



Residential Development Roch Civil Stage 3 Report

For Wakefield Developments Pembrookshire Limited

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Issued by	Hydrock Consultants Limited Wharton Place 13 Wharton Street Cardiff CF10 1GS United Kingdom T +44 (0)2920 023 665 E cardiff@hydrock.com hydrock.com	Client	Wakefield Developments Pembrokeshire Limited
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Issue number	P01	Name
Prepared by		Jessica Li
Checked by		Chris Stone
Approved by		Mark Lewis

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1. Introduction

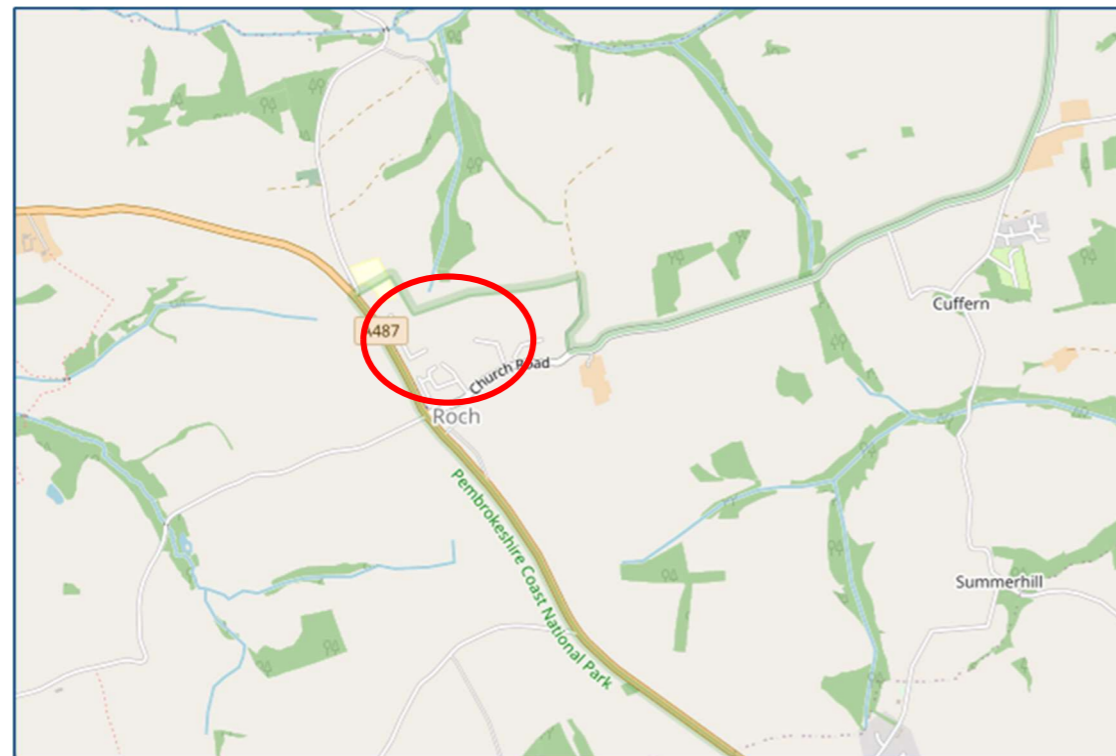
This report forms the Civils RIBA Stage 3 report for the proposed residential development at land off Maes Ffynnon Roch, Pembrokeshire. The purpose of this report is to provide commentary on the engineering progress to date, design parameters, engineering philosophy, site constraints, design development, and to provide a basis for the developed design at RIBA Stage 4.

1.1 Site Information

1.1.1 Site Location

Figure 1 indicates the site location within the red circle, which is located off the A487 via Pilgrim's Way, Roch, Harverfordwest, SA62 6AJ (Approximate Grid Reference X-187447, Y-221279). ©OpenStreetMap contributors.

Figure 1.1: Site location plan



1.1.2 Site Description

The site is approximately 2.0 hectares (ha) of greenfield land which will be split into two catchments of the development. One catchment is 0.6ha in area and located to the east of the site off Pilgrims Way and the other catchment is 1.4ha on the western side of the site off Maes Ffynnon.

The site is bordered by existing dwellings on the eastern, southern and western boundaries, with greenfield land bordering the northern boundary of the site. The site has allowance for two direct vehicle accesses where one phase will be accessed via Pilgrim's Way, and the other phase will be accessed via Maes Ffynnon which are located to the west and east of the site respectively.

1.2 Development Brief

For assessment purposes the development is a proposed residential development of 52 units with associated infrastructure. The proposed new development will be split into two phases which be accessed via Pilgrim's Way and Maes Ffynnon respectively.

2. Ground conditions

2.1 Infiltrations and Soakaways

Based on the preliminary site investigation works which were conducted on site on 21.02.2022, where trial holes were dug to a depth of 1m below existing ground level across the site. The results returned no infiltration on the test within Phase 1 and ground water was hit at a depth of approximately 800mm within the trial hole in Phase 2. Based on the findings of the testing we have concluded that soakaways are not a feasible means of disposing surface water runoff generated from the site.

Whilst not being allowed for in the drainage design it is proposed, that where possible, SABS features will be unlined to utilise any marginal infiltration that may occur.

2.2 Further Geotechnical and Geo-Environmental Investigation Work.

Required Further Actions:

- » Desk top study is required for the site prior to full investigation works commencing.
- » Full geotechnical ground investigation and geotechnical laboratory testing is required.

3. Civil Engineering

3.1 Site Levels and Access Arrangements

The site has allowance for direct vehicle access off Pilgrim's Way to the western boundary of the site and also from Maes Ffynnon to the eastern boundary of the site. The proposed development is situated on an existing greenfield that is segregated into two sections via an existing ridgeline and ditch therefore, the western section of the site falls south to north and the eastern section of the site falls southeast to northwest at approximately 1:12 and 1:18 respectively. Due to the topography of the site the proposed development will be split into two phases and catchment areas, one to the west and one to the east of the proposed development, however both catchment areas will drain to the same discharge outfall. Figure 3.1 (©OpenStreetMap contributors) outlines the catchment areas for the proposed development, where catchment 1 is highlighted in blue and catchment 2 is highlighted in red. A cut fill analysis will also be undertaken to provide an indication of the quantum of material which will require disposal offsite. A copy of the site general arrangement drawings containing indicative development levels and retaining wall heights can be found in Appendix B.

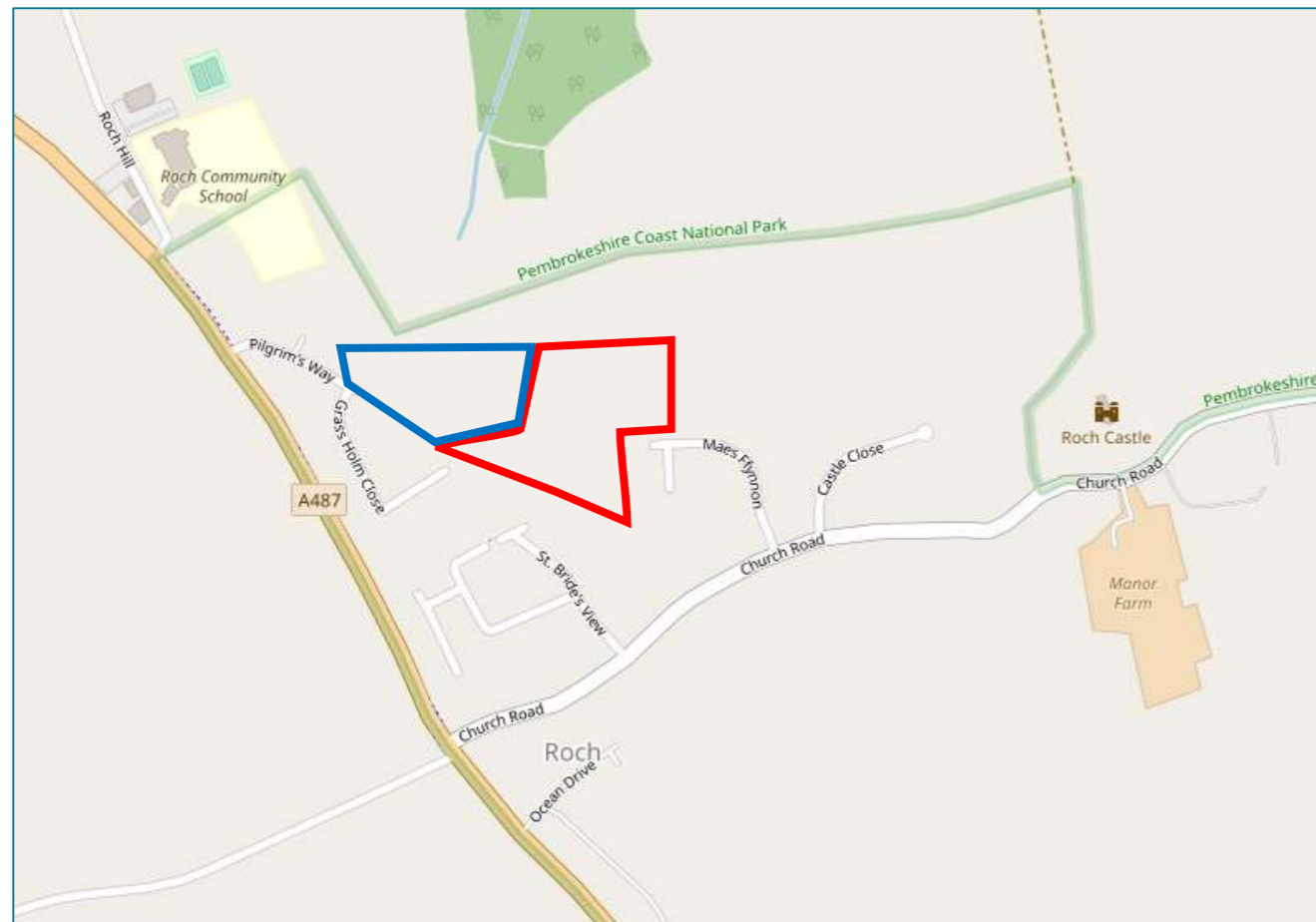


Figure 3.1: Catchment Plan

3.2 Flood Risk

From available mapping information an area adjacent to the site on the northern boundary of the proposed development that is subject to very minor surface water flooding indicated by the purple hatching in Figure 3.2 which is an extract from Natural Resources Wales (NRW) flood risk maps. The site itself is showing as being free from any form of flooding.



Figure 3.2: Extract from NRW flood risk map

3.3 Existing Drainage Arrangements

From available mapping information it has been established that the nearest watercourse is located north of the site which flows south to north and lies within the site boundary. Additionally, there is an existing pond, pumping station and tank located within the eastern portion of the site which discharge into the existing watercourse, these existing drainage elements currently serve a number of dwellings from Maes Ffynnon.

The nearest foul sewers are a public foul sewer 150mm in diameter flowing east to west located west of the site within Pilgrim's Way, and an existing pumping station receiving flows from a number of dwellings from Maes Ffynnon via a public foul sewer 150mm in diameter flowing east to west and located within the eastern portion of the site's boundary. Figure 2 contains an extract of the Dwr Cymru Welsh Water (DCWW) asset plan for the area with the site boundary shown in green.

Figure 3.3 contains an extract of the DCWW asset plan for the area with the site boundary shown in green.

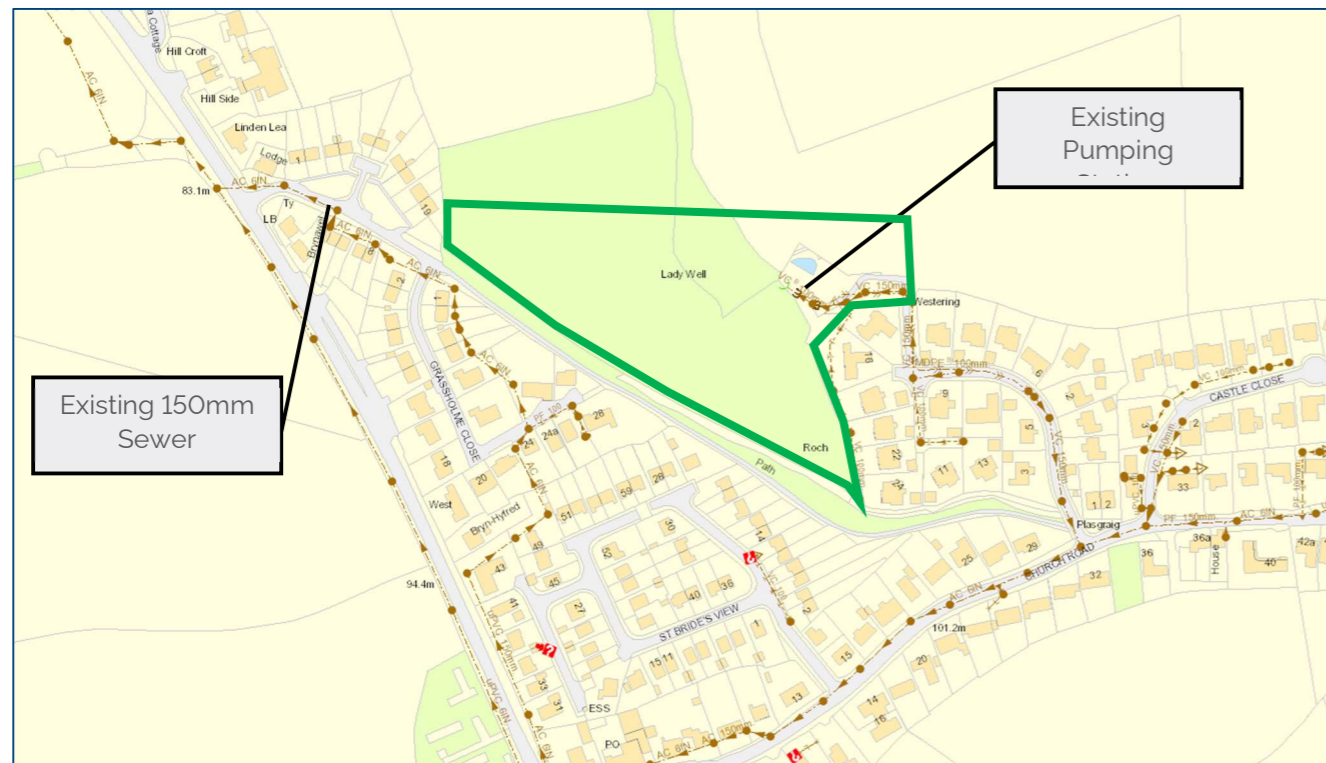


Figure 3.3 Extract of DCWW Record Plan

3.4 Proposed Development

3.4.1 Foul Drainage Strategy

The proposed new development will be constructed on existing greenfield land with no existing gravity foul drainage outlet. There is an existing public pumping station located near the eastern boundary of the site which serves Maes Ffynnon. It is proposed to discharge the site to the existing public foul sewer west of the site located in Pilgrim's Way. Both phases of the development should be able to gravitate to this new outfall without the need for pumping. The existing foul pumping station located near the eastern boundary of the site that currently serves dwellings from Maes Ffynnon is proposed to be decommissioned and removed with the existing flows being diverted into the new gravity system, this option will need to be discussed further with DCW/W at detailed design stage.

The capacity of the existing sewer to receive the flows from the proposed development has been confirmed by DCW/W via a pre planning response (PPA0005824), a copy of the pre planning response from DCW/W is included in Appendix A.

All on site sewerage systems will be designed and constructed to comply with building regulations requirements with any adopted elements in accordance with the latest edition of "Sewers for Adoption" and any of the adopting authority's (DCW/W) specific requirements.

3.4.2 Surface Water Drainage Strategy

The aim of the surface water drainage strategy is to mimic the natural catchment processes as closely as possible and adopt the principles of water management schemes as stated in section 2 of the statutory "Sustainable Drainage Systems Standards for Wales" (SDSSW) document 2018.

From 7th January 2019 Schedule 3 of the Flood and Water Management Act has been implemented by the Welsh Government which requires any development of more than 1 unit or where the construction area is greater than 100m² to comply with the SuDS Approving Bodies (SAB's) design guidance and

ministers' standards which will require all sites to adopt SuDs in their design. The standards are listed below;

- » S1 – Surface Water Runoff Destination
- » S2 – Surface Water Runoff Hydraulic Control
- » S3 – Water Quality
- » S4 – Amenity
- » S5 – Biodiversity
- » S6 – Design of Drainage for Construction, Operation and Maintenance

A SAB pre-app will be submitted to the local authority prior to commencement of the stage 3 design works in order that a positive response can be obtained from the SAB officer for the developments' strategy ahead of the planning submission. Below is a summary of how the standards will be met within this development.

S1 Surface Water Runoff Destination

Based on the site investigation works conducted on site on 21.02.2022, where trial holes were dug to a depth of 1m below existing ground level, the results returned ground water was hit at a depth of approximately 800mm within the trial hole in catchment 1 and no infiltration on the test within catchment 2. Based on the findings of the testing on site soakaways are noted as a feasible solution for the disposal of surface water runoff, therefore the site will look to utilise a discharge to the existing watercourse which is located within the site to the north of the site and flows north the south. This existing watercourse currently receives surface water runoff from the dwellings and infrastructure on Maes Ffynnon via an existing pond and tank. The proposed surface water drainage strategy will look to utilise two discharge points into the existing watercourse, one to serve catchment 1 and one to serve catchment 2, where the watercourse is considerably lower than both catchment plateaus and therefore both connections will be achievable via gravity.

S2 Surface Water Runoff Hydraulic Control

SuDS features will be proposed across the site to provide the required levels of interception stated in the "Sustainable Drainage Systems Standards for Wales" (SDSSW).

The proposed discharge rates from the development will be attenuated to the current greenfield runoff rates of the site, 2.9l/s and 7.1l/s for catchment 1 and catchment 2 respectively, with storage being provided for all rainfall events up to and including a 1in100 year return event with 40% allowance for climate change.

Storage will be provided in the form of rain gardens and permeable paving across the site and the main features of a pond to the north of the site and a smaller pond and cellular storage tank located within catchment 1 of the development.

As part of the proposed design, we would look to decommission the existing attenuation pond and divert the existing surface water flows from Maes Ffynnon into the proposed new system to free up development land within the eastern area of the site. The existing flows from Maes Ffynnon are proposed to be diverted into the proposed new area 2 system with the new northern attenuation basin catering for both the proposed and existing flows. Based on the design information received from the client the design volume of the existing basin is 185cu and the design discharge rate is 8.8 l/s, a copy of the existing design drawings can be found in Appendix B.

The proposed system will make an allowance for the existing flows by increasing the allowable discharge rate from 7.1l/s to 15.9l/s at the outfall to include the design discharge rate of the existing attenuation basin. Along with providing a minimum of 185cu of additional storage to compensate of the removal of the existing attenuation basin.

S3 Water Quality

The management trains to be used on the project will be assessed using the Simple Index Assessment (SIA) tool available publicly (<http://www.ukSuDS.com/drainage-calculation-tools/water-quality-assessment-for-SuDS-developments>) which is built around the principles for simple assessment outlined in CIRIA C753 to assess the levels of treatment provided by the proposals.

The possible impact of accidental spills will need to be addressed with the most vulnerable areas to a spill or other pollution incident being any car park areas and access roads. The highway areas and parking will therefore be drained into the permeable paving system or adjacent rain gardens or tree pits which will provide a level of treatment for pollution.

Planting within the SuDS features should form part of the water quality strategy. SuDS components like rain gardens and ponds will provide water quality improvements by reducing sediment and contaminants from runoff either through settlement or biological breakdown of pollutants as part of their interceptor function, so only robust and tolerant species of planting should be specified. Once these species establish this will decrease the flow rate of water travelling through and filter pollutants and contaminants before entering the downstream network.

S4 Amenity

The primary amenity focus of the SuDS scheme should be to improve the health and well-being of the users. The scheme will need to be based on natural forms that mimic natural landscapes found within the region and the vegetated rain garden planting areas are designed with locally contextual species that will encourage natural colonisation. Other key amenity benefits should include improving air quality around the development, increasing carbon sequestration and improving water quality through removal of pollutants via rain gardens and ponds.

S5 Biodiversity

The SuDS scheme biodiversity strategy should revolve around the creation of significant and varied habitat to increase the overall biodiversity of the site and ecological value. The inclusion of plant species that will enhance the general eco system and simultaneously act as a water filtration system to clean pollutants and contaminants should be used where possible.

The plant species selected should be both locally contextual and appropriate for the varied habitat zones including primary characteristics that shall ensure:

- » Good soil binding and filtration species
- » Minimised erosion
- » Improved filtration via dense root and stem species
- » Tolerance to seasonal variations including droughts and inundations
- » Good suspended solids retention
- » Pollutant tolerant
- » Emergent and pioneering species for natural ecological colonisation
- » The creation of diverse, self-sustaining and resilient ecosystems for high species biodiversity
- » Support for local and regional habitat strategies

In general, the proposed rain gardens and ponds will be the focal habitat for the site and will enhance the site over the current site layout by adding areas of water and damp soils. Exposed areas of rain gardens will attract certain species and shaded areas under adjacent buildings and trees will further enhance the varied ecosystem potential.

S6 Design of Drainage for Construction, Operation and Maintenance

The surface water drainage system should be designed with the overriding ethos of simplicity in construction, use and maintenance. This then allows a very simple translation from the principles described within standard S6, namely that all elements of the surface water drainage system should be designed so that they can be constructed, as well as maintained and operated "...easily, safely, cost-effectively, in a timely manner, and with the aim of minimising the use of scarce resources and embedded carbon (energy)." (SDSSW).

The proposed system will be offered for adoption as it will serve more than one property, therefore the SAB will be responsible for the maintenance of the off-plot elements of the system to ensure it continues to comply with SuDS standards. In order for the drainage system to be adopted it must be designed and constructed in accordance with the SDSSW document and any conditions of approval stipulated by the SAB.

A copy of the surface water drainage strategy drawings can be found in Appendix B.

3.5 Location of the Attenuation Pond

As seen from the drainage strategy drawings provided in Appendix B and under section 3.4.2 of this report, the proposed development's surface water strategy is to attenuate the development's surface water via permeable paving, rain gardens, a cellular storage tanks and ponds across the site; and discharge the development's surface water into the existing watercourse via two discharge outfalls. As shown on the drainage strategy drawings in Appendix B the location of the larger pond is situated outside of the site's planning boundary. The pond has been located as such due to a number of reasons which are the following:

- » To maximise the developable area within the site's boundary
- » The proposed location of the pond allows more of the site to gravitate to the watercourse without the requirement of pumping
- » To ensure the scheme is financially viable
- » To provide betterment to the wider catchment area by including and diverting Maes Ffynnon's existing surface water catchment into our proposed development's surface water drainage strategy;
- » In doing so it allows Maes Ffynnon to be offered up for adoption which is a requirement from Pembrokeshire County Council
- » The pond has been sized and designed to accept storage for a 1in100 YRP + 40% climate change allowance, whilst the existing pond on site has only been designed to accept storage for a 1in30 YRP

3.6 Proposed Site Levels

The proposed site will be split into plateaus, the higher plateau will be located to the east of the site and accessed off the existing highway on Maes Ffynnon with the lower plateau to the west of the site being accessed off Pilgrims Way. Due to the change in level between the two areas of the site there will be a retaining wall to ramped access structure constructed between the two plateaus as shown on the engineering strategy layout.

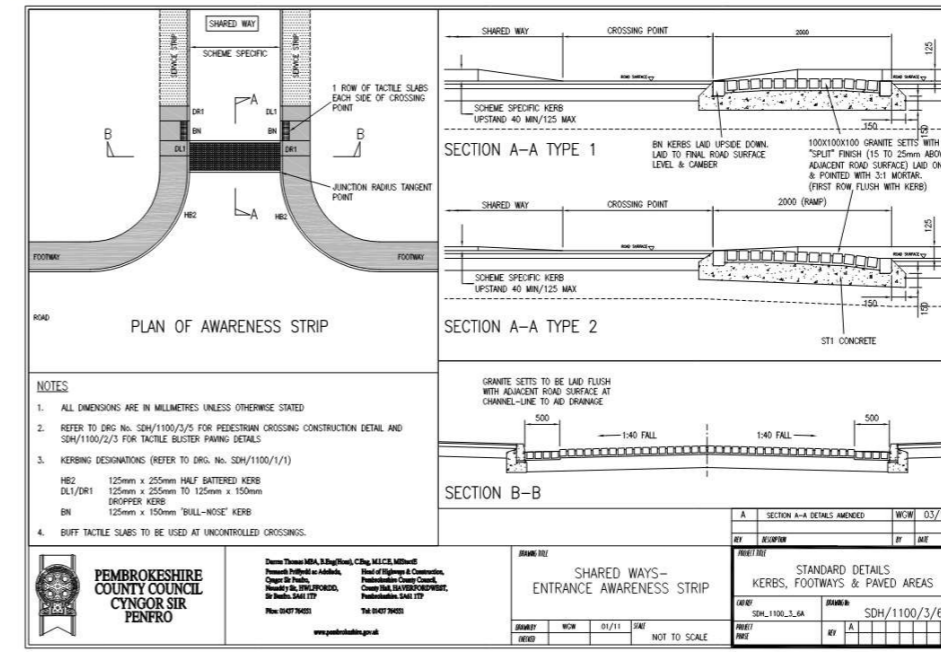
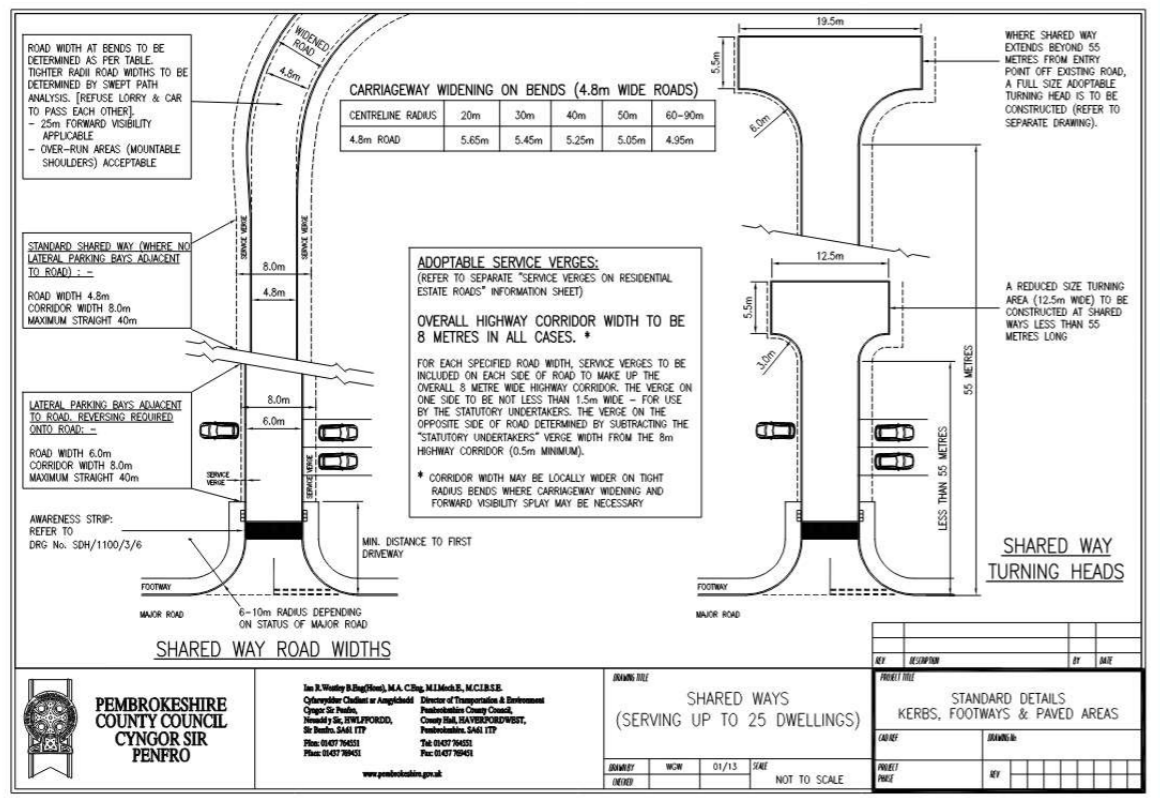
The levels have been designed to ensure as much of the site as possible can gravitate to the main attenuation pond. With the rest of the site discharging into the adjacent watercourse via a cellular storage tank located on the lower plateau of the site. Due to levels a small area of the access road into the site will need to discharge into the existing surface water within Pilgrims Way.

3.7 Vehicle Access

The site is proposed to have direct vehicle access off Pilgrim's Way and Maes Ffynnon located to the west and east of the proposed development respectively. Both proposed junctions have been designed in accordance to Pembrokeshire County Council's highway standards and preliminary consultation has

been held with the highway authority of these proposed junctions. This will require modification to the existing Pilgrim's Way carriageway which will entail widening a section of the existing carriageway leading up to the proposed development's western vehicle access to 5.5m to achieve the required forward visibility entering the site, and the formation of a new carriageway to construct a new vehicle access into the proposed development on the eastern boundary off Maes Ffynnon. The preliminary consultation with the highway authority has established that Maes Ffynnon is currently under private ownership and cannot be offered for adoption until the drainage strategy of Maes Ffynnon is bought up to an adoptable standard. The proposed development's drainage strategy has been designed to accommodate and attenuate the existing flows generated from Maes Ffynnon, as mentioned in section 3.4.2 under the SDSSW S2 standard, to allow for Maes Ffynnon to be offered up for adoption.

Both of the proposed vehicle accesses into the proposed development will begin at 5.5m wide and widen to a 6m shared surface within the proposed development. Prior to becoming a 6m wide shared surface, these will be designed in accordance with shared ways details (reproduced below) provided by Pembrokeshire County Council highways department, appropriate turning facilities will be provided at the end of each shared surface. The proposed vehicle access from Pilgrim's Way will widen to 6.5m whilst from Maes Ffynnon the proposed carriageway will widen to approximately 7.7m on the radius to enable large refuse vehicles to access the proposed development from the west and east respectively.



Private shared drives will be provided for properties not directly accessible from the spine road or shared surface.

A copy of the site general arrangement drawings can be found in Appendix B.

4. Statutory Approvals

4.1 SAB

From 7th January 2019 Schedule 3 of the Flood and Water Management Act has been implemented by the Welsh Government which requires any development of more than 1 unit or where the construction area is greater than 100m² to comply with the SuDS Approving Bodies (SAB's) design guidance and ministers' standards which will require all sites to adopt SuDs in their design. As such a SAB application will be required to be prepared, submitted and approved prior to commencement of any construction works on site.

4.2 DCWW

It is proposed that the development's below ground foul drainage network will be adopted by DCWW. S104 and S106 agreements will need to be obtained for these elements of the works.

4.3 Planning

The site is due to submit a Pre-Application Consultation (PAC) as part of the required process of acquiring planning for the development.

4.4 Building Regulations

The local authority will be engaged in the next works stage to begin discussions around building regulations approval.

5. Next Steps

- » Suggested additional surveys:
 - » Commission GPR survey of the development's boundary

- » Undertake manhole survey of existing foul manhole chamber located within Pilgrim's Way which has been identified as a connection point for the proposed development's foul discharge
- » Commission GI works
- » Development and submission of a SAB application
- » Develop RIBA Stage 4 Design for tender.

5.1 Key Project Risks

There are a number of outstanding project risk at this stage, which will be managed and eliminated through the following workstages and design development. The key risks with relations to Civil engineering are discussed below:

- » Buried drainage elements on the site
- » Existing pond to be decommissioned

5.2 Information Required at the Next Stage

- » GPR information of the site
- » Further GI work
- » Foul manhole information

Appendix A DCW/W pre planning response

Miss Jessica Li
Hydrock
Castlebridge 5
Cowbridge Road East
Cardiff
Glamorgan
CF11 9AB

Date: 30/06/2021
Our Ref: PPA0005824

Dear Miss Li,

Site Address: Roch
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.

SEWERAGE

Firstly, we note that the proposal relates to a development of 55 dwellings and acknowledge the is allocated (Ref: HSG/114/LDP-01) within the Local Development Plan (LDP). In reference to our representations during the LDP consultation process, namely the 'Statement of Common Ground', we can confirm that an assessment has been undertaken of the public sewerage system to accommodate 55 dwellings and informs our appraisal as follows.

Public Sewerage Network

The proposed development site is located in the immediate vicinity of a foul only sewerage system, which drains to Newgale Waste water 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 Pembrokeshire County 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 foul sewerage system. We advise that the flows should be connected to the foul sewer located in Pilgrims Way at manhole SM87213207.

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.

SEWAGE TREATMENT

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

WATER SUPPLY

A water supply can be made available to service this proposed development. However, this would require the installation of off-site mains from our 6" diameter watermain located in Pilgrims Way. Under Sections 40 - 41 of the Water Industry Act 1991 the above cost is requisitionable and, subject to us receiving your detailed site layout plan and your programme for construction, we would be able to provide a more accurate assessment of the developer's contribution. These details should be sent to the above address.

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

Please quote our reference number in all communications and correspondence.

Yours faithfully,



Owain George
Planning Liaison Manager
Developer Services



Welsh Water is owned by Glas Cymru – a 'not-for-profit' company.
Mae Dŵr Cymru yn eiddo i Glas Cymru – cwmni 'nid-er-elw'.

We welcome correspondence in
Welsh and English

Dŵr Cymru Cyf, a limited company registered in
Wales no 2366777. Registered office: Pentwyn Road,
Nelson, Treharris, Mid Glamorgan CF46 6LY

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.

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

We welcome correspondence in
Welsh and English

Dŵr Cymru Cyf, a limited company registered in
Wales no 2366777. Registered office: Pentwyn Road,
Nelson, Treharris, Mid Glamorgan CF46 6LY

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.

Appendix B Preliminary general arrangement and drainage drawings



PART OF THE MATERIAL IN THIS PLOT HAS BEEN REPRODUCED FROM AN ORDNANCE SURVEY MAP © CROWN COPYRIGHT 2021. ALL RIGHTS RESERVED. LICENCE NUMBER 100022432.

KEY	
	MAJOR CONTOUR (0.5m INTERVALS)
	MINOR CONTOUR (0.1m INTERVALS)
	CONTOUR LEVEL
	RETAINING STRUCTURE
	DWARF RETAINING STRUCTURE (UNDER 0.5m)
	SuDS EASEMENT

NOTES:

- DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT PROJECT DRAWINGS AND WITH THE HEALTH AND SAFETY INFORMATION PROVIDED AND/OR WITHIN THE PRE-CONSTRUCTION INFORMATION.
- USE OF THIS DRAWING DOES NOT ABSOLVE THE CLIENT FROM HIS RESPONSIBILITIES UNDER THE HEALTH AND SAFETY. THE CONSTRUCTION DESIGN AND MANAGEMENT REGULATIONS 2015. THE PRINCIPAL DESIGNER IS REQUIRED TO CONTACT HYDROCK CONSULTANTS PRIOR TO PERMITTING THIS DRAWING TO BE USED IN CONNECTION WITH ANY CONSTRUCTION WORKS.
- BEFORE COMMENCEMENT OF ANY WORKS ASSOCIATED WITH THE DRAWING REFER TO ALL RELEVANT HEALTH AND SAFETY INFORMATION FOR THE WORKS INCLUDING RESIDUAL RISK INFORMATION. THE CONTRACTOR SHOULD COMPLY WITH HS(G) 47 'AVOIDING DANGER FROM UNDERGROUND SERVICES' WHEN PLANNING, LOCATING AND EXCAVATING AROUND EXISTING SERVICES. IT IS KNOWN THAT EXISTING UTILITY COMPANY UNDERGROUND SERVICES AND APPARATUS ARE PRESENT WITHIN THE PROPOSED WORKS AREA AND IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE EXISTING SERVICES ON SITE ACCURATELY.
- INFORMATION REGARDING THE LOCATION AND DEPTH OF EXISTING SERVICES CANNOT BE GUARANTEED BY THE STATUTORY UNDERTAKER. THE CONTRACTOR SHALL CONDUCT THE WORKS WITH DUE REGARD FOR THE ECOLOGICAL AND ENVIRONMENTAL REQUIREMENTS OF THE SCHEME. THE DRAWING SHALL BE USED FOR THE INTENDED PURPOSE ONLY AND THIS DRAWING HAS BEEN BASED ON INFORMATION PROVIDED BY OTHER PARTIES AND HYDROCK DO NOT WARRANT THE ACCURACY OF THIS INFORMATION. DIMENSIONS SHALL NOT BE SCALED FROM THE DRAWING AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL DIMENSIONS AND LEVELS ON SITE FOR THE ACTUAL SETTING OUT OF THE WORKS. DIMENSIONS MARKED 'DIMENSIONS TO BE SITE CHECKED' ARE SUBJECT TO CONFIRMATION BY THE CONTRACTOR BEFORE THE WORKS COMMENCE.
- HYDROCK IS NOT RESPONSIBLE FOR CHECKING DIMENSIONS ON SITE.
- HYDROCK IS NOT RESPONSIBLE FOR SETTING OUT GRID LINES, BUILDING LINE ETC.
- HYDROCK IS NOT RESPONSIBLE FOR DIMENSIONS USED IN THE ORDERING AND MANUFACTURING OF EQUIPMENT AND THIS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- ALL FIGURED LEVELS ARE IN METRES AND RELATED TO EXISTING SURVEY GRID & DATUM UNLESS NOTED OTHERWISE.
- ALL FIGURED DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
- TEMPORARY WORKS DESIGN ASSOCIATED WITH THE CONSTRUCTION OF THE WORKS SHALL BE RESPONSIBILITY OF THE CONTRACTOR.
- THE CONTRACTOR SHALL MAINTAIN FREE AND OPEN ACCESS TO PUBLIC HIGHWAY AND ADJACENT LANDS AT ALL TIMES DURING THE COURSE OF THE WORKS UNLESS OTHERWISE AGREED IN WRITING WITH THE INTERESTED PARTIES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF ALL TRAFFIC MANAGEMENT PROPOSALS & PHASING. SUCH DETAILS SHALL BE SUBMITTED TO THE LOCAL HIGHWAY AUTHORITY FOR APPROVAL PRIOR TO THE START OF THE WORKS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ASSOCIATED COSTS AND ORDERS.
- CONFLICTING INFORMATION SHOWN ON THE ENGINEERS DRAWINGS OR DISCREPANCIES BETWEEN THE INFORMATION GIVEN BY THE ENGINEER AND THAT PROVIDED BY OTHERS MUST BE REFERRED TO THE ENGINEER BEFORE THE WORKS COMMENCE.



REVISIONS

P03	Issued as part of Planning Pack					
S4	AS	26/04/23	JSL	26/04/23	CS	26/04/23
P02	Updated to suit new layout					
S2	JSL	26/03/22	CS	26/03/22	CS	26/03/22
P01	First Issue					
S2	JSL	08/10/21	CS	08/10/21	CS	08/10/21
REV	REVISION NOTES/COMMENTS					
STA.	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE

Hydrock
 THIRD FLOOR, WHARTON PLACE
 13 WHARTON STREET
 CARDIFF
 CF10 1GS
 t: +44 (0) 2920 023665
 e: cardiff@hydrock.com

CLIENT
**WAKEFIELD DEVELOPMENTS
 PEMBROKESHIRE LIMITED**

PROJECT
**RESIDENTIAL DEVELOPMENT AT
 LAND OFF MAES Y FFYNNON, ROCH,
 PEMBROKESHIRE**

TITLE
PROPOSED ENGINEERING STRATEGY

HYDROCK PROJECT NO.	SCALE @ A1	
C-20198	1:500	
STATUS DESCRIPTION		STATUS
FOR INFORMATION		S2
DRAWING NO. (PROJECT ORIGINATOR ZONE LEVEL TYPE ROLE NUMBER)		REVISION
ROC-HYD-XX-XX-DR-C-2100		P03

Filename: F:\01_Contract\C-20198-Land off Maes y Ffynnon, Roch, Pembrokeshire\01_WIP\DR_Drawing\ROC-HYD-XX-XX-DR-C-2100_Proposed Engineering Strategy.dwg



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DRAINAGE KEY	
	SITE BOUNDARY
	PROPOSED SURFACE WATER PIPES, POSITIONS ARE INDICATIVE
	PROPOSED FOUL WATER PIPES, POSITIONS ARE INDICATIVE
	PROPOSED PRECAST CONCRETE INLET/OUTLET HEADWALL
	EXISTING SURFACE WATER PIPES, OUTFALL TO EXISTING DITCH VIA POND, POSITIONS FROM TOPO
	EXISTING SURFACE WATER PIPES, OUTFALL TO EXISTING DITCH VIA TANK, POSITIONS FROM TOPO
	EXISTING FOUL WATER PIPES AND PUMPING STATION, POSITIONS FROM TOPO
	PROPOSED SURFACE WATER DIVERSION, VIA POND, POSITIONS INDICATIVE
	PROPOSED SURFACE WATER DIVERSION, VIA TANK, POSITIONS INDICATIVE
	EXISTING EASEMENT TO S38 SURFACE WATER SYSTEM
	PROPOSED RAIN GARDENS, POSITIONS ARE INDICATIVE
	PROPOSED PERMEABLE SURFACING AND SUB BASE SYSTEM
	PROPOSED ATTENUATION BASIN
	PROPOSED CELLULAR STORAGE TANK
	PROPOSED SUDS PLANTER

- General Notes:**
- Drawing to be read in conjunction with all other relevant project drawings
 - Use of this drawing does not absolve the client from his responsibilities under the Health and Safety; The Construction Design and Management Regulations 2015. The Principal Designer is required to contact Hydrock Consultants prior to permitting this drawing to be used in connection with any construction works.
 - The drawing shall be read in conjunction with the health and safety information provided and/or within the pre-construction information. Before commencement of works associated with the drawing refer to all relevant health and safety information for the works including residual risk information.
 - The drawing has been based on information provided by other parties and Hydrock do not warrant the accuracy of this information.
 - The drawing indicates the design intent for the works and items/service routes in such detail as to indicate the design. The drawing does not show all components that may be necessary to locate services in a fully coordinated manner.
 - It is known that existing utility company underground services and apparatus is present within the proposed works area and it is the Contractors responsibility to locate existing services on site accurately.
 - The Contractor should comply with hsg(j) 47 "Avoiding Danger from Underground Services" when excavating around existing services.
 - The Contractor is to verify the line, level and diameter of existing sewers before commencing drainage works.
 - The contractor should allow for all necessary investigative work (cat detection, trial holes, etc.) to determine route and depth of all underground services to avoid damage and preserve supplies to existing users.
 - The drawing shall be used for the intended purpose only and Hydrock does not warrant the accuracy of this information.
 - Dimensions shall not be scaled from the drawing and the contractor shall be responsible for obtaining all dimensions and levels on site for the actual setting out of the works.
 - Hydrock is not responsible for checking dimensions on site.
 - Hydrock is not responsible for setting out grid lines, building line etc.
 - Hydrock is not responsible for dimensions used in the ordering and manufacturing of equipment and this shall be the responsibility of the contractor.
 - All figured levels are in metres and related to existing survey grid & datum unless noted otherwise
 - All figured dimensions are in metres unless noted otherwise.

REVISIONS				
REV	DATE	BY	REASON	APPROVED
P04	26/04/23	ML	Issued as part of Planning Pack	
S2	26/04/23	ML	Issued as part of Planning Pack	
P03	01/04/22	CS	Issued as pre-SAB application	
S2	01/04/22	CS	Issued as pre-SAB application	
P02	26/03/22	CS	Updated to suit new layout	
S2	26/03/22	CS	Updated to suit new layout	
P01	08/10/21	CS	First Issue	
S2	08/10/21	CS	First Issue	



CLIENT
WAKEFIELD DEVELOPMENTS
PEMBROKESHIRE LIMITED

PROJECT
RESIDENTIAL DEVELOPMENT AT
LAND OFF MAES Y FFYNNON, ROCH,
PEMBROKESHIRE

TITLE
PROPOSED DRAINAGE STRATEGY

HYDROCK PROJECT NO. C-20198	SCALE @ A1 1:500	STATUS S2
FOR INFORMATION		REVISION P04
DRAWING NO. (PROJECT ORIGINATOR ZONE LEVEL TYPE ROLE NUMBER) ROC-HYD-XX-XX-DR-C-2200		

Filename: F:\01 Contract\C-2000\C-20198 - Land off Maes y Ffynnon, Roch, Pembrokeshire\01_WIP\DR_Drainage\ROC-HYD-XX-XX-DR-C-2200_Proposed Drainage Strategy.dwg