water drainage options in accordance with a hierarchy which states that discharge to a combined sewer shall only be made as a last resort. Disposal should be made through the hierarchical approach, preferring infiltration and, where infiltration is not possible, disposal to a surface water drainage body in liaison with the Land Drainage Authority and/or Natural Resources Wales.

It is therefore recommended that the developer consult with Wrexham County Borough Council, as the determining SuDS Approval Body (SAB), in relation to their proposals for SuDS features. Please note, DCWW is a statutory consultee to the SAB application process and will provide comments to any SuDS proposals by response to SAB consultation. Please refer to further detailed advice relating to surface water management included in our attached Advice & Guidance note. In addition, please note that no highway or land drainage run-off will be permitted to discharge directly or indirectly into the public sewerage system.

### **Foul Water Drainage – Sewerage Network**

We have considered the impact of foul flows generated by the proposed development and concluded that flows can be accommodated within the public sewerage system. We advise that the flows should be connected to the combined sewer at manhole SJ34501711 located in highway to the South of the site. We note that there is a private sewer from the development site already connected to manhole SJ34501711, this may be able to be further utilised.

Should a planning application be submitted for this development we will seek to control these points of communication via appropriate planning conditions and therefore recommend that any drainage layout or strategy submitted as part of your application takes this into account. However, should you wish for an alternative connection point to be considered please provide further information to us in the form of a drainage strategy, preferably in advance of a planning application being submitted.



You may need to apply to Dwr Cymru Welsh Water for any connection to the public sewer under Section 106 of the Water Industry Act 1991. However, if the connection to the public sewer network is either via a lateral drain (i.e. a drain which extends beyond the connecting property boundary) or via a new sewer (i.e. serves more than one property), it is now a mandatory requirement to first enter into a Section 104 Adoption Agreement (Water Industry Act 1991). The design of the sewers and lateral drains must also conform to the Welsh Ministers Standards for Foul Sewers and Lateral Drains, and conform with the publication "Sewers for Adoption"- 7th Edition. Further information can be obtained via the Developer Services pages of [www.dwrcymru.com](http://www.dwrcymru.com).

If the development will give rise to a new discharge (or alter an existing discharge) of trade effluent, directly or indirectly to the public sewerage system, then a Discharge Consent under Section 118 of the Water Industry Act 1991 is required from Dwr Cymru / Welsh Water. Please note that the issuing of a Discharge Consent is independent of the planning process and a consent may be refused although planning permission is granted.

### **Foul Water Drainage – Sewerage Treatment**

No problems are envisaged with the Wastewater Treatment Works for the treatment of domestic discharges from this site.

I trust the above information is helpful and will assist you in forming water and drainage strategies that should accompany any future planning application. I also attach copies of our water and sewer extract plans for the area, and a copy of our Planning Guidance Note which provides further information on our approach to the planning process, making connections to our systems and ensuring any existing public assets or infrastructure located within new development sites are protected.

Please note that our response is based on the information provided in your enquiry and should the information change we reserve the right to make a new representation. Should you have any queries or wish to discuss any aspect of our response please do not hesitate to contact our dedicated team of planning officers, either on 0800 917 2652 or via email at [developer.services@dwrcymru.com](mailto:developer.services@dwrcymru.com)

Please quote our reference number in all communications and correspondence.

Yours faithfully,



**Owain George**  
**Planning Liaison Manager**  
**Developer Services**

***Please Note that demands upon the water and sewerage systems change continually; consequently the information given above should be regarded as reliable for a maximum period of 12 months from the date of this letter.***



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Mae Dwr Cymru yn eiddo i Glas Cymru – cwmni 'nid-er-elw'.

We welcome correspondence in  
Welsh and English

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Rydym yn croesawu gohebiaeth yn y  
Gymraeg neu yn Saesneg

Dŵr Cymru Cyf, cwmni cyfyngedig wedi'i gofrestru yng  
Nghymru rhif 2366777. Swyddfa gofrestredig: Heol Pentwyn  
Nelson, Treharris, Morgannwg Ganol CF46 6LY.

