VILLAGE BAKERY

DAF Plant Phosphorus Assessment

Report Ref: 204-XOS-XX-XX-RP-C-0010

XOsquare Limited Consulting Engineers

20 April 2026

DOCUMENT ISSUE RECORD

Document Number		204-XOS-XX-XX-RP-C-0010			
Document Title		**DAF Plant Phosphorus Assessment**			
Status	**Revision**	**Date of Issue**	**Author**	**Checked**	**Reviewed**
Planning	P1	20.04.2026	U. Malik	M. Walsh	E. Parry

Report Limitation

All comments and proposals contained in this report are based on information available to XOsquare Limited during recent investigations.

This report has been prepared for the sole use of Village Bakery. No other third parties may rely upon or reproduce the contents of this report without the written permission of XOsquare Limited.

TABLE OF CONTENTS

1 Executive summary 1
2 Scope 1
3 Background 2
4 Planning and regulatory context 2
5 Revised drainage arrangement and installed DAF system 3
5.1 Revised foul / trade-effluent drainage 3
5.2 DAF plant configuration 3
6 Assessment of phosphorus treatment performance 4
6.1 Why the DAF is the correct treatment approach for this use 4
6.2 Relationship between the DAF process and phosphorus removal 4
6.3 What the DAF can and cannot be said to achieve on the current evidence 5
6.4 Discharge route and role of the receiving public treatment works 5
7 Overall planning assessment 5
8 Operational controls and monitoring 6
8.1 Suggested monitoring parameters 6
8.2 Suggested planning condition wording 7
9 Conclusions 7
10 References 8

1 EXECUTIVE SUMMARY

This report assesses the revised foul drainage strategy for Village Bakery at Coed Aben Road, Wrexham Industrial Estate, following the change from the originally approved warehouse use to a fitted-out bakery. The original drainage strategy was prepared on the basis of domestic-equivalent foul discharge only; the current fit-out introduces bakery trade effluent from internal floor gullies, wash-down points and process-related cleaning activities. [D1][D2]

The updated drainage drawing shows that the new trade effluent is collected via new internal foul runs and directed to an external dissolved air flotation (DAF) treatment area before discharge to the existing foul sewer and onward to the public sewer on Coed Aben Road. The DAF plant information and layout drawings identify a Watermark Projects Model 6 unit with associated screening, chemical dosing, balance storage and sludge storage equipment. [D2][D3][D4][D5]

The site lies within the River Dee and Bala Lake Special Area of Conservation (SAC) catchment, which remains nutrient-sensitive. Current Natural Resources Wales (NRW) advice requires planning authorities to consider nutrient impacts through the Habitats Regulations Assessment (HRA) process, and nutrient neutrality may be required where downstream water bodies are failing phosphorus targets. The River Dee and Bala Lake (Wales) assessment remains phosphorus-constrained, with only 38% of assessed water bodies passing phosphorus targets in NRW's 2024 water quality assessment. [E1][E2][E4]

On the information reviewed, the installed DAF plant represents an appropriate on-site pretreatment measure for the revised bakery use. The process train - screening, equalisation, pH adjustment, coagulant dosing, polymer flocculation, flotation and sludge removal - is technically suited to removing suspended solids, fats/oils/grease and associated phosphorus-bearing material before the discharge reaches the public sewer. The treated discharge then remains subject to control within the public sewerage system and at Five Fords Wastewater Treatment Works (WwTW), which holds a reviewed phosphorus permit. [D3][E1][E3][E7][E8]

The report therefore concludes that the DAF arrangement provides sufficient pretreatment in principle for planning purposes, provided that: (i) the final discharge remains to the existing foul sewer and onward to the public sewer serving Five Fords WwTW; (ii) the plant is commissioned and operated within its design envelope; and (iii) a monitoring and maintenance regime is secured to verify the achieved effluent quality over time. Because no measured phosphorus dataset has been supplied, the report does not claim a guaranteed final effluent phosphorus concentration at this stage; instead it explains why the selected system is the correct treatment approach and what verification should accompany the planning and operational process. [E1]

2 SCOPE

This document is a planning support report. It focuses on the implications of the revised bakery drainage arrangement for phosphorus loading within the River Dee and Bala Lake SAC catchment and should be read as an addendum to, not a replacement for, the earlier drainage strategy. The review has been based on the information listed in Table 1.

Ref.	Document	Relevance to this report
D1	154-XOS-XX-XX-RP-C-5000 Rev P3 - Drainage Design Technical Note (20/09/2022)	Original warehouse drainage basis; confirms previous domestic-only foul assumption and public sewer route.
D2	204-XOS-XX-XX-DR-C-5700 AB2 - Proposed Drainage As-Built (17/04/2026)	Updated bakery foul/trade-effluent drainage layout, sump arrangement and DAF area connections.
D3	Watermark Projects - Quote Ref. WM-Q-10066 Rev.6, Model 6 information (08/01/2026)	DAF quoted capacity and core treatment equipment/components.
D4	DAF Plant Layout ZD Sketch (01/09/2025)	Indicative site layout for the DAF plant and associated tanks/equipment.
D5	Effluent Plant Layout - General Arrangement (01/01/2025)	General arrangement showing screen(s), chemical IBCs, Model 6 DAF, balance tank, sludge tank and feed pump.

E1	NRW - Advice to planning authorities for planning applications affecting nutrient sensitive SACs, Version 5.1 (09/02/2026)	Current planning/HRA position for new discharges and public sewer connections.
E2	NRW - Principles of nutrient neutrality in relation to development or water discharge permit proposals (2026)	Definition of nutrient neutrality and where it applies.
E3	NRW - Phosphorus limits on environmental permits for waste water treatment work discharges	Reviewed phosphorus permit limits for Five Fords WwTW.
E4	NRW - Assessment of water quality in Wales 2024	Current phosphorus constraint status in the River Dee and Bala Lake (Wales) SAC.

Table 1. Documents and guidance reviewed.

3 BACKGROUND

The 2022 drainage technical note was produced for a speculative B2/B8 warehouse with ancillary office space. In relation to water quality within the SAC catchment, that report explicitly stated that the proposed foul discharge would be domestic-equivalent only, arising from toilets and domestic appliances, and that there would be no industrial effluent discharge from the development. On that basis, the foul drainage strategy relied on conveyance to the public sewer and treatment at Five Fords WwTW. [D1]

The current development has progressed differently. The building has been fitted out as a bakery and the updated drainage drawing now shows new foul runs within the warehouse to serve pop-ups, internal gullies and wash-down points that will receive trade effluent from cleaning products and bakery by-products. The drainage addendum is therefore required because the earlier domestic-only water quality narrative is no longer sufficient for planning purposes. [D2]

Importantly, the revised scheme does not propose any direct discharge of bakery wastewater to a watercourse or to ground. Instead, the updated plan shows all such flows being captured within the foul system and routed to a dedicated external DAF pretreatment area before connection to the existing foul sewer. Surface water drainage remains on a separate system. [D1][D2]

Key distinction from the 2022 strategy: the current proposal is not a standalone private sewage treatment solution replacing the public sewer connection. It is a trade-effluent pretreatment system installed ahead of an existing public foul sewer connection. The relevance of that distinction is that the discharge still remains within the public sewerage system and the receiving WwTW permit regime, while the DAF reduces pollutant loading before it reaches that system.

4 PLANNING AND REGULATORY CONTEXT

The site is within the River Dee and Bala Lake SAC catchment. NRW's current advice to planning authorities (Version 5.1, published 09 February 2026) states that planning authorities are responsible for determining whether a proposal will result in an increase in nutrient loading and that developments connecting to the public sewer should be considered through the HRA process on a case-by-case basis. [E1][E5]

NRW also states that nutrient neutrality is the approach used to prevent new development or water discharge permit proposals from causing any net increase in nutrients for the duration of the authorisation. For phosphorus, NRW identifies the whole River Dee and Bala Lake catchment - with the exception of the downstream water body GB111067057080 - as an area where nutrient neutrality applies. The Wrexham site is within that wider catchment context. [E2]

In its latest water quality assessment, NRW reports that the River Dee and Bala Lake (Wales) SAC has only 38% of assessed water bodies passing phosphorus targets. This confirms that the catchment remains sensitive and that a precautionary, well-evidenced drainage position is required. [E4]

Issue	Current guidance / evidence	Implication for this scheme
Public sewer connection	NRW advises that new developments proposing connections to a public sewer should be subject to HRA by the planning authority. The authority should seek confirmation of foul drainage arrangements, connection point and receiving WwTW. [E1]	The planning submission should clearly identify the revised foul route, the DAF pretreatment stage and the ultimate connection to the public sewer.
Receiving treatment works	NRW advises that the sewerage undertaker should confirm that the receiving WwTW has a reviewed permit, is compliant with permit conditions and has capacity for the additional flow and nutrient load. [E1]	The planning case is strengthened by showing that Five Fords is a reviewed works and by obtaining / appending current sewerage undertaker confirmation where available.
Five Fords phosphorus permit	NRW's published permit review table identifies Five Fords WwTW (permit CM0077801) with a phosphorus limit of 1.0 mg/l effective 28/07/2023, tightening to 0.7 mg/l from 31/03/2030. [E3]	The receiving public treatment works is within NRW's reviewed-permit programme rather than being an uncontrolled or unreviewed discharge point.
Catchment sensitivity	NRW's 2024 assessment reports that only 38% of assessed water bodies in the River Dee and Bala Lake (Wales) SAC pass phosphorus targets. [E4]	The scheme should not rely on generic assumptions; it should show that trade effluent is captured, treated and managed before reaching the public sewer.
Chemical pre-treatment	NRW advises that chemical pre-treatment to reduce phosphorus in wastewater discharging to a public sewer may adversely affect the wider sewer system and WwTW, and that advice should first be sought from the water company. [E1]	The DAF chemistry and discharge quality should be acceptable to Dŵr Cymru Welsh Water and supported by commissioning, monitoring and operator controls.
Water company engagement	Early engagement with the sewerage undertaker is good practice where chemically treated non-domestic effluent connects to the public sewer.	Retain any correspondence or technical feedback from Dŵr Cymru Welsh Water as supporting evidence where available.

Table 2. Planning and regulatory considerations relevant to phosphate loading.

5 REVISED DRAINAGE ARRANGEMENT AND INSTALLED DAF SYSTEM

5.1 Revised foul / trade-effluent drainage

The updated drainage drawing shows a series of new foul runs within the bakery linking internal gullies, pop-up points and plant areas to an external treatment and discharge zone. In the southwest corner of the site the drawing identifies a sump chamber (FW13), associated overflow / backdrop connections, and the DAF treatment area. The same drawing notes a pump duty of 2.04 l/s at FW13, equivalent to approximately 7.34 m3/h. [D2]

The hydraulic significance of that drawing note is that the apparent pumped discharge rate shown on the foul drawing is lower than the quoted maximum capacity of the selected Watermark Model 6 DAF unit, which is stated as up to 10,000 litres per hour (10.0 m3/h) based on a maximum solids loading of 3,000 ppm. On the face of the available information, the selected DAF therefore appears to be of an appropriate hydraulic order for the drainage arrangement shown, subject always to the actual influent strength and the commissioning settings used on site. [D2][D3]

5.2 DAF plant configuration

The plant information and layout drawings describe a Watermark Projects Model 6 skid-mounted DAF package with associated ancillary equipment. The general arrangement drawings show the following items within the external treatment area: screening equipment, chemical IBCs, the Model 6 DAF unit, control panel, balance tank, sludge tank and feed pump. The vendor information also describes two-stage mixing vessels, pH control, coagulant dosing, polymer make-up and sludge transfer equipment. [D3][D4][D5]

Treatment stage / component	Evidence from drawings / supplier data	Relevance to phosphate control
Collection and conveyance	Updated foul drainage drawing shows new internal foul runs serving gullies / pop-ups, with flows directed toward the external treatment area. [D2]	Ensures bakery trade effluent is captured within the foul system and not allowed to discharge untreated elsewhere.
Pre-screening	General arrangement shows screening equipment ahead of or adjacent to the DAF; supplier options include a rotary drum screen for gross/free solids removal to 2 mm. [D3][D5]	Removes coarse solids and bakery residues before downstream chemical treatment.
Equalisation / balance tank	Plant layouts show a balance tank; supplier information identifies an optional 30,000 litre MDPE balance tank with level control. [D3][D4][D5]	Buffers variable bakery wash-down flows and helps provide steadier chemical dosing and DAF operation.
Chemical conditioning	Supplier information identifies pH controller, pH adjustment dosing pump, coagulant dosing pump and automatic polymer make-up system. [D3]	Provides the treatment mechanism by which dissolved / colloidal material can be destabilised and phosphorus-bearing solids can be removed with the floated sludge.
DAF separation	Supplier information identifies a 2 m2 DAF cell with integral air compressor and white-water system. [D3]	Separates conditioned solids, fats/oils and flocculated material from the liquid phase.
Sludge storage / removal	Plant layouts show a sludge tank; supplier information identifies an optional 30,000 litre sludge tank. [D3][D5]	Provides controlled containment of removed solids and associated phosphorus for off-site management.
Automation and control	Supplier information identifies Siemens PLC/HMI controls; drawings show a control panel within the treatment area. [D3][D5]	Supports repeatable operation, alarm handling and plant management.

Table 3. DAF treatment train and its relevance to phosphate control.

Indicative treatment sequence, based on the supplied drawings and vendor information: bakery trade effluent collection -> pre-screening -> balance / equalisation -> pH correction and coagulant dosing -> polymer flocculation -> dissolved air flotation -> sludge removal to sludge tank -> treated discharge to foul sewer via the site drainage system.

6 ASSESSMENT OF PHOSPHORUS TREATMENT PERFORMANCE

6.1 Why the DAF is the correct treatment approach for this use

The wastewater arising from bakery floor gullies, wash-down points and cleaning operations is materially different from standard domestic foul. It is expected to contain suspended food solids, starches, dough fines, fats/oils/grease and cleaning residues. That combination makes direct untreated discharge to the foul sewer less favourable than a dedicated pretreatment stage. The DAF arrangement shown on the drawings is specifically aimed at that problem: it removes solids and floating material before the effluent reaches the public sewer. [D2][D3][D5]

The selected Model 6 DAF is not described by the supplier as a simple settlement tank or passive interceptor. It is an actively controlled treatment process incorporating pH control, coagulant dosing, polymer make-up, mixing and flotation. That is important because it means the system is designed to do more than just skim fats; it also conditions and separates the waste stream so that the pollutant mass discharged to the sewer is materially lower than it would be without pretreatment. [D3]

6.2 Relationship between the DAF process and phosphorus removal

The broader wastewater treatment literature and regulatory guidance recognise that phosphorus removal is achieved using chemical treatment and solid-liquid separation processes. The US EPA Nutrient Control Design Manual identifies chemical phosphorus removal as a core nutrient-control approach for wastewater treatment. UK government guidance on chemical dosing at wastewater treatment works states that iron and aluminium dosing are used to reduce phosphorus concentration and that chemical dosing is also used to aid sludge and solids settlement. [E7][E8]

The significance for this project is that the installed DAF package already includes the key building blocks of that treatment philosophy: pH adjustment, coagulant dosing, polymer dosing and a flotation stage that removes conditioned solids as sludge. In engineering terms, this means the DAF is capable of removing phosphorus in two main ways: first, by removing suspended and entrained solids that contain phosphorus; and second, by allowing phosphorus that has been converted into a removable floc or precipitate during chemical conditioning to be separated in the flotation stage. [D3][E8]

The supplier information does not, however, provide a guaranteed treated-effluent phosphorus figure for the specific Village Bakery influent. That is not unusual for industrial pretreatment plants, because achieved phosphorus performance depends on the actual influent characteristics, the selected chemical regime, contact time, mixing, pH and the optimisation achieved during commissioning. For that reason, the report relies on the process capability and configuration of the installed plant rather than claiming a fixed numeric phosphorus outcome that is not evidenced in the supplied data. [D3][E7]

6.3 What the DAF can and cannot be said to achieve on the current evidence

On the present evidence, it is reasonable to state that the DAF plant provides an appropriate and materially beneficial pretreatment barrier between the bakery trade effluent and the public foul sewer. It captures solids, floating material and chemically conditioned floc that would otherwise contribute to the phosphorus and pollutant load entering the public system. The arrangement is therefore clearly preferable to an untreated discharge of bakery wash-down and by-product residues to the sewer. [D2][D3][D5]

What cannot yet be stated with confidence, because the information has not been supplied, is the exact residual total phosphorus or orthophosphate concentration in the treated effluent under normal operation. Likewise, a site-specific phosphorus mass-load calculation in kilograms per day cannot presently be completed because no measured trade effluent flow profile, influent phosphorus data or treated-effluent phosphorus dataset has been provided. This is a limitation of the evidence base rather than a flaw in the treatment concept. [D2][D3]

For planning purposes, that distinction matters. The available information is sufficient to show that a dedicated pretreatment system has been installed and that the mechanism of treatment is relevant to phosphorus control. If the planning authority or NRW require a full nutrient-budget exercise, then commissioning and monitoring data should be appended so the phosphorus mass balance can be calculated using the standard relationship: load (kg/day) = flow (m3/day) x concentration (mg/l) / 1000.

6.4 Discharge route and role of the receiving public treatment works

The DAF is a pretreatment stage only; it is not the final point of environmental regulation. The treated trade effluent continues to discharge to the existing foul sewer and then to the public sewer on Coed Aben Road. NRW's permit review table identifies Five Fords WwTW as a reviewed works with a phosphorus limit of 1.0 mg/l already in force and a tighter 0.7 mg/l limit effective from 31 March 2030. [D1][E3]

That does not remove the need for good on-site pretreatment. On the contrary, the DAF helps by reducing the solids and pollutant load that the public sewer and WwTW need to receive and treat. It also aligns with NRW's presumption that development in sewered areas should discharge to the public sewer rather than to a private surface-water or ground discharge. [E1]

At the same time, NRW's current advice specifically notes that chemical pre-treatment proposals for phosphorus control ahead of a public sewer connection should be discussed with the water company because of the potential effects on the wider sewerage system and treatment works. The acceptability of the final discharge chemistry is therefore not a planning matter alone; it should be supported by continuing operator engagement with Dŵr Cymru Welsh Water together with commissioning, monitoring and maintenance of the installed plant. [E1]

7 OVERALL PLANNING ASSESSMENT

Having reviewed the supplied drawings, DAF supplier information and the current NRW / Dŵr Cymru guidance, the revised drainage arrangement is considered acceptable in principle from a phosphate-loading perspective, for the following reasons:

The revised scheme no longer relies on the domestic-only assumption used in the 2022 warehouse report; it introduces a dedicated pretreatment stage specifically to deal with bakery trade effluent. [D1][D2]

Trade effluent is collected within the foul system and routed to a purpose-designed DAF treatment area rather than being discharged untreated. [D2][D4][D5]

The selected Model 6 DAF includes the process components associated with phosphorus-reduction pretreatment: pH control, coagulant dosing, polymer addition, mixing, flotation and sludge removal. [D3][E8]

The hydraulic order of the shown sump / pump duty is lower than the vendor's quoted maximum DAF throughput, indicating broad compatibility between the selected plant and the drainage arrangement shown. [D2][D3]

The final discharge remains to the public foul sewer and then to Five Fords WwTW, a reviewed treatment works with published phosphorus permit limits. [D1][E3]

There is no evidence in the reviewed material of a new direct discharge from the bakery trade effluent to surface water or ground. [D1][D2]

The planning authority should nevertheless treat the above as an 'in-principle, properly controlled' conclusion rather than a free-standing claim of demonstrated nutrient neutrality. The catchment remains sensitive, and NRW's current advice makes clear that the HRA process must still consider the final sewerage route, the receiving WwTW position and the potential nutrient effects of the development. [E1][E2][E4]

Accordingly, the strongest and most defensible planning position is that the installed DAF plant provides sufficient and appropriate pretreatment for the bakery use, provided that the operational controls set out in Section 8 are secured. This is the correct planning conclusion on the present information.

8 OPERATIONAL CONTROLS AND MONITORING

Because the planning application concerns a nutrient-sensitive catchment, long-term operational control is as important as the physical plant selection. The following measures are recommended to secure the planning and regulatory position.

Control / evidence item	Reason	Recommended position
Water company engagement	Demonstrates that the operator has engaged with Dŵr Cymru Welsh Water regarding the chemically treated bakery effluent discharge route.	Append any relevant correspondence or technical feedback from Dŵr Cymru Welsh Water where available.
Commissioning report	Confirms the plant has been set up for the actual influent characteristics and demonstrates achieved initial performance.	Append supplier or specialist commissioning report confirming chemical regime, settings and satisfactory operation.
Effluent monitoring	Needed to demonstrate actual achieved discharge quality and quantify phosphorus performance if requested by the planning authority / NRW.	Monitor at least flow, pH, suspended solids, FOG, COD, total phosphorus and orthophosphate during commissioning and at agreed routine intervals thereafter.
Maintenance and operator logs	NRW and Dŵr Cymru concerns about long-term management are addressed through a documented O&M regime. [E1]	Retain plant maintenance records, alarm history, dosing records and sludge removal notes for inspection.
Sludge management	Removed solids will contain the pollutants extracted from the wastewater stream.	Store in the dedicated sludge tank and remove off site by an appropriately authorised contractor.
Chemical approval	NRW advises that chemical pre-treatment proposals for public sewer discharges should be discussed with the water company. [E1]	Ensure the selected dosing chemicals and operating envelope have been reviewed with Dŵr Cymru Welsh Water where required.

Table 4. Recommended operational controls and supporting evidence.

8.1 Suggested monitoring parameters

The monitoring regime should align with the plant supplier's operating manual and any project-specific operational requirements, but Table 5 sets out a practical minimum framework to support the planning case and ongoing operation of the installed treatment system.

Parameter	Why it matters	Suggested minimum frequency
Flow / discharge volume	Required to calculate pollutant mass load and confirm operation within the plant's design envelope.	Daily log or continuous where metering is provided.
pH	Directly linked to chemical dosing performance and sewer acceptance criteria.	Continuous on-plant monitoring and daily review.
Total suspended solids (TSS)	Primary indicator of solids removal in the DAF stage.	Weekly during commissioning, then monthly or at another justified routine interval.
FOG	Confirms control of bakery fats/oils/grease to protect the sewer network and WwTW.	Weekly during commissioning, then monthly or at another justified routine interval.
COD / BOD	Shows reduction in organic loading associated with bakery wash-down.	Monthly or at another justified routine interval.
Total phosphorus and orthophosphate	Direct evidence of phosphorus treatment performance and input to any nutrient budget if requested.	Weekly during commissioning, then monthly for at least the first year or as otherwise agreed.
Dosing chemical usage	Demonstrates stable chemical operation and supports troubleshooting / optimisation.	Continuous operator record.
Sludge removal records	Verifies that captured pollutant mass is being removed from site rather than recirculated or retained indefinitely.	Each removal event.

Table 5. Suggested monitoring framework.

8.2 Suggested planning condition wording

No bakery trade effluent arising from the use shall be discharged to the public sewer until the on-site DAF pretreatment plant has been fully installed, commissioned and brought into operation in accordance with the manufacturer's written specification. The DAF plant shall thereafter be retained in operation for the lifetime of the bakery use. Records of commissioning, maintenance, dosing, sludge removal and effluent monitoring shall be retained and made available to the local planning authority on request.

9 CONCLUSIONS

1. The original 2022 drainage strategy was based on a warehouse use with domestic-equivalent foul only and no industrial effluent. That basis is no longer applicable following fit-out of the building as a bakery. [D1][D2]

2. The updated drainage drawing and DAF layouts show that bakery trade effluent is now being collected and directed to an external DAF pretreatment system before discharge to the existing foul sewer and the public sewer on Coed Aben Road. [D2][D4][D5]

3. The installed Watermark Model 6 DAF system includes the treatment elements relevant to phosphorus control in bakery wastewater: screening, equalisation, pH adjustment, coagulant dosing, polymer flocculation, flotation and sludge removal. [D3][D5][E8]

4. The quoted DAF treatment capacity of up to 10.0 m3/h is of the same order and greater than the 7.34 m3/h sump / pump duty shown on the updated drainage drawing, indicating broad hydraulic suitability on the information reviewed. [D2][D3]

5. The DAF plant should be regarded as an on-site pretreatment system that materially reduces phosphorus-bearing solids and associated pollutant load before the discharge reaches the public sewer. The final treated flow remains within the public sewerage system and the receiving Five Fords WwTW permit regime. [E1][E3]

6. The site remains within the phosphorus-sensitive River Dee and Bala Lake SAC catchment. Accordingly, the planning authority will still need to consider the proposal through the HRA process and should rely on the sewerage undertaker's position regarding public sewer acceptance, WwTW capacity and permit compliance. [E1][E2][E4]

7. Subject to commissioning of the DAF plant and the monitoring / maintenance measures set out in this report, the revised drainage arrangement is considered acceptable in principle and the DAF plant provides sufficient pretreatment with regard to phosphate loading for planning purposes.

10 REFERENCES

[D1] XOsquare Limited, 154-XOS-XX-XX-RP-C-5000 Rev P3 - Drainage Design Technical Note, 20 September 2022.

[D2] XOsquare Limited, 204-XOS-XX-XX-DR-C-5700 AB2 - Proposed Drainage As-Built, 17 April 2026.

[D3] Watermark Projects, Quote Ref. WM-Q-10066 Rev.6 - Model 6 information, 08 January 2026.

[D4] DAF Plant Layout ZD Sketch, 01 September 2025.

[D5] The WA Cooke Group, Effluent Plant Layout / General Arrangement Plan, 01 January 2025.

[E1] Natural Resources Wales, Advice to planning authorities for planning applications affecting nutrient sensitive Special Areas of Conservation, Version 5.1, published 09 February 2026.

[E2] Natural Resources Wales, Principles of nutrient neutrality in relation to development or water discharge permit proposals, accessed April 2026.

[E3] Natural Resources Wales, Phosphorus limits on environmental permits for waste water treatment work discharges, permit review table including Five Fords WwTW.

[E4] Natural Resources Wales, Assessment of water quality in Wales 2024.

[E5] Natural Resources Wales, River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid SAC Core Management Plan including Conservation Objectives, Version 3, September 2022.

[E7] United States Environmental Protection Agency, Nutrient Control Design Manual, updated 28 July 2025.

[E8] GOV.UK, Water companies: control of chemicals used for dosing at waste water treatment works, published 08 May 2018.