**Weetwood Services Ltd**
info@weetwood.net

Weetwood
Development • Planning • Environment

# Roxburgh House, Hill Street, Wrexham LL11 1SN

## Foul Water Flow Calculation and Impact of Phosphates

## Technical Note

| | |
|---|---|
| **Project ref:** | 6809 – Roxburgh House, Hill Street, Wrexham LL11 1SN |
| **Prepared by:** | Geoff Waite BSc CEng C.WEM MICE MCIWEM *Consultant* |
| **Approved by:** | Tim Brook BSc (Hons) MCIWEM *Technical Director* |
| **Date:** | 15 January 2026 |
| **Version:** | Final v1.1 |

### Introduction

1. Weetwood Services Ltd ('Weetwood') has been instructed by M1 Trade Ltd to prepare a Technical Note to calculate the pre and post development foul water flow rates in association with the proposed redevelopment of Roxburgh House, Hill Street, Wrexham LL11 1SN. The Technical note also addresses the impact of the development on phosphates discharged into the public sewer network and ultimately into the River Dee.

### Existing and Proposed Development

2. Roxburgh House is located at the junction of Hill Street and Regent Street, Wrexham at Ordnance Survey National Grid Reference SJ 333 503 as shown in **Figure 1**.

3. The existing building consists of four storeys. Planning application reference P/2025/0833 was validated on 30 October 2025 and refers to the proposed change of use of the second and third floors of the building. The present use of these two floors comprises 1,933 m² of vacant office space. The proposals are for 30 no. one-bedroom apartments. The proposals also include minor works to the car park at the rear of the property to provide additional spaces, a bin store, a cycle store and means of escape.

4. The development proposals for the second and third floor are provided in **Annex 1**.

5. There are retail units present on the ground and first floors of the building, and this use is to continue.

6. Natural Resources Wales (NRW) formally commented on the planning application on 4 December 2025. NRW expressed concerns about foul drainage as follows:

   *"The proposed development could potentially lead to an increase of phosphorus load from the receiving wastewater treatment works into the River Dee and Bala Lake Special Area of Conservation. The majority of the River Dee catchment in Wales is currently failing to meet water quality targets for phosphorus. The nutrient impacts of proposed developments with connections to mains need to be considered on a case-by-case basis within the Habitats Regulations Assessment process. Whilst NRW permitting service has completed a Review of Water Company Discharge Permits we are currently undertaking further data analysis for the River Dee following a number of enquiries and questions from stakeholders and several ongoing Appeals. We will be able to provide further advice to your Authority once we have concluded the review."*

### Public Sewers in the Vicinity of the Site

7. Dŵr Cymru Welsh Water's (DCWW's) public sewer records have not been obtained. DCWW formally commented on the planning application on 25 November 2025 (see **Annex 2**). DCWW confirmed that capacity exists within the public sewerage network to receive domestic only foul water flows from the proposed development site. This response did not, however, comment on the capacity of the receiving wastewater treatment works (WwTW) to receive foul water from the development.

8. The receiving WwTW for foul water from the site is at Five Fords (postcode LL13 0PA). Further enquiries have been made to DCWW requesting capacity information for the WwTW and whether the WwTW has a current phosphate permit.

9. DCWW responded to this enquiry by email on 14 January 2026[1]. DCWW stated in the email:

*"…. we can advise that this WwTW has a phosphorus consent limit and is currently compliant with the 95% quartile for its flow passed forward (FPF) performance, at the time of this consultation. The WwTW has a phosphates permit of 1 mg/l, due to be restricted to 0.7mg/l by 31/3/30. Accordingly, we would advise there is currently suitable hydraulic capacity in the public sewerage system and downstream WwTW to accommodate foul water flows for a 30 apartment development."*

10. To summarise, the Five Fords WwTW has a phosphates consent, the WwTW is operating within that consent and there is available capacity at the WwTW to accommodate the proposed development.

## Foul Flow Rate Calculation

11. Calculations are provided for foul water flow rates and volumes for the current usage and the for the proposed development.

12. The calculations for current foul water usage are based upon the potential use of 1,933 $m^2$ of office space. Post development foul water flow usage is calculated based upon 30 no. one-bedroom apartments.

13. Three documents have been used to determine foul water usage:

- 'Flows and Loads – 4'[2]
- 'Employment Density Guide'[3]
- The textbook 'Urban Drainage'[4]

### Pre Development Foul Water Calculation

14. 'Flows and Loads – 4' recommends a water usage of 90 litres/person/day for full time office staff.

15. The 'Employment Density Guide' recommends an employee density of one person per 12 $m^2$ for existing office space. On this basis 1,933 m2 of office space could accommodate up to 161 persons. The calculated water usage per day is therefore up to 14,490 litres.

16. A check has been carried out on pre development foul water usage using the recommendations in the textbook 'Urban Drainage'. Table 9.2 states that the daily volume of wastewater generated by offices is 750 litres/day/100 $m^2$. For an area of 1,933 $m^2$, the calculated daily volume is 14,498 litres, i.e. virtually the same as that calculated using 'Flows and Loads – 4'. This provides confidence regarding the accuracy of the pre development foul flow water rate calculation.

### Post Development Foul Water Calculation

17. 'Flows and Loads – 4' recommends a water usage of 150 litres/person/day for residential development.

18. The proposals are for 30 no. one-bedroom flats so the maximum number of persons on site is 60. The maximum calculated post development water usage per day is 9,000 litres.

19. These calculations indicate that there would be a reduction in foul water discharged to the public sewerage network of 5,490 litres/day post development.

### Weekly Foul Water Volumes

20. It is recognised that the offices would be in use for 5 days per week whilst the residential occupation would be in use full time.

[1] Email from DCWW to Weetwood, Reference PLA0091480, 14 January 2026

[2] Flows and Loads – 4, British Water Code of Practice for Sizing Criteria, Treatment Capacity for Sewage Treatment Systems, November 2013

[3] Employment Density Guide, Homes & Communities Agency, 2nd Edition 2010

[4] Urban Drainage 4th Edition, Butler, Digman et al, 2018, Table 9.2 page 188

21. The pre development weekly volume of foul water discharged into the public sewerage network is calculated to be 72,450 litres.

22. The post development weekly volume of foul water discharged into the public sewerage network is calculated to be 63,000 litres.

23. This also shows a reduction on the weekly foul water volume discharged to the public sewerage network post development.

### Impact of Phosphates

24. Five Fords WwTW ultimately discharges into the River Dee which is classified as a phosphorous sensitive river Special Area of Conversation.

25. Pre and post development foul water generated at the site are both domestic in nature.

26. The calculations presented here indicate that there will be a reduction in daily and weekly foul water volumes discharged into the public sewerage network post development.

27. The impact of phosphorous levels in the public network and the receiving WwTW will therefore also be reduced following redevelopment.

### Summary

28. The proposals are to redevelop the second and third floor of Roxburgh House, Hill Street, Wrexham.

29. The current usage of these two floors comprise 1,933 $m^2$ of office space.

30. The proposals are to replace the office space with 30 no. one-bedroom apartments.

31. The potential daily foul water usage for the existing site is 14,490 litres. The post development daily foul water usage is 9,000 litres.

32. The weekly pre development foul water volume discharged into the public sewerage network is 72,450 litres. This compares to the post development weekly volume of 63,000 litres.

33. There is a reduction in both the daily and weekly foul water volumes discharged into the public sewerage network.

34. The reduction in foul water volumes will result in a corresponding reduction in phosphates discharged into the public sewerage network.

35. DCWW have confirmed that there is available capacity within the public sewerage network and at the receiving WwTW to accommodate the proposed development.

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# FIGURES

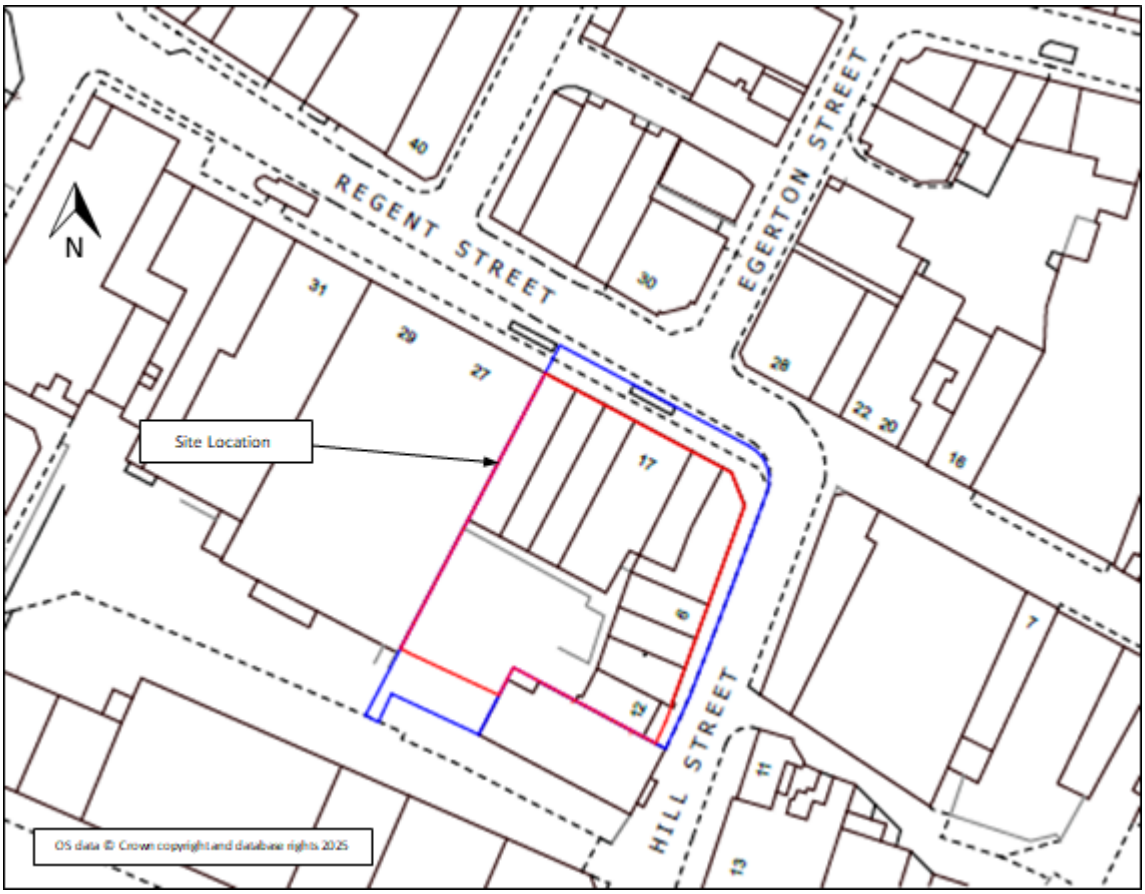



**Figure 1: Site Location**

# ANNEX 1

## Development Proposals




PROPOSED SECOND FLOOR PLAN
1 : 100

0 2m 4m 6m 8m 10m
GRAPHICAL SCALE 1:100

**NOTES**

Do not scale from this drawing. Only figured dimensions are to be taken from this drawing. The contractor must verify all dimensions on site before commencing any work or shop drawings. The contractor must report any discrepancies to Hughes O'Hanlon before commencing work. If this drawing exceeds the quantities taken in any way, Hughes O'Hanlon is to be informed before the work is initiated.
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Details shown represent the minimum indicative requirement. The installer is responsible for all detailed design. The designer shall be responsible for developing the principles indicated to a complete design and for coordinating with the latest building arrangements. The installer shall be deemed to have included within their tender offer all necessary provision over and above the minimum requirements indicated on the drawings and within the specification to provide a complete and functional installation.

| REV | DESCRIPTION | DRAWN BY | CHECKED BY | APPROVED BY | DATE |
|---|---|---|---|---|---|
| P09 | PLANNING ISSUE | DJH | DGH | DGH | 22/10/25 |
| P08 | DESIGN UPDATE | DJH | DGH | DGH | 20/10/25 |
| P07 | DEISGN AMEND | DJH | DGH | DGH | 16/10/25 |
| P06 | DESIGN UPDATE | DJH | DGH | DGH | 25/09/25 |
| P05 | DESIGN UPDATE | DJH | DGH | DGH | 19/09/25 |
| P04 | UPDATED LAYOUTS | DJH | DGH | DGH | 10/09/25 |
| P03 | UPDATED LAYOUTS | DJH | DGH | DGH | 08/09/25 |
| P02 | DRAFT ISSUE | DJH | DGH | DGH | 05/09/25 |
| P01 | INITIAL ISSUE | DJH | DGH | KOH | 08/08/25 |

PROJECT TITLE
ROXBURGH HOUSE, WREXHAM

CLIENT
M1 INVESTMENTS Ltd

DRAWING TITLE
PROPOSED - SECOND FLOOR PLAN

SCALE @ A1
1 : 100

**DO NOT SCALE** Any discrepancy or query concerning this drawing should be referred to the Architect

| PROJECT No | DRAWING No (PROJECT - ORIGINATOR - FUNCTION - LEVEL - FORM - DISCIPLINE - NUMBER) | REVISION |
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PROPOSED THIRD FLOOR PLAN
1 : 100

0 2m 4m 6m 8m 10m
GRAPHICAL SCALE 1:100

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| REV | DESCRIPTION \| DRAWN BY \| CHECKED BY \| APPROVED BY | DATE |
|---|---|---|
| P09 | PLANNING ISSUE \| DJH \| DGH \| DGH | 22/10/25 |
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| P06 | DESIGN UPDATE \| DJH \| DGH \| DGH | 25/09/25 |
| P05 | DESIGN UPDATE \| DJH \| DGH \| DGH | 19/09/25 |
| P04 | UPDATED LAYOUTS \| DJH \| DGH \| DGH | 10/09/25 |
| P03 | UPDATED LAYOUTS \| DJH \| DGH \| DGH | 08/09/25 |
| P02 | DRAFT ISSUE \| DJH \| DGH \| DGH | 05/09/25 |
| P01 | INITIAL ISSUE \| DJH \| DGH \| KOH | 08/08/25 |

PROJECT TITLE
ROXBURGH HOUSE, WREXHAM

CLIENT
M1 INVESTMENTS Ltd

DRAWING TITLE
PROPOSED - THIRD FLOOR PLAN

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# ANNEX 2

## Dŵr Cymru Welsh Water Planning Consultation Response

Dŵr Cymru
Welsh Water

Developer Services
PO Box 3146
Cardiff
CF30 0EH

Tel: +44 (0)800 917 2652
Fax: +44 (0)2920 740472
E.mail: developer.services@dwrcymru.com

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Ffacs: +44 (0)2920 740472
E.bost: developer.services@dwrcymru.com

Wrexham County Council
16 Lord Street
WREXHAM
LL11 1LG

**Date: 27/11/2025**
**Our Ref: PLA0091480**
**Your Ref: P/2025/0833**

Dear Sir/Madam

**Grid Ref: SJ332503 333309 350364**
**Site: Roxburgh House, 12 Hill Street, Wrexham**
**Development: Change of use of second and third floor of building from class B1 (offices) to create 30 no apartments (class C3) including creation of additional parking spaces, bin store, cycle storage and means of escape**

We refer to your planning consultation relating to the above site, and we can provide the following comments in respect to the proposed development.

We note that the Application seeks the internal alterations and conversion of existing vacant Office space at Roxburgh House, to 30no. new WDQR compliant 1-bedroom apartment.

**Public Sewerage Network – Foul Disposal**

We note that the method for disposal of foul is via the existing main sewer. We can confirm capacity exists within the public sewerage network in order to receive the domestic foul only flows from the proposed development site.

**Surface Water**

We note that the proposal intends to dispose of surface water via the main sewer. Please be advised that under no circumstances would we allow surface water or highway run-off from any net increase development to communicate directly or indirectly with the public combined sewer.

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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.

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'. It is therefore recommended that the developer engage in consultation with the Council, as the determining SuDS Approval Body (SAB), in relation to their proposals for SuDS features. Please note, Dwr Cymru Welsh Water is a statutory consultee to the SAB application process and will provide comments to any SuDS proposals by response to SAB consultation.

Planning Policy Wales highlights that any surface water from new developments should not be discharged to combined systems because of the risk of pollution when combined systems overflow. Accordingly, as a material consideration within the planning process and notwithstanding the submitted application form, we recommend a condition that specifies no surface water flows shall communicate directly or indirectly to the public sewerage system.

We would request that if you are minded to grant Planning Consent for the above development that the **Conditions and Advisory Notes** provided below are included within the consent to ensure no detriment to existing residents or the environment and to Dwr Cymru Welsh Water's assets.

## Conditions

### Condition 1 – Surface Water

No surface water and/or land drainage shall be allowed to connect directly or indirectly with the public sewerage network.

**Reason**: To prevent hydraulic overloading of the public sewerage system, to protect the health and safety of existing residents and ensure no pollution of or detriment to the environment.

## Advisory Notes

*In accordance with Planning Policy Wales (Edition 12) and Technical Advice Note 12 (Design), the applicant is advised to take a sustainable approach in considering water supply in new development proposals, including utilising approaches that improve water efficiency and reduce water consumption. We would recommend that the applicant liaises with the relevant Local Authority Building Control department to discuss their water efficiency requirements.*

*The applicant may need to apply to Dwr Cymru / Welsh Water for any connection to the public sewer under S106 of the Water industry Act 1991. 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 Gravity 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.*

*The planning permission hereby granted does not extend any rights to carry out any works permissions required by the Water industries Act 1991. Any alterations to existing premises resulting in the creation of additional premises or merging of existing premises must also be constructed so that each is separately connected to the Company's water main and can be separately metered. Please contact our new connections team on 0800 917 2652 for further information on water and sewerage connections.*

*The applicant is 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 us in dealing with the proposal the applicant may contact Dwr Cymru Welsh Water. Under the Water Industry Act 1991 Dwr Cymru Welsh Water has rights of access to its apparatus at all times.*

Our response is based on the information provided by your application. Should the proposal alter during the course of the application process we kindly request that we are re-consulted and reserve the right to make new representation.

If you have any queries please contact the undersigned on 0800 917 2652 or via email at **developer.services@dwrcymru.com**

Please quote our reference number in all communications and correspondence.

Yours faithfully,

**Olivia Davis**
**Development Planning Officer**
**Developer Services**

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