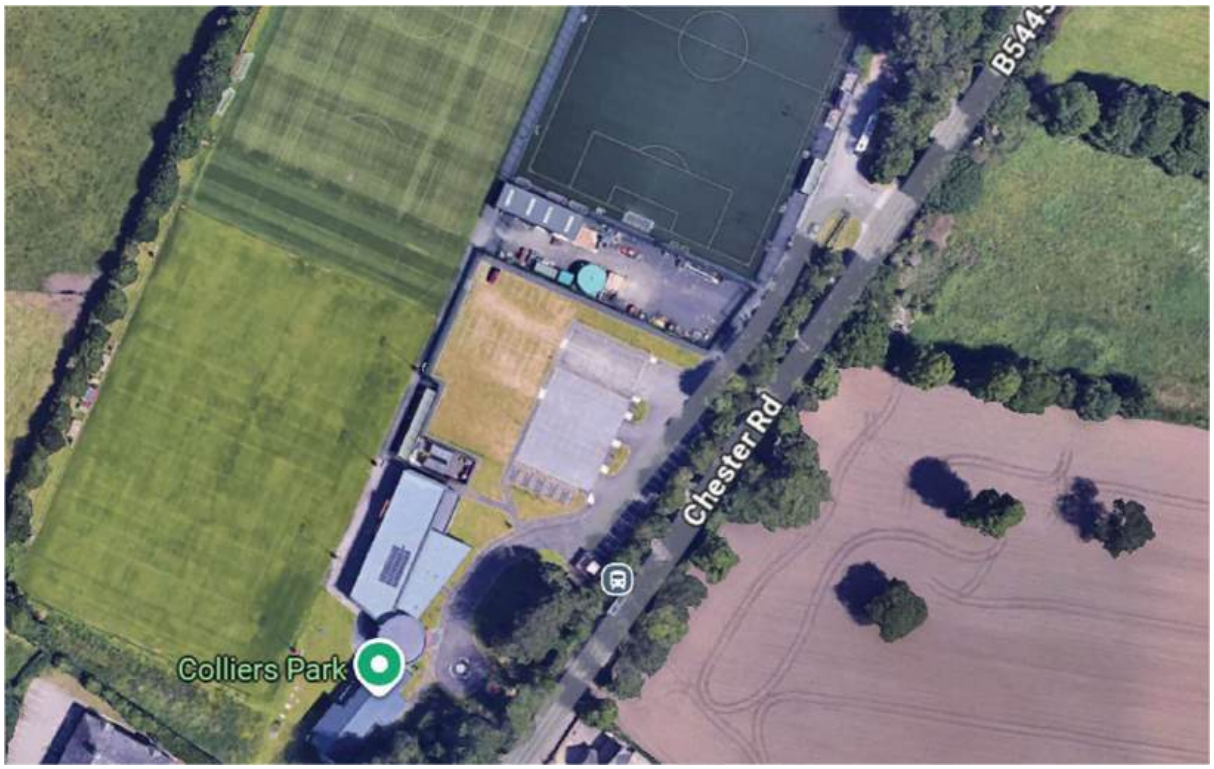
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**Colliers Park, Wrexham AFC**
**Wrexham**

**Modulek**

# Flood Consequences Assessment and Drainage Strategy Statement

**April 2026**




**P4920**

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| Revision History | | | |
|---|---|---|---|
| Initial Issue | 28 April 2026 | | |
| Prepared By: |  | Checked: |  |
| | Tony Cooper<br>Senior Engineer | | Steve Bowles<br>Senior Engineer |

| Rev No | Date | Description | By | Checked |
|---|---|---|---|---|
| P00 | 29/04/2026 | Initial Issue | TC | SAB |
| P01 | 03/06/2026 | FoI Drainage philosophy added | TC | SAB |
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# 1 INTRODUCTION

Avie Consulting Ltd has been commissioned by Modulek to undertake detailed drainage designs and obtain approval to them for the proposed development of a new First Team Pavillion at Colliers Park, Wrexham, LL12 8PW.

The aim of this report is to allow the Wrexham County Borough Council to assess the site and the proposed drainage solution with a view to providing approval.

# 2 PROPOSED DEVELOPMENT

The site comprises an existing car park serving a football training facility along with grass and hard standing areas. The additional First team pavilion is proposed to be erected adjacent the existing car park and Silo.

Please refer Appendix A for Site Development Proposals.

The site is located 800m Southeast of Colwyn Bay Centre at Ordnance Survey grid reference SJ343541, with the nearest post code being LL12 8PW.

The site is bounded as follows:

To the North – Existing multipurpose sports pitch.

To the East – Existing hard standing and access road serving the development.

To the South – Existing tarmac car park.

To the West – Existing tarmac car park and silo feature

The site has a slight fall from the North towards the South with levels ranging from approximately 76.50m to 76.05m

The proposed development comprises of a new sports facility and associated impermeable hardstanding that will cover 0.036 hectares (677 square metres) of currently existing bitmac and grassed areas serving the Wrexham football training facilities.

## 3 FLOOD CONSEQUENCE ASSESSMENT

According to the Development Advice Maps, the site lies within Zone A. This means that the justification test is not applicable and there is no need to consider flood risk further.

The proposed development is classed as More vulnerable.

A more vulnerable development needs to comply with surface water requirements and not result in an increase in flooding elsewhere. There are no further constraints applied in relation to River and Coastal Flooding.

Site levels fall to the South. Overland flows would naturally tend to flow directly Away from the proposed building.

The site levels vary by approximately 0.5 metres and as such overland or flooded manholes will result in water flowing downhill towards the southern boundary of the site. Beyond this corner, there is an existing bitmac access road.

Mechanisms of flooding may be exceedance of capacity in the wider football clubs below ground surface water drainage network due to blockage, pipe collapse or a lack of maintenance.

Sources of flooding are expected to be the proposed development - in the event of storm events that exceed the capacity of the designed system – and the wider training facilities should there be a failure of the wider drainage system but given the relative locations of the existing and proposed buildings, the majority of any flooding would naturally bypass the proposed development.

Any flooding that occurs on the site will follow the fall of the land and flow north off the site, onto the adjoining grassed area. It is assumed that any flooding would have infiltrated to ground at this point.

The access and egress for the wider school sports facilities are to the south of the site and as such, any flooding or overland flow will not sit on or around the pedestrian access points.

There are no known natural heritage impacts from the expansion of the school in the manner proposed.

The proposed below ground surface water drainage for the new building will reduce flood risk on and off the site as it is proposed to collect surface water and infiltrate it to ground in close proximity to the proposed buildings. The below ground surface water drainage has been designed to accommodate 100-year return period storm events with an additional allowance of 40% for climate change.

## 4 FLOOD RISK SUMMARY

| Sources of Flooding | Risk | | | Control Measures |
|---|---|---|---|---|
| | High | Medium | Low | |
| Rivers: | | | X | None |
| Sea | | | X | None |
| Land | | | X | Ensure flood routes are maintained and FFL's are 150mm above external ground level |
| Groundwater | | | X | None |
| Existing sewers | | | X | None |

## 5 INCREASE TO OFFSITE FLOODING

The development has been designed to accommodate the anticipated runoff for storm events up to and including the 1in100 year return period storms with durations ranging from 15 minutes to 7 days and a further allowance of 40% for climate change.

The proposed below ground surface water drainage system has been modelled using Causeway Flow to simulate a range of rainfall events for the Wrexham area to establish the volume of surface water storage required to balance the volume of collected runoff with the measured infiltration rates on the site. The proposed system is capable of infiltrating to ground the modelled runoff and complying with the requirement to half drain within 24 hours.

The proposed development replaces an existing (undrained) greenfield area and a drained tarmac area with a positively drained impermeable surface that will discharge surface water runoff to ground. This will result in a decrease in the runoff from the existing hard standing area and thereby reduce the flood risk associated with surface water runoff from the grassed area. The proposed drainage has been designed to accommodate severe storm events and would only result in flooding in the event of a storm that exceeded the above design parameters or due to a failure of the system from a lack of maintenance.

## 6 FOUL DRAINAGE

The proposed foul drainage network will be designed to collect each of the identified foul connection points within the building to a common carrier pipe to connect to the discharge point as identified on drawing P4920/01E. Due to the location of the nearest public foul sewer identified on Welsh Water asset plans, discharge to public sewer has been discounted. This is not considered a viable option to discharge to the existing drains located within the Premier Inn grounds located to the southwest of the site adjacent the existing Colliers Park FAW building. A connection would be required to cross third party land, disrupting an existing carpark. The route to make a connection is also constrained by an existing hedge line and trees. The proposed foul drainage design ethos is based on the Colliers Park proposals. The Colliers Park building

to the southwest of the building via a packaged treatment plant and ultimately discharging to ground in a trench located next to the football pitch. The foul drainage network serving the new FAW building has been designed to pass through a private package treatment plant (maintained by a management company) and discharge to an existing drain located in the access road to the east of the building. The developer undertook Percolation testing in the vicinity of the new building. Test results came back unsuitable; these are identified in the Brownfield Solutions Ltd Geotechnical letter JL/C6579/15383. Therefore, discharging to ground in the immediate vicinity of the building has also been discounted. It has been confirmed that the existing drain that the treated foul flows will be discharging to ultimately connects to an existing soakaway located to the northeast of the site adjacent the site entrance.

The foul drainage network has been co-ordinated with the structural foundations and the above ground drainage designs.

## 7 COMPLIANCE WITH STANDARD PRINCIPLES

The collected surface waters are proposed to be infiltrated to ground on the eastern side of the development within the boundary of the defined site. in this way. The surface water is being managed as close to the source of runoff as possible.

The collected surface water is proposed to discharge to ground where it is expected to contribute to aquifer replenishment.

The proposed development comprises buildings/roof areas and pedestrian hard standings. These are not anticipated to contribute pollution other than silts. These silts will be removed by the passage of surface waters through silt traps (between RWP's and the surface water infiltration facility).

The proposed drainage system reduces flood risk on the site and downstream of it as it is designed to accommodate severe storm events (up to and including 100-year return period) and it will remove the present greenfield runoff for the 677 square metres of the proposed site.

The proposed drainage system accounts for future pressures on flood risk by removing surface water and infiltrating it to ground. The design has also used an allowance of 40% for future climate change. Urban creep has not been built into the design as further works on the site would have their own surface water systems designed.

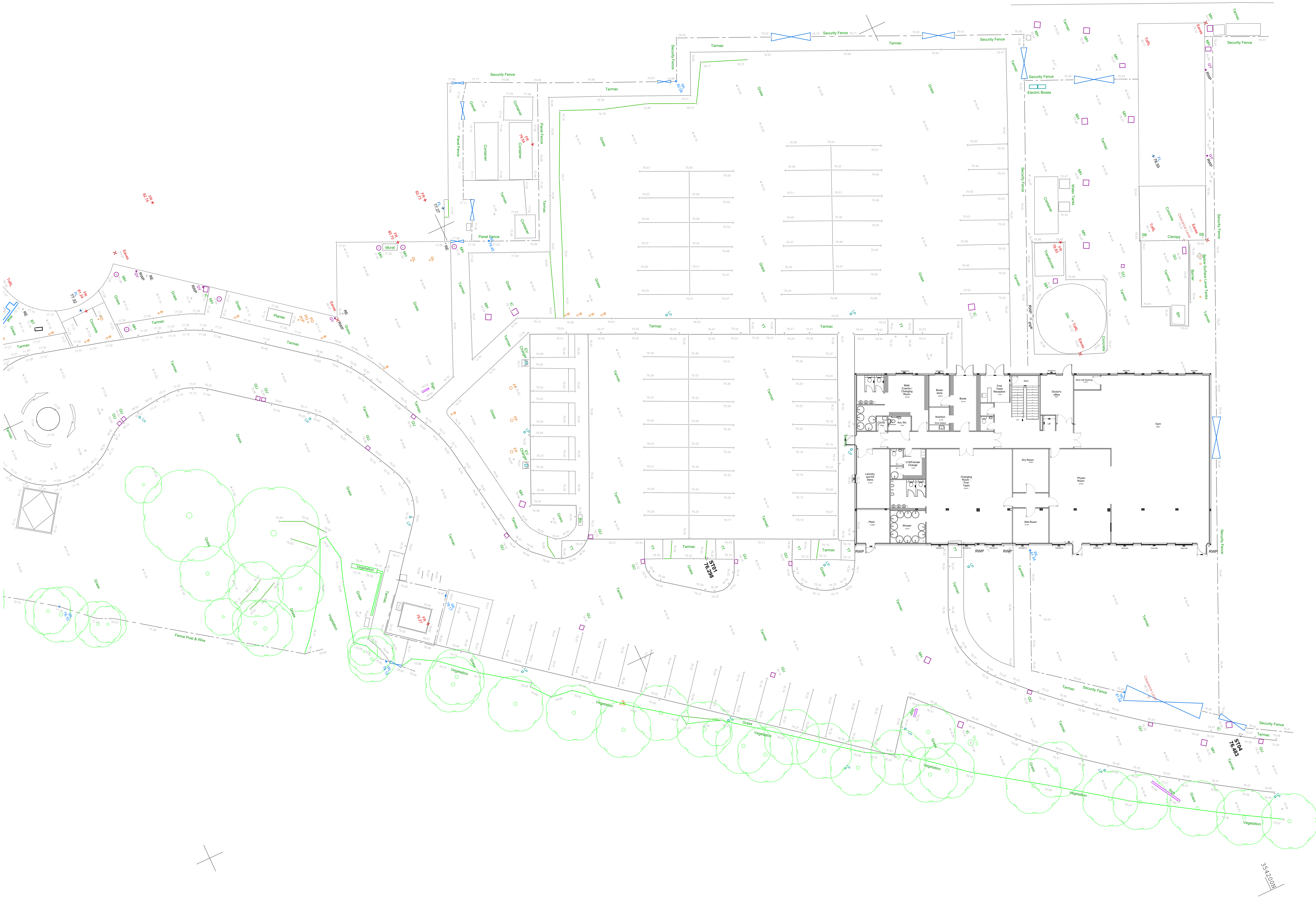
The new training facility will be provided with its own surface water drainage system separate from the wider site to collect, clean and discharge surface water back into the wider water environment. The treatment of the limited amounts of pollutants expected from roof and pedestrian hard standing areas will be dealt with by silt traps within the system and percolation into natural ground.

The limited scope of the proposed development and its drainage systems means that it is not expected to deliver any biodiversity or amenity benefits.

The proposed drainage system is within an unused hard standing area and as such is not sterilising any further land than is necessary. The storage and infiltration are below ground, allowing continued use of the area above.

The distribution of silt traps allows the system to be maintained by cyclic removal of silts from the silt traps.

## APPENDIX A - Site Development Proposal



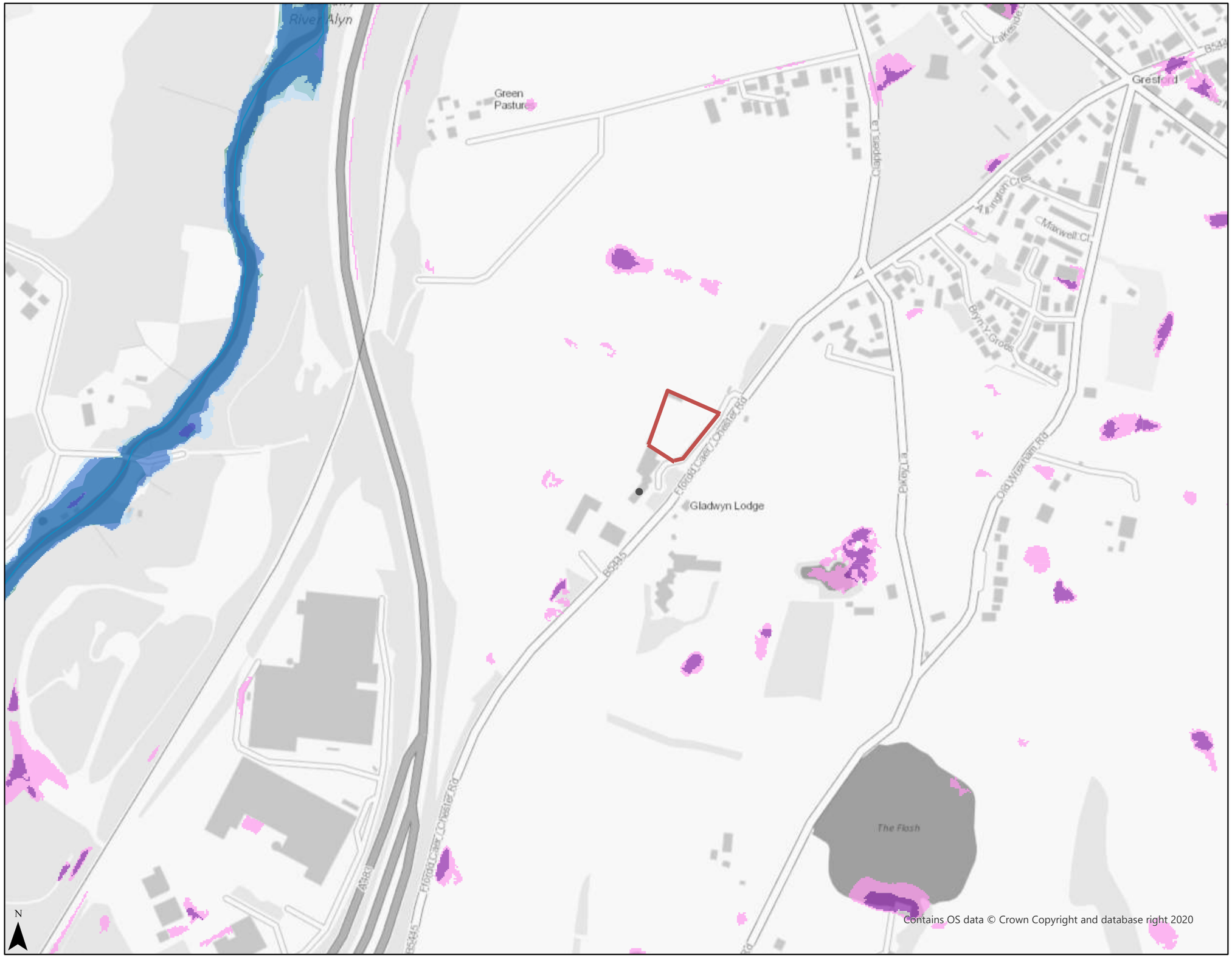
Security Fence
Tarmac
Grass
Gravel
Container
Panel Fence
Mural
Planter
Concrete
Wall
Sign
EV Charger
Bin
Vegetation
Fence Post & Wire
Electric Boxes
Water Tanks
Transformer
Silo
Pipe
Canopy
Barrier
Below Surface Level Tanks
Clearance Level
Male Coachs / Changing Room
Boots store
Boots
First Team Reception
Store
Doctor's office
Store with Racking
Gym
Nutrition
Drink Station
Cln/St
Acc Wc
U18/Female Change
Laundry and Kit Store
Changing Room - First Team
Dry Room
Physio Room
Wet Room
Plant
Shower
Lift
ST01
76.298
ST04
76.483
354200N

## APPENDIX B - Flood Map

Cyfoeth Naturiol Cymru
Natural Resources Wales

# Flood Map for Planning - Detail

**P4920 Colliers Park, Wrexham**




## Legend

TAN15 Defended Zones
- Rivers
- Sea
- Rivers and Sea

Rivers
- Flood Zone 3
- Flood Zone 2

Sea
- Flood Zone 3
- Flood Zone 2

Surface Water and Small Watercourses
- Flood Zone 3
- Flood Zone 2
- Recorded Flood Extents
- Flood Risk from Reservoirs
- Main Rivers

Scale at A3: 1:5,000

Date: 28/04/2026

0.2 0.1 0 0.2
km

British National Grid

**Disclaimer**

https://naturalresources.wales/flooding/disclaimer-for-our-flood-and-coastal-erosion-risk-maps/?lang=en

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## APPENDIX C - Proposed Drainage Strategy

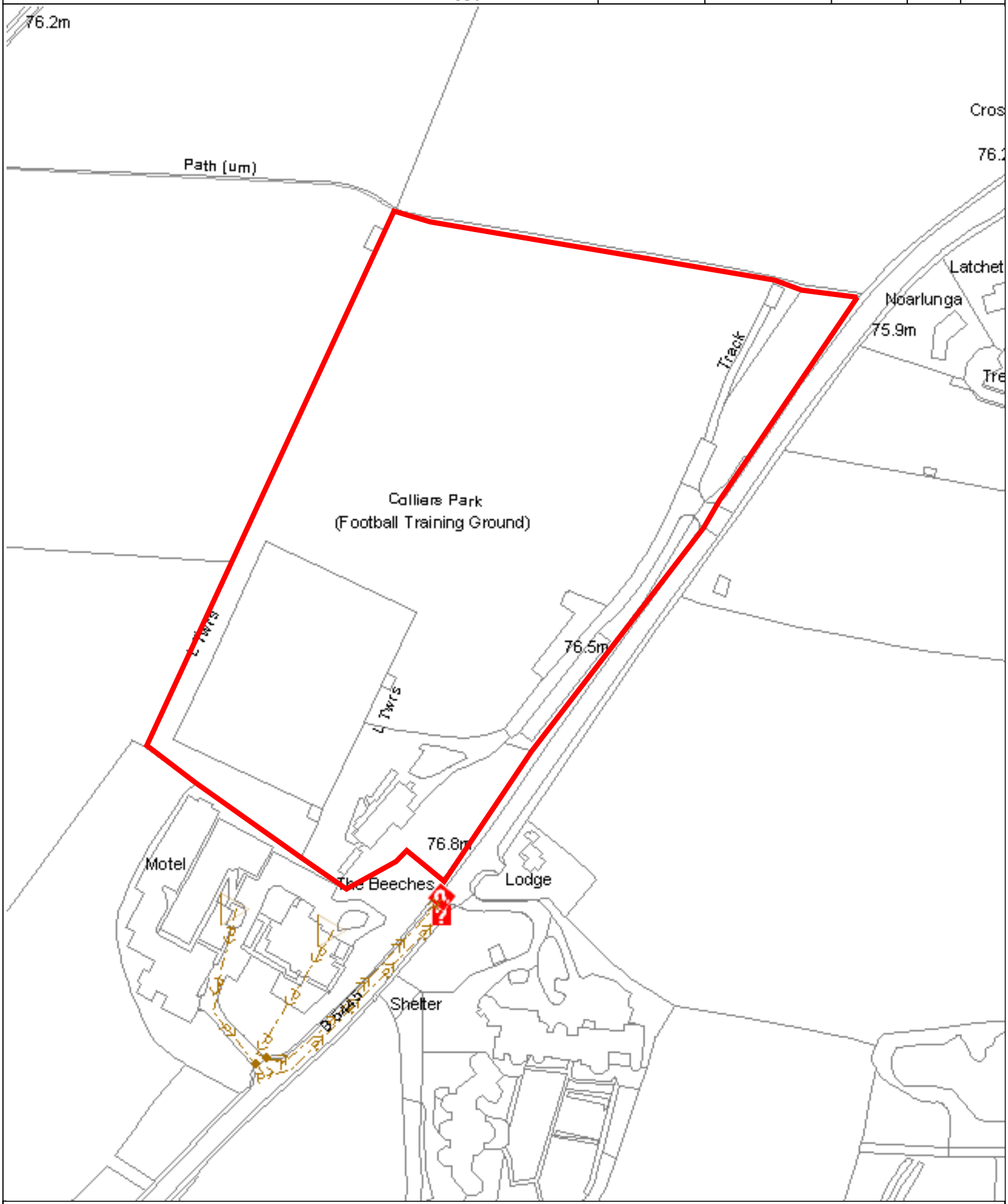
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Project
COLLIERS PARK, WREXHAM

Detail
WELSH WATER APARATUS MAP

| Project No. | Drawing No. | Scale | By | Rev. |
|---|---|---|---|---|
| 3829 | EW14 | NTS | B.T. | * |




This drawing is to be read in conjunction with all relevant architects drawings and specifications.
Do not scale – use written dimensions only !

## APPENDIX D – Welsh Water Assets Plan

OS GRID REFERENCE 388938,375529

FL 76.55

All Drainage Channels to be ACO MD100.

Drainage Channel to be ACO MD100 and fitted with sump box unit .

Existing light column to be relocated.

Tricel Sewage Treatment Plant UK50 Tank.

Line and level of existing chamber requires investigation.

Proposed attenuation crates to be Polystorm PSM1A or similar approved.
9.50m x 4.00m x 1.2m deep = 45.60m³
Minimum volume required = 43.32m³
(Considering 95% void ratio)
The attenuation has been designed based on the 1 in 100 year plus 40% climate change storm event.
Crates to be constructed in strict accordance with manufacturers guidance.
Infiltration rate of 0.14472 m/h has been used based on soakaway test results from Brownfield Solutions Ltd test WS103 from Report JL/C6579/15383.

Internal SVP/SS and gulley locations subject to final locations provided by Modulek. RWP location subject to above ground drainage proposals.

Retain existing access to front of building and tie in with new external works proposals.

Surface water drainage proposals subject to soakaway testing.

Any existing live services will require diverting to accommodate future development if any present.

Internal foul connections penetrating radon barrier to be fitted with Visqueen top hat connection in accordance with manufacturer's guidance.

Notes-

This drawing is copyright and must not be copied in part or in whole unless agreed with Avie Consulting Ltd.

All dimensions are in millimetres unless noted otherwise.

DO NOT SCALE THIS DRAWING - IF IN DOUBT ASK

1. All dimensions & levels to be checked by the contractor prior to commencement of work, any discrepancy shall be reported immediately to Avie Consulting Ltd.
2. All work shall be carried out in accordance with Local Authority, statutory authority, health & safety requirements and regulations.
3. The drawings shall be read in accordance with all other contract documents relevant at that time of issue and during the period of the contract.
4. The contractor must ensure the overall stability of the works is adequate at all stages of the construction.

PRIVATE DRAINAGE KEY-

- PPIC — PROPOSED SURFACE WATER SEWER/INSPECTION CHAMBER
- PPIC — PROPOSED FOUL WATER SEWER/INSPECTION CHAMBER
- RAIN WATER PIPE (CONNECTION PIPE 110Ø)
- TRAPPED POLYPROPYLENE ROAD GULLY (CONNECTION PIPE 110Ø)
- RODDING EYE
- DRAINAGE CHANNEL
- SOIL PIPE (CONNECTION PIPE 110Ø). NOTE: HEAD OF ALL FOUL RUNS AND EVERY 6 PLOTS TO BE VENTED.
- BACK INLET GULLY (CONNECTION PIPE 110Ø)

SW MANHOLE SCHEDULE

| NAME | COVER | INVERT | DUTY | DEPTH TO INVERT | DEPTH TO SOFFIT | DIAMETER | TYPE | PIEPDIA |
|---|---|---|---|---|---|---|---|---|
| MHS01 | 76.400 | 75.680 | B125 | 0.720 | 0.620 | 0.600 | PPIC | 0.100 |
| MHS02 | 76.400 | 75.420 | B125 | 0.980 | 0.880 | 0.600 | PPIC | 0.100 |
| MHS03 | 76.650 | 75.235 | B125 | 1.415 | 1.315 | 0.600 | PPIC | 0.100 |
| MHS04 | 76.440 | 75.790 | B125 | 0.650 | 0.550 | 0.600 | PPIC | 0.100 |
| MHS05 | 76.650 | 75.000 | B125 | 1.650 | 1.500 | 0.600 | SILT TRAP | 0.150 |
| MHS06 | 121.550 | 119.397 | D400 | 2.153 | 2.003 | 1.200 | PCC | 0.150 |

FW MANHOLE SCHEDULE

| NAME | COVER | INVERT | DUTY | DEPTH TO INVERT | DEPTH TO SOFFIT | DIAMETER | TYPE | PIEPDIA | BACKDROP |
|---|---|---|---|---|---|---|---|---|---|
| MHF01 | 76.760 | 76.310 | B125 | 0.450 | 0.350 | 0.600 | PPIC | 0.100 | |
| MHF02 | 76.760 | 76.101 | B125 | 0.659 | 0.559 | 0.600 | PPIC | 0.100 | |
| MHF03 | 76.760 | 75.951 | B125 | 0.809 | 0.709 | 0.600 | PPIC | 0.100 | |
| MHF04 | 76.760 | 75.924 | B125 | 0.836 | 0.736 | 0.600 | PPIC | 0.100 | |
| MHF05 | 76.760 | 75.854 | B125 | 0.906 | 0.806 | 0.600 | PPIC | 0.100 | |
| MHF06 | 76.760 | 75.680 | B125 | 1.08 | 0.980 | 0.600 | PPIC | 0.100 | |
| MHF07 | 76.610 | 75.656 | B125 | 0.954 | 0.854 | 0.600 | PPIC | 0.100 | |
| MHF08 | 76.760 | 75.611 | B125 | 1.149 | 1.049 | 0.600 | PPIC | 0.100 | |
| MHF09 | 76.760 | 76.310 | B125 | 0.45 | 0.35 | 0.600 | PPIC | 0.100 | |
| MHF10 | 76.760 | 76.202 | B125 | 0.558 | 0.458 | 0.600 | PPIC | 0.100 | |
| MHF11 | 76.760 | 76.175 | B125 | 0.585 | 0.485 | 0.600 | PPIC | 0.100 | |
| MHF12 | 76.760 | 76.131 | B125 | 0.629 | 0.529 | 0.600 | PPIC | 0.100 | |
| MHF13 | 76.760 | 76.096 | B125 | 0.664 | 0.564 | 0.600 | PPIC | 0.100 | |
| MHF14 | 76.760 | 75.527 | B125 | 1.233 | 1.083 | 0.600 | PPIC | 0.150 | |
| EXMH | 76.310 | 74.800 | D400 | 1.510 | 1.285 | 1.200 | EXISTING | 0.225 | 75.283 |

| Rev | Details | By | Chk | Date |
|---|---|---|---|---|
| E | Surface water to rear of building amended. MH schedule amended. | J.C. | T.C. | 11.05.2026 |
| D | Amended MHF03,MHF05 and MHF08 | J.C. | T.C. | 06.05.2026 |
| C | Amended to new drainage pop ups | J.C. | T.C. | 01.05.2026 |
| B | Drainage amended | J.C. | T.C. | 29.04.2026 |
| A | Amended to Brownfield Solutions' infiltration report | J.C. | T.C. | 24.04.2026 |
| Ø | Initial issue | J.C. | T.C. | 01.04.2026 |

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Client: Modulek

Project: Colliers Park, Wrexham

Title: Foul and Surface Water Drainage Layout

| Drawn: | Checked: | Date: | Scale: | Original dwg size |
|---|---|---|---|---|
| J.C. | T.C. | April 2026 | 1:200 | A1 |

Drawing Number: P4920-01 Rev: E