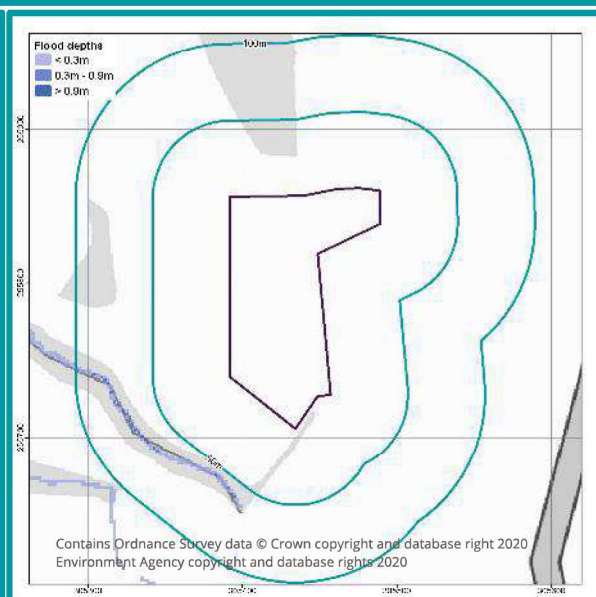
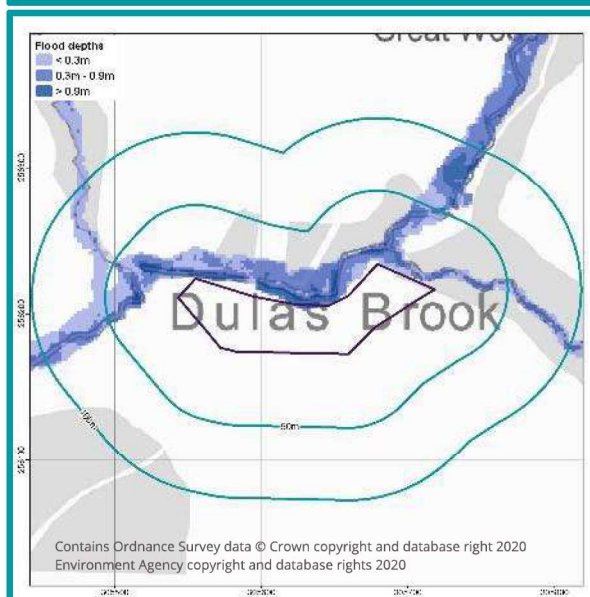
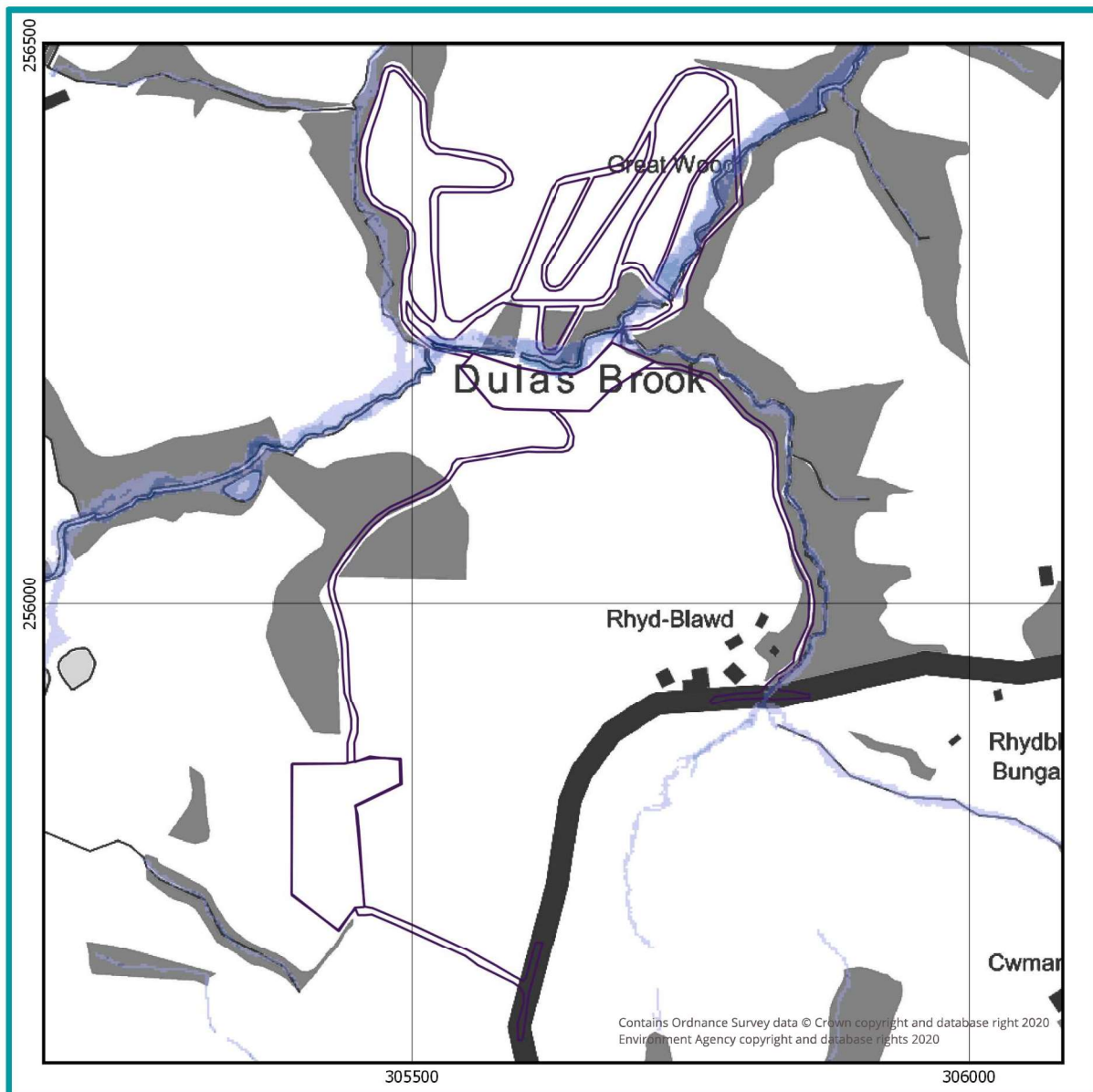
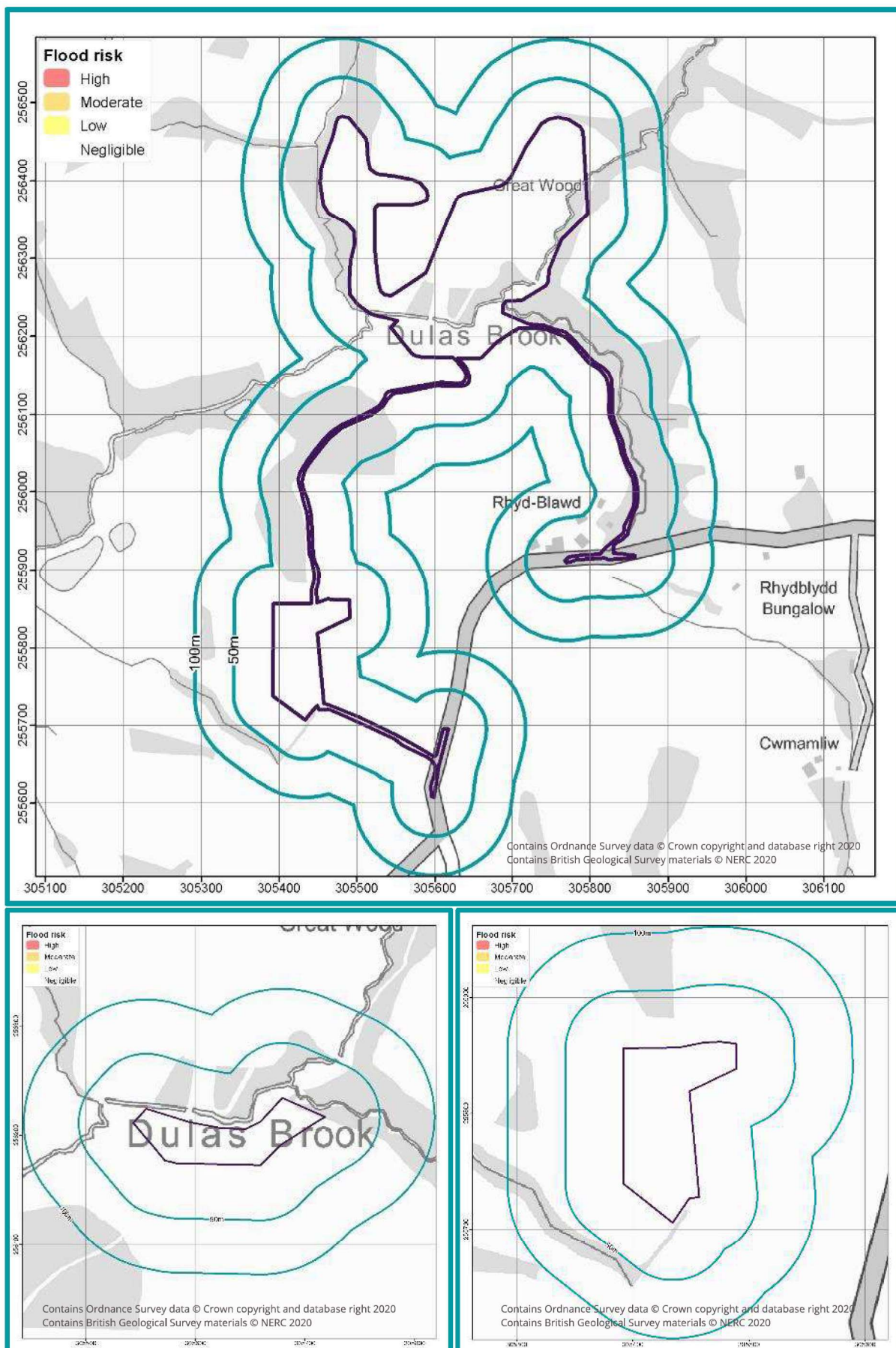


14. Risk of Flooding from Surface Water



GeoSmart have undertaken an assessment of the risk of flooding from surface water (pluvial) sources within the vicinity of the Site using the NRW's Risk of Flooding from Surface Water mapping. The map above shows the extent and depth of flooding during the 1 in 100 year event. The development areas are considered to be at Very Low risk of surface water flooding. The foul water drainage systems will not be affected by pluvial flooding.

15. Groundwater Flood Risk



GeoSmart have undertaken an assessment of the risk of flooding from groundwater within the vicinity of the Site. GeoSmart's Groundwater Flood Risk (GW5) map confirms the Site has a Negligible risk of groundwater flooding during a 1% annual probability (1 in 100 year) event. The foul water drainage systems will not be affected by groundwater flooding.

16. Foul drainage strategy

Water quality

In accordance with Natural Resources Wales (NRW) advice issued on the 20th January 2021 following an assessment of phosphate levels within the River Wye SAC/SSSI it is necessary to demonstrate that foul drainage from the proposed development will not result in an adverse effect on the integrity of the River Wye SAC through further addition of phosphate. NRW's current planning position statement concludes that "any proposed new development that might otherwise result in increasing the amount of phosphate withing the SAC either by direct or indirect discharges must be able to demonstrate phosphate neutrality or betterment".

The foul drainage system proposed below has been selected following the hierarchy described within Planning Circular 008/2018. The location of the site, remote from mains sewer suggests that a Package Treatment Plant (PTP) will be suitable. In acknowledgement of the sensitivity of the local environment the PTP will include additional treatment for phosphate removal and a tertiary treatment through a reed bed for final effluent polishing. It is anticipated that the phosphate concentration in the final treated effluent will be as low as technically possible from a private system – less than 1.0 mg/l.

Phosphate betterment

It is noted that by taking the existing system, which offers little in the way of treatment, out of commission there is expected to be a betterment in the overall quality of the effluent leaving the Site and a reduction in the phosphate concentration entering the Dulas Brook. For comparison an average phosphate concentration from a septic tank (which offers some level of treatment) is 12.2 mg/l (ref. Natural England Commissioned Report (NECR) 221) so it can reasonably be assumed that the existing system releases phosphate at a similar or higher concentration than this. On this basis it is anticipated that the proposed treatment systems for Areas A and B will offer betterment over the existing phosphate concentrations entering the SAC/SSSI.

Additionally, although the proposed development will have greater flows, it is still considered that there will be betterment of phosphate loading. For example, using the maximum discharge rates, the current phosphate loading per day would be at least 24.2 g per day ($(1.98 \times 1000 \times 12.2)/1000$) whereas the proposed loading (for Area A and Area B combined) would be in the order of 8.34 g per day ($(8.34 \times 1000 \times 1)/1000$).

Environmental permitting requirements

As the discharge will be to a designated surface water (SAC and SSSI) a Bespoke Environmental Permit is likely to be required. A pre-application submission to NRW will be made to confirm environmental permitting requirements for the Site. Advice will also be requested regarding any additional risk assessments that may be required, such as a Habitat Regulations Assessment (HRA). Any permit applications or further risk assessments can be completed following agreement in principle of the strategy presented below.

It should be noted that Planning Approval and Building Regulations approval will still be required in addition to an Environmental Permit.

The owner of the treatment system holds the permit, consent or authorisation to discharge and should be aware that he is responsible for the effluent quality discharged. Thus all sources of discharge into the system must be declared. It is an offence if the effluent fails to comply with the regulators requirements.

Area A – Moto X Experience Centre

The existing foul drainage arrangement has been in-situ for a significant period of time and used on a daily basis, for a variety of events. The existing system has been confirmed not to conform to current design standards and as such is proposed to be taken completely out of use and replaced with a new system. The existing system offers little in the way of effluent treatment and nutrient removal. The closest public foul sewer connection point is expected to be in excess of 500m from the Site. On the basis of percolation testing undertaken in April 2021 the ground conditions are not conducive to infiltration.

The following options would therefore be suitable to accommodate the proposed development.

Table 9: Area A Primary foul water drainage strategy

Existing daily discharge	0.4 to 1.98 m ³
Proposed daily discharge	1.2 to 5.94 m ³
Discharge location	Surface water – Dulas Brook to the north (SSSI / SAC)
Primary treatment	BioKube Jupiter 25
Secondary treatment	Phosphate concentration reduction (chemical dosing to bind and store as a sludge with periodic desludging for off-site disposal).
Tertiary treatment	Reed bed for final polishing and additional nutrient removal.
Comment	It is anticipated that the phosphate concentration in the final treated effluent will be as low as technically possible from a private system. A schematic including the proposed foul drainage strategy and location is shown in Section 17

Table 10: Area A Secondary foul water drainage strategy

Existing daily discharge	0.4 to 1.98 m ³
Proposed daily discharge	0 m ³
Discharge location	Off-Site – all foul water contained in a tank on-Site for periodic removal by tanker for off-Site treatment and disposal.

Primary treatment	None
Secondary treatment	None
Tertiary treatment	None
Comment	If final discharge to surface water of treated effluent is not acceptable by the regulatory authorities then this is the only available option and is not considered to be a sustainable approach. Further environmental permits and risk assessment are unlikely to be required if this strategy was adopted.

Area B – Lodges

There are no existing drainage systems in the area proposed for the lodges. The closest public foul sewer connection point is expected to be in excess of 500m from the Site. On the basis of percolation testing undertaken in April 2021 the ground conditions are not conducive to infiltration.

The following options would therefore be suitable to accommodate the proposed development.

Table 11: Area B Primary foul water drainage strategy

Existing daily discharge	0 m ³
Proposed daily discharge	2.4 m ³
Discharge location	Surface water – tributary of the Dulas Brook located c. 55m to the south west, the tributary is connected directly to the SAC/SSSI.
Primary treatment	BioKube Venus 2200
Secondary treatment	Phosphate concentration reduction (chemical dosing to bind and store as a sludge with periodic desludging for off-site disposal).
Tertiary treatment	Reed bed for final polishing and additional nutrient removal.
Comment	It is anticipated that the phosphate concentration in the final treated effluent will be as low as technically possible from a private system. A schematic including the proposed foul drainage strategy and location is shown in Section 17

Table 12: **Area B** Secondary foul water drainage strategy

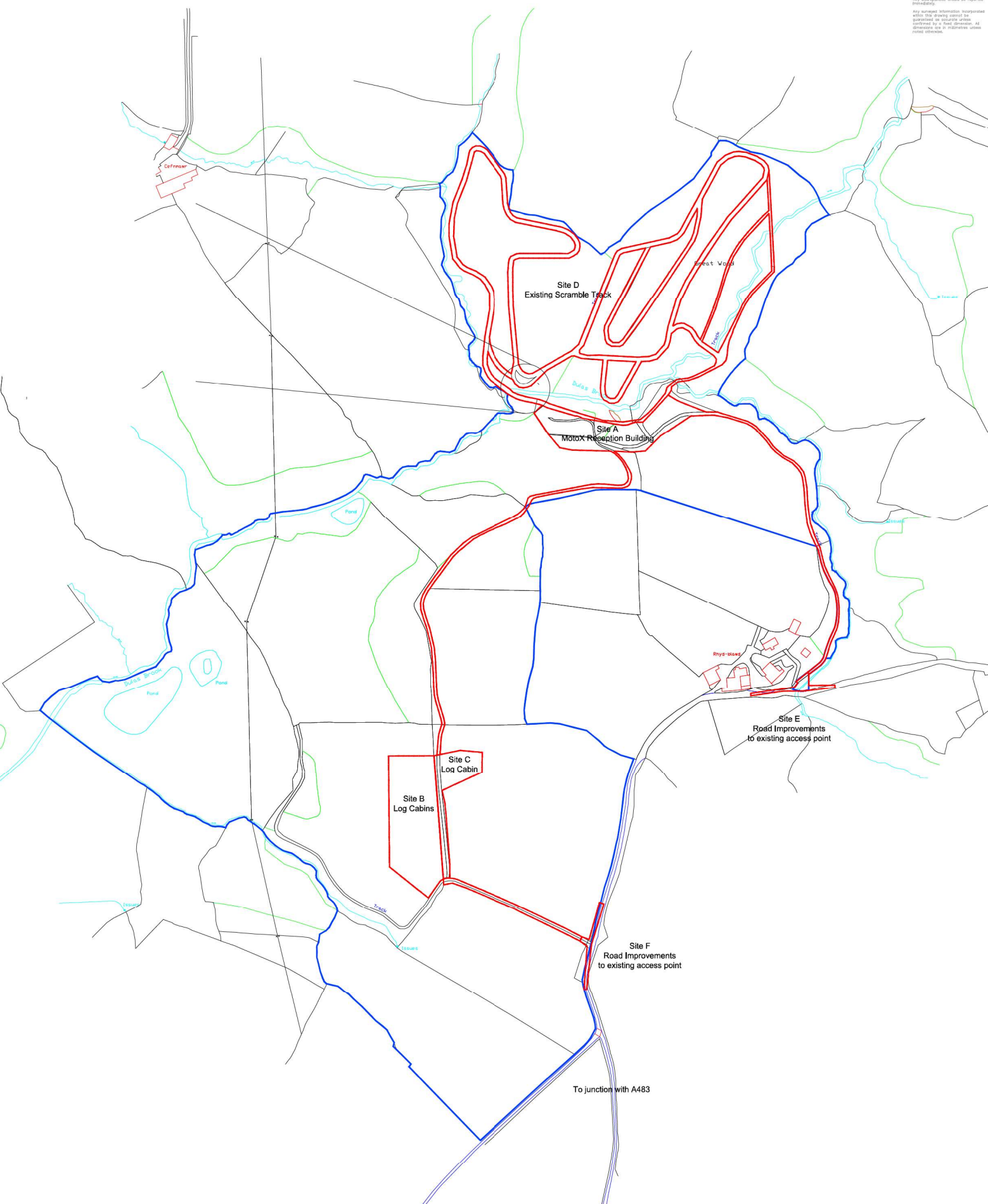
Existing daily discharge	0 m ³
Proposed daily discharge	0 m ³
Discharge location	Off-Site – all foul water contained in a tank on-Site for periodic removal by tanker for off-Site treatment and disposal.
Primary treatment	None
Secondary treatment	None
Tertiary treatment	None
Comment	If final discharge to surface water of treated effluent is not acceptable by the regulatory authorities then this is the only available option and is not considered to be a sustainable approach. Further environmental permits and risk assessment are unlikely to be required if this strategy was adopted.

18. Appendices

Appendix A

Site Plans

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PROPOSED LOCATION PLAN
 Scale: 1:1250

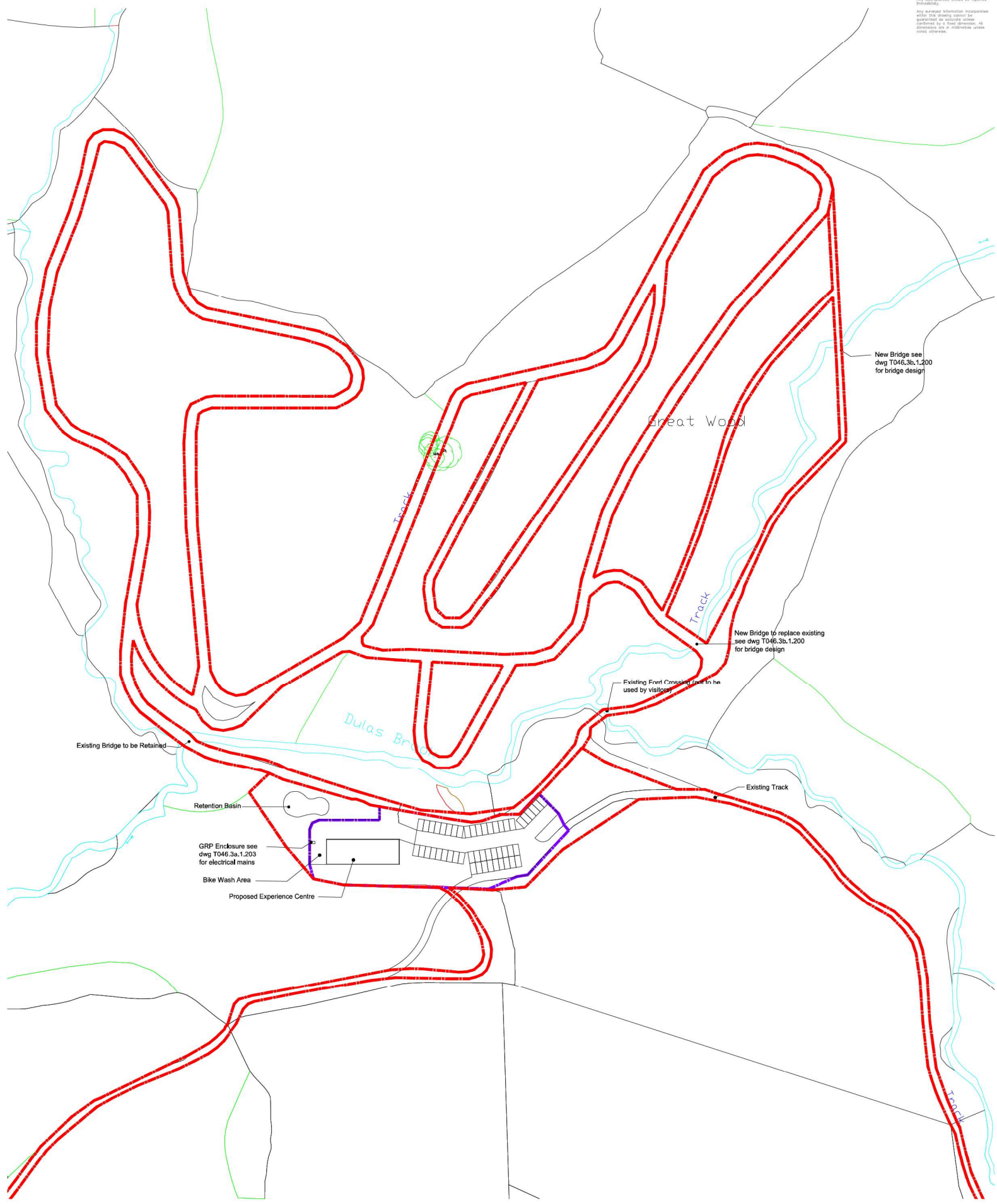
For details of proposed building please refer to the following drawings:
 Site A - Reception Building:
 3a.1.302 - Proposed Ground Floor Plan
 3a.1.303 - Proposed Elevations
 3a.1.304 - Perspective View
 3a.1.305 - Interior View and Materials
 Site B - Log Pods
 3a.1.401 Log Cabin Details
 Site C - Log Cabin
 3a.1.501 Log Cabin Details

Site D - Existing Scramble Track (10,055 square meters)
 Site E - Refer to Entran Drawings



Project: Proposed Motorway Access to Land at Rhys-Blawd Farm, Llanfihangel Wells, Powys	
Drawing Status: Stage 3a Planning	Drawing Title: Land Ownership Plan
Scale: 1:1250@A2	Date: 22.03.19
Drawn By: T06-3a-000	Rev: D

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PROPOSED BLOCK PLAN
Scale: 1:500

- Existing Scramble Track
- Proposed Area for Reception Building

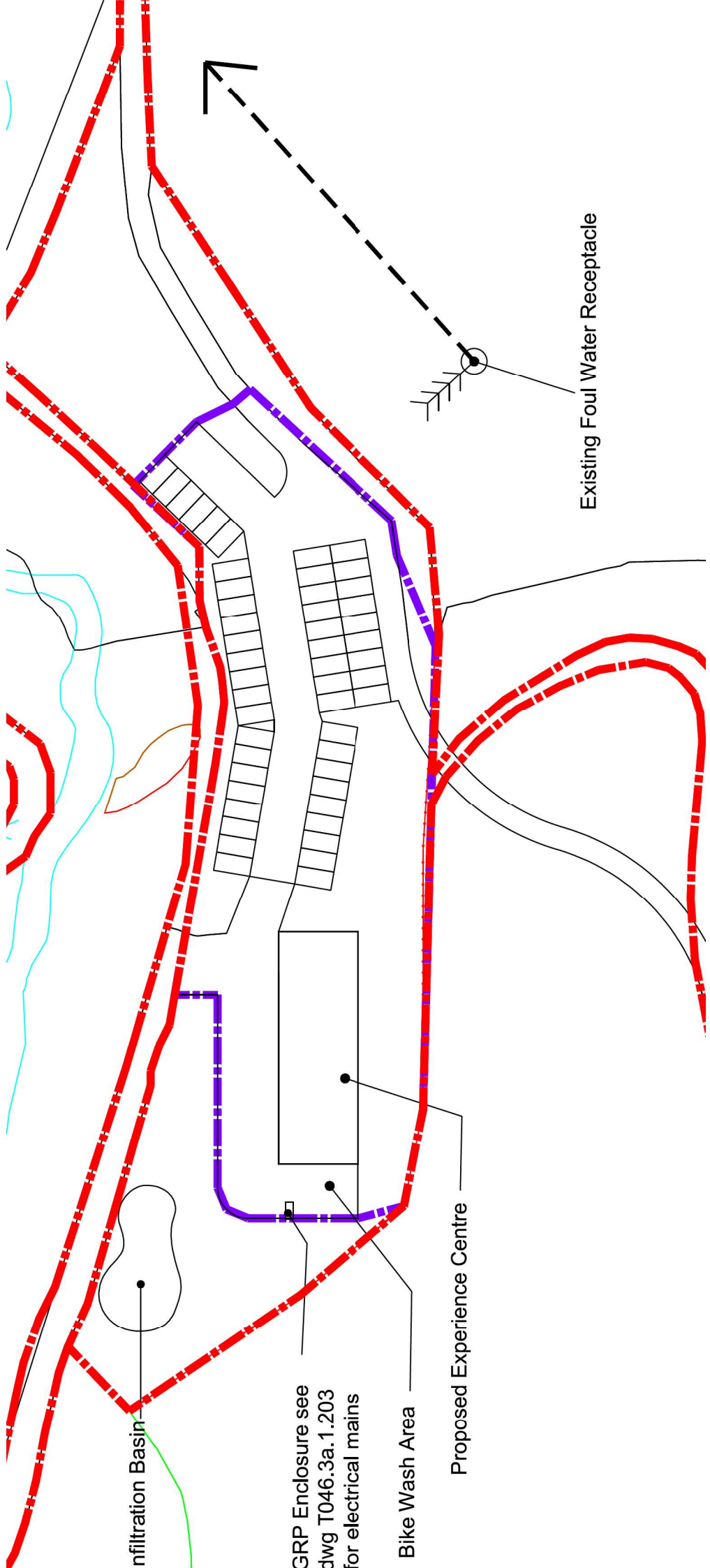
For details of proposed building please refer to the following drawings:

- 3a.1.302 - Proposed Ground Floor Plan
- 3a.1.303 - Proposed Elevations
- 3a.1.304 - Perspective View
- 3a.1.305 - Interior View and Materials

To be read in conjunction with drawing T046 3a.0.202



Drawing Status: Stage 3a Planning		Drawing Title: Proposed Block Plan 1 / 2	
Scale: 1:500 (A3)	Date: 22.03.19	Drawing No: T046-3a-0201	Rev: C



Infiltration Basin

GRP Enclosure see
dwg T046.3a.1.203
for electrical mains

Bike Wash Area

Proposed Experience Centre

Existing Foul Water Receptacle

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PROPOSED BLOCK PLAN
Scale: 1:500

Area of Log Cabins - See Drawing T046-3a-1-401



Rev A - Layout and drainage updated - 23.10.21 - TM	
Rev B - PIP relocated - 12.01.21 - TM	
Project - Proposed Moor-Cheer centre on land at Ghyddalund Farm, Llanfihangel, Powys	Drawing Title - Proposed Block Plan 2/2
Drawing Status - Stage 3a Planning	Drawing No. -
Scale - 1:500 @ A1	Date - 22.03.19
	Drawing No. - T046-3a-0-202
	Rev - B

Appendix B

Dwr Cymru Water Search

