Bear Consulting
Civil and Structural Engineers

BIKE PARK WALES, MERTHYR TYDFIL

FOUL DRAINAGE STRATEGY

CLIENT

BIKE PARK WALES

GETHIN WOODLAND CENTRE
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BEAR CONSULTING DOCUMENT REFERENCE: P0665Rc_02b

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Revision	Date	Notes	Author	Approved
A	12.01.2026	Updated to suit BPW comments	-	PC
B	05.02.2026	Updated to suit LPA comments	-	PC

1.0 INTRODUCTION

This drainage strategy has been prepared to support the submission of an updated foul drainage strategy pursuant to Condition 5 of Planning Permission P/22/0192 at Bike Park Wales, Gethin Woodland Centre, Abercanaid, Merthyr Tydfil, CF48 1YZ.

Condition 5 states:

“No development shall commence until a drainage scheme for the disposal of foul drainage has been submitted to and approved in writing by the local planning authority. The drainage scheme shall be carried out in accordance with the approved details.”

Condition 5 was previously discharged on 04 June 2024 under application reference P/23/0263. Since that approval, the proposed development has been subject to minor amendments to the accommodation mix and to the routing of foul drainage. As a result, an updated foul drainage strategy is required to reflect the current proposal.

This report therefore supersedes the previously approved foul drainage strategy insofar as it relates to Condition 5 of P/22/0192. The submission does not seek to re-open surface water drainage or sustainable drainage matters, which remain unchanged.

The foul drainage strategy has been prepared in accordance with relevant best practice and prevailing guidance for private foul drainage systems in Wales, including (as applicable):

- Building Regulations - Approved Document H (Wales) (Drainage and waste disposal);
- British Water - Flows and Loads 4 (foul flow estimation);
- BS EN 1825 for grease separators serving catering facilities
- Manufacturer guidance for proprietary wastewater treatment systems.

The proposed drainage system will be developed through to detailed design to ensure continued compliance with the above and with the requirements of Natural Resources Wales (NRW) through the environmental permitting process.

This report addresses foul drainage only. Surface water drainage is excluded and remains as previously approved. Bike wash runoff is excluded from the proposed foul drainage system and will continue to be treated and discharged under NRW trade effluent Permit EPR/BB3197FK.

The foul drainage strategy and associated flow calculations are based on a series of reasonable assumptions, including anticipated occupancy levels, typical patterns of use, installation of modern low-flow sanitary appliances and normal site operation. These assumptions reflect current best practice but do not establish a guarantee of operational performance.

Actual flows and effluent characteristics will be influenced by site management practices, user behaviour, maintenance regimes and the final appliance specification.

2.0 EXISTING SITE ARRANGEMENT

2.1 Site Description

Bike Park Wales is an established outdoor recreation facility located within Gethin Woodland Centre. The site includes existing visitor facilities, parking, café and welfare buildings, bike trails and associated drainage infrastructure, including an existing foul water treatment system and a separate reed bed system serving bike wash runoff.

2.2 Planning History

The current proposals sit within the context of the following planning permissions:

- **P/19/0073 (2019)**
  Approved the provision of **36 camping pods and 5 chalets**, together with parking, welfare facilities, drainage and infrastructure works. A drainage strategy was approved under this consent.

- **P/22/0192**
  Approved a revised scheme titled *"Provision of 29 camping pods"* and associated infrastructure. This permission superseded the drainage strategy approved under P/19/0073 and introduced **Condition 5**, requiring submission and approval of a foul drainage scheme.

- **P/23/0263**
  Discharged Condition 5 of P/22/0192 following submission of a foul drainage strategy.

Whilst P/22/0192 amended the number and arrangement of camping pods, the five chalets approved under P/19/0073 remain extant and were not removed by the later consent. The foul drainage assessment presented within this report therefore also includes flows from the five approved chalets.

3.0 EXISTING DRAINAGE ARRANGEMENT

The site is not served by a public foul sewer network and foul drainage is therefore managed on-site via private treatment systems. The existing drainage arrangements comprise separate systems for domestic foul sewage and bike wash trade effluent, each regulated independently by Natural Resources Wales (NRW) under separate environmental permits.

3.1 Existing Domestic Foul Drainage

Domestic foul drainage arising from the existing site facilities (including the café and welfare buildings) is currently treated via an on-site package treatment plant and discharged to the Nant Graig watercourse under NRW environmental permit EPR/AB3591CP. This permit regulates the discharge of domestic foul sewage only, specifying permitted discharge volumes and effluent quality standards to protect the receiving watercourse.

3.2 Existing Bike Wash Drainage (Reed Bed)

Bike wash runoff is treated as a separate trade effluent stream and is managed independently of the domestic foul drainage system. Bike wash effluent is routed via a silt trap and reed bed treatment system prior to discharge to the Nant Graig watercourse.

The bike wash discharge is regulated independently under NRW trade effluent permit EPR/BB3197FK and does not form part of the domestic foul sewage discharge regulated under Permit EPR/AB3591CP.

3.3 Existing Drainage Summary

In summary, the existing site drainage comprises:

- Domestic foul sewage from existing site facilities treated via a package treatment plant and discharged under NRW Permit EPR/AB3591CP

  and

- Bike wash trade effluent treated separately via a silt trap and reed bed system and discharged under NRW Permit EPR/BB3197FK.

These two effluent streams are hydraulically and regulatorily separate, notwithstanding that they ultimately discharge to the same receiving watercourse.

4.0 PROPOSED DEVELOPMENT OVERVIEW

Following discharge of the planning Condition 5, Bike Park Wales undertook additional customer survey work to inform ongoing refinement of the approved accommodation mix.

This work identified a higher than anticipated demand for:

- Twin-room accommodation with en-suite facilities

  and

- Campervan parking

As a result, the approved accommodation mix has been amended, whilst remaining within the scope of the approved development.

Accommodation Type	Approved Scheme (P/22/0192)	Amended Scheme
Camping Pods	21	10
Shepherds Huts (en-suite)	3	11
Campervan Hook-ups	7	9
Total Units	**31**	**30**

Essentially, the approved layout comprises 21 camping pods (sleeping up to four persons per unit, without en-suite facilities) and 3 shepherds huts (sleeping up to two persons per unit, with en-suite facilities). The amended proposal revises the accommodation mix to comprise 10 camping pods and 11 shepherds huts, together with 9 serviced campervan spaces.

The revised arrangement utilises the same established accommodation areas and infrastructure, with the footprints and foundations of the camping pods and shepherds huts remaining consistent, and changes limited to the elevation profile of units converted from camping pods to shepherds huts. In addition, three camping pods have been replaced with serviced campervan spaces in response to identified demand.

Total approved occupancy (excluding chalets): (21 x 4) + (3 x 2) + (7 x 2) = 104 persons

Total proposed occupancy (excluding chalets): (10 x 4) + (11 x 2) + (9 x 2) = 80 persons

Overall, the amended accommodation mix results in a net reduction of up to 24 overnight guests per night when compared with the previously approved scheme.

In parallel with these changes, it is now proposed that existing site foul drainage (including the café and welfare facilities) is routed to the new foul treatment system. These changes alter the foul flow characteristics of the site and necessitate an updated foul drainage strategy.

The proposed site layout has been included in Appendix A of this report.

5.0 NRW PERMIT SUMMARY

The site operates under three bespoke environmental permits issued by Natural Resources Wales (NRW), which regulate separate wastewater discharge streams and outfalls associated with the development. These permits control allowable discharge volumes, effluent quality standards and monitoring requirements to protect the receiving watercourse, Nant Graig.

Two of the permits regulate treated domestic foul sewage from separate treatment systems and discharge points on the site, while a third permit independently regulates trade effluent arising from bike wash activities. Although all discharges ultimately enter the same receiving watercourse, they are regulated separately due to differing effluent characteristics and treatment processes.

NRW Permit (2017) - EPR/AB3591CP

This permit regulates the discharge of secondary-treated domestic foul sewage from the existing on-site package treatment plant serving the visitor centre and existing site facilities. Treated effluent discharges to the Nant Graig watercourse via the permitted outfall.

The permit specifies volumetric and effluent quality limits together with associated monitoring and management requirements.

Summary of Emission Limits – Refer to Permit for full schedule:

Parameter	Limit	Unit
Max Daily Volume	9.0	m^3/day
BOD (ATU)	20	mg/L
Ammoniacal-N	5.45	mg/L
Suspended Solids	30	mg/L

Discharge Points – Refer to Permit for full schedule:

Effluent	Discharge Point	Discharge Point NGR	Receiving Water
Secondary treated sewage effluent	Outlet 1 on permit	SO 05057 03532	Nant Graig

Monitoring Points – Refer to Permit for full schedule:

Effluent(s) and discharge point(s)	Monitoring Type	Monitoring Point NGR	Monitoring Point Reference
Secondary treated sewage effluent via Outlet 1	Effluent Sample Point	SO 05057 03532	Sample Point

NRW Permit (2022) - EPR/BB3197FK (Bike Wash Trade Effluent)

This permit regulates trade effluent arising from bike wash activities, which is treated independently of the domestic foul drainage system via a silt trap and reed bed treatment system prior to discharge to the Nant Graig watercourse.

The bike wash trade effluent is treated independently via a silt trap and reed bed system and discharges to the Nant Graig watercourse via the existing outfall location. Although the outfall location is shared with the domestic foul drainage, the bike wash discharge is regulated separately under NRW Permit EPR/BB3197FK and does not form part of the domestic foul sewage discharge regulated under Permit EPR/AB3591CP.

Summary of Emission Limits – Refer to Permit for full schedule:

Parameter	Limit	Unit
Max Daily Volume	2.5	m^3/day
Suspended Solids	10	mg/L
pH	6-9	-
Visible oil or grease	No significant trace (≤0.5)	-

Discharge Points – Refer to Permit for full schedule:

Effluent	Discharge Point	Discharge Point NGR	Receiving Water
Trade effluent (bike wash runoff) via silt trap and reed bed	Outfall at Nant Graig watercourse	SO 05057 03532	Nant Graig

Monitoring Points – Refer to Permit for full schedule:

Effluent(s) and discharge point(s)	Monitoring Type	Monitoring Point NGR	Monitoring Point Reference
Trade effluent (bike wash runoff) via outfall at Nant Graig	Effluent Sample Point	SO 05052 03500	Effluent Sample Point

NRW Permit (2023) - EPR/CB3893CC

This permit authorises a separate domestic foul sewage discharge associated with a newer treatment system serving the proposed accommodation and welfare facilities. The treatment arrangement comprises a package treatment plant with tertiary treatment prior to discharge to the Nant Graig watercourse via a separate permitted outfall.

The scope of this permit does not extend to the existing visitor centre facilities regulated under Permit EPR/AB3591CP.

Summary of Emission Limits – Refer to Permit for full schedule:

Parameter	Limit	Unit
Max Daily Volume	10.2	m^3/day
BOD (ATU)	10	mg/L
Ammoniacal-N	4	mg/L
Suspended Solids	30	mg/L

Discharge Points – Refer to Permit for full schedule:

Effluent	Discharge Point	Discharge Point NGR	Receiving Water
Secondary treated sewage effluent via reed bed system	Outlet 1 on permit	SO 05198 03583	Nant Graig

Monitoring Points – Refer to Permit for full schedule:

Effluent(s) and discharge point(s)	Monitoring Type	Monitoring Point NGR	Monitoring Point Reference
Secondary treated sewage effluent via Outlet 1	Effluent Sample Point	SO 05201 03537	Sample Point

6.0 PROPOSED FOUL DRAINAGE STRATEGY

6.1 Overview

It is proposed to decommission and remove the existing on-site package treatment plant serving existing domestic and catering facilities, with all domestic foul drainage diverted to the newer treatment system serving the camping units and chalets, as shown on the proposed drainage layout P0665 c01b – Proposed Drainage Layout – Foul Water in Appendix B of this report, subject to agreement with Natural Resources Wales.

All domestic foul drainage associated with the amended development is proposed to be treated on-site prior to discharge to Nant Graig, in accordance with the requirements of NRW through the environmental permitting process.

The proposed treatment train comprises:

- Primary and secondary treatment via a proprietary package treatment plant (e.g. Klargester NN Max Recycle);
- Tertiary treatment via a granular tertiary treatment module (e.g. Klargester BioTreat);
- Final discharge to the receiving watercourse.

This arrangement provides enhanced effluent quality and represents a robust solution appropriate to the sensitivity of the receiving environment.

Bear Consulting have been in discussion with Klargester to confirm suitability of the proposed treatment units to serve the demand/expected usage. Appendix C includes the details of the package treatment plant, the tertiary treatment unit and a typical grease separator suitable for serving the catering facilities.

6.2 Foul Sources

The proposed system will serve foul drainage from:

- Camping pods;
- Shepherds huts (en-suite);
- Five approved chalets;
- Café and kitchen facilities;
- Changing village and welfare facilities.

Bike wash runoff shall be excluded from the new foul drainage system and shall continue to be treated and discharged independently via the existing silt trap and reed bed system to the Nant Graig watercourse under NRW trade effluent Permit EPR/BB3197FK, using the existing outfall location.

6.3 Grease Management

Foul drainage from the café and kitchen facilities will pass through a suitably sized grease separator, designed and installed in accordance with BS EN 1825, prior to entering the treatment system.

7.0 FOUL DRAINAGE CALCULATIONS & ASSUMPTIONS

7.1 Overview

Foul flows have been calculated using British Water - Flows and Loads 4, supplemented by operational information provided by Bike Park Wales. The detailed calculations are presented on Drawing SKc04 - Proposed Foul Water Drainage Calculation Summary.

The assessment includes all domestic foul sources listed in Section 6.2.

Motorhome/campervan waste and toilet chemical waste is excluded as the occupiers shall use the onsite facilities.

7.2 Low-Flow Appliance Assumptions

The calculations presented on Drawing SKc04 are based on the assumption that modern low-flow sanitary appliances will be installed throughout the development, including:

- Low-flush WCs
- Low-flow showers
- Flow-restricted taps and fittings.

This approach reflects current best practice for visitor accommodation and results in realistic, rather than legacy worst-case water consumption rates. These assumptions will require approval from NRW prior to obtaining/varying the existing permits.

7.3 Calculated Foul Flows

Based on the above assumptions, the calculated foul flows are:

- **Average daily foul flow:** Approximately 11.7 m^3/day
- **Peak daily foul flow:** Approximately 18.5 m^3/day

The above values and calculations have been demonstrated on drawing SKc04 in Appendix B of this report.

The peak flow represents a reasonable worst-case scenario (on weekends), with average daily flows expected to be significantly lower during typical operation.

8.0 NRW PERMIT VARIATION

The site is currently regulated by three NRW bespoke environmental permits, which together control separate wastewater discharge streams associated with different activities and treatment systems on site. These permits are summarised in Section 5 and comprise:

Permit Reference	Discharge Description	Permitted Daily Flow
EPR/AB3591CP	Treated effluent associated with existing site operations	9.0 m³/day
EPR/BB3197FK	Trade effluent discharge associated with bike wash activities, treated independently via a silt trap and reed bed system.	2.5 m³/day
EPR/CB3893CC	Treated domestic foul discharge to suit Condition 5 of P/22/0192 – **currently not operational**	10.2 m³/day

The proposed foul drainage strategy maintains a clear separation between domestic foul sewage and bike wash trade effluent, with no commingling of effluent streams.

8.1 Proposed Re-allocation of Permitted Discharge Volumes (Subject to NRW Agreement)

It is proposed that all domestic foul drainage associated with the amended development, including accommodation units, café, welfare and changing facilities, will be routed to the newer treatment system and discharged in accordance with Permit EPR/CB3893CC, subject to agreement with NRW.

The existing bike wash runoff will continue to be treated independently via the existing silt trap and reed bed system and discharged under Permit EPR/BB3197FK. No material increase in bike wash activity or discharge characteristics is proposed as part of the current scheme.

8.2 Relationship to Proposed Domestic Foul Flows

The proposed domestic foul flows, calculated in accordance with British Water - Flows and Loads 4 and summarised on Drawing SKc04, are as follows:

Parameter	Flow
Average daily foul flow	Approximately 11.7 m³/day
Peak daily foul flow	Approximately 18.5 m³/day

The assumed bike wash discharge of approximately 2.29 m³/day is regulated independently under Permit EPR/BB3197FK and does not form part of the domestic foul sewage discharge envelope considered under either Permit EPR/AB3591CP or EPR/CB3893CC.

Following the diversion of domestic foul drainage from the existing site facilities to the newer treatment system, the consented discharge volume of 9.0 m³/day currently authorised under Permit EPR/AB3591CP is anticipated to be largely unused.

It is therefore intended that this consented volume may be considered by NRW as part of any future permit variation, with a view to allowing discharge capacity associated with the existing foul sewage system serving domestic and catering facilities, to be taken into account within the newer foul sewage permit (EPR/CB3893CC), subject to NRW agreement.

This reflects that, following decommissioning of the existing treatment plant serving the existing domestic and catering facilities (subject to agreement with Natural Resources Wales), the associated foul sewage discharge from that part of the site would cease.

Any adjustment or re-allocation of permitted discharge volumes would be progressed through the formal environmental permitting process and would only take effect following approval by Natural Resources Wales.

8.3 Summary of Permitting Position

In summary:

- Bike wash trade effluent will continue to be regulated independently under Permit EPR/BB3197FK;
- Domestic foul sewage associated with the amended development is proposed to discharge under Permit EPR/CB3893CC;
- Any changes to discharge volumes or treatment arrangements will be subject to agreement with NRW through the environmental permitting process.

No changes are proposed to surface water drainage arrangements, which remain as previously approved.

9.0 CONCLUSION

This foul drainage strategy has been prepared to support the discharge of Condition 5 of Planning Permission P/22/0192 and to inform discussions with Natural Resources Wales regarding the environmental permitting process. The strategy is based on the proposed development layout and operational assumptions current at the time of writing. It has been prepared using information provided by the client regarding the proposed site layout, accommodation mix, occupancy assumptions and anticipated patterns of use, which have been relied upon for the purposes of this assessment.

The report demonstrates that the proposed foul drainage arrangements provide appropriate means of treating and disposing of domestic foul effluent arising from the development. In summary:

- The foul drainage strategy defines the intended design approach and permitting basis and does not establish a guarantee of operational performance under all future site conditions
- All domestic foul drainage associated with the approved and amended development (including accommodation units, café, welfare and changing facilities) is proposed to be collected and treated via an on-site package wastewater treatment system, comprising primary and secondary treatment, followed by tertiary treatment prior to discharge.
- Foul effluent from kitchen facilities will be routed through a suitably sized grease separator, designed in accordance with BS EN 1825, before entering the treatment system.
- The treated effluent from the diverted drainage serving the existing catering facility and the proposed camping and accommodation units will discharge to the Nant Graig watercourse via the outfall authorised under NRW Permit EPR/CB3893CC, subject to NRW agreement.
- Bike wash runoff shall be excluded from the new foul drainage system and shall continue to be treated and discharged independently via the existing silt trap and reed bed system to the Nant Graig watercourse under NRW trade effluent Permit EPR/BB3197FK, using the existing outfall location.
- Foul flows have been calculated using recognised guidance (British Water - Flows and Loads 4) and reasonable assumptions on water use, including the use of modern low-flow sanitary appliances. Both average and peak daily foul flows have been clearly identified to inform the proposed drainage strategy.
- Any material change in site use, occupancy levels, appliance specification or operational practices beyond those assumed within this strategy may require reassessment of foul drainage capacity and permitting arrangements.
- The identified peak daily foul flow represents a short-term worst-case scenario (weekends) and does not indicate a sustained discharge above consented daily limits, which will be confirmed through the permitting and detailed design process.

- Implementation and operation of the proposed foul drainage system at the calculated flows is subject to formal agreement of the proposed permit variation by Natural Resources Wales.

- Subject to agreement with Natural Resources Wales on a variation to the existing environmental permit(s), the proposed foul drainage system is capable of operating in accordance with the relevant regulatory requirements.

- Should NRW require amendments to discharge volumes or treatment capacity, the proposed strategy allows for refinement at detailed design stage without fundamental alteration to the site drainage concept.

- The performance of the foul drainage system and ongoing compliance with environmental permits will depend on correct installation, commissioning, operation and maintenance of the treatment infrastructure in accordance with manufacturer recommendations and permit conditions.

All foul and trade effluent discharges will operate in accordance with the relevant NRW environmental permits, with any changes subject to approval through the environmental permitting process.

Appendix A

KEY

- Significant trees to be retained (approximate position)
- Woodland/shrubs to be retained (approximate extent)
- Significant trees to be removed (approximate position)
- Proposed native standard and feathered tree planting
- Trees proposed as part of earlier application
- Proposed native tree and shrub mass planting
- Native tree and shrub mass planting proposed as part of earlier application
- Proposed fencing
- Proposed gabion wall with coursed stonework fill
- Proposed topsoil bund
- Existing retained building
- Proposed shepherd's hut
- Proposed camping pod
- Other proposed building
- Building proposed as part of earlier application
- Existing parking
- Proposed/amended parking or road edge
- Proposed plastic surface reinforcement
- Proposed/amended path/track edge
- Proposed overflow parking
- Proposed timber picnic tables
- Boulders
- Other proposed features
- Habitat structure/timber pile
- Electrical hook-up (motorhome parking area)
- Surface drainage feature (refer to engineering for details)
- Manholes and underground drainage features (refer to engineering for details)
- Demise area (October 22)
- Red line boundary (approximate)

NOTE ON DRAINAGE:
Details of drainage are for guidance only. For precise details, refer to engineer's drawings.

NOTES ON THE LANDSCAPE PROPOSALS

The landscape shown on this masterplan has been designed to create a high quality amenity space that maximises habitat quality.

The design was created in order to fulfill the requirements for additional parking, buildings and other features associated with the expansion of facilities at Bike Park Wales.

The landscape proposals have evolved significantly, in response to adverse effects that were identified as being likely to result from the development of the site in line with the initial plans. The design presented is the result of series of refinements to layout and specification which are intended to avoid or reduce such effects.

SCALE

0 5 10 50m

Scale 1:500 printed at A0

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LANDSCAPE ARCHITECTURE
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Project title:
Bike Parks Wales, Abercanaid

Drawing title:
BPW Landscape Masterplan

Client:
Bike Parks Wales

Date:
6th November 2018

Revisions:
Rev A: 8th November 2018 - arboricultural information updated and pods & lodges re-located.
Rev B: 19th December 2018 - general amendments to features.
Rev C: 17th January 2019 - re-design of van parking area
Rev D: 25th July 2019 - re-design of van and overflow parking area and lodges.
Rev E: 14th Aug 2019 - amendment of proposed overflow and main parking areas and associated landscape.
Rev F: 4th Oct 2019 - Detailed amendments to drainage and associated landscape, additional tree information and other minor changes.
Rev G: 11th Oct 2019 - Amendment of terrace proposals.
Rev H: 13th Nov 2019 - Adjustment of tree positions and associated proposals
Rev I: 8th April 2022 - Amendments to pods, changing village and other features
Rev J: 19th April 2022. Revised drainage information and associated minor changes to planting.
Rev K: 5th June 2023.
Rev L: 7th October2025. Minor amendments to hut and pod mix + bike lockers.
Rev M: 16th Dec 2025 - Changes to foul drainage spec and other minor amendments

Drawing number:
18/461/01 M

BIKE PARK WALES: LANDSCAPE MASTERPLAN

NORTH

KEY

- Significant trees to be retained (approximate position)
- Woodland/shrubs to be retained (approximate extent)
- Proposed native standard and feathered tree planting
- Trees proposed as part of earlier application
- Proposed native tree and shrub mass planting
- Native tree and shrub mass planting proposed as part of earlier application
- Existing retained building
- Proposed shepherd's huts
- Proposed camping pods
- Proposed chalets
- Proposed WC pods
- Proposed workshop pods
- Other proposed building
- Building proposed as part of earlier application
- Red line boundary (approximate)
- Estimated tree and large shrub cover after proposed works have been completed

NOTES ON TREE COVER

The tree cover shown by the light green hatching is an estimate of the overall spread of *existing* trees and large shrubs that will be retained after the proposed works are complete. It does not include proposed planting: this is shown as beds enclosed by a mid-green line and by individual mid-green circles (see key above).

Once proposed planting and areas left to regenerate are established, the overall tree cover will be significantly greater than the areas of light green hatching shown at present.

SCALE

0 5 10 50m

Scale 1:500 printed at A0

PETER QUINN ASSOCIATES

LANDSCAPE ARCHITECTURE

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Project title:
Bike Parks Wales, Abercanaid

Drawing title:
BPW Landscape Masterplan: tree cover

Client:
Bike Parks Wales

Date:
20th May 2022

Revisions:
A 16th Oct 2025. Minor amendments to hut and pod mix + bike lockers.
B 16th Dec 2025 - Changes to foul drainage spec and other minor amendments

Drawing number:
22/461/25 B

BIKE PARK WALES: TREE COVER

NORTH

Appendix B

NRW permit (EPR/AB3591CP) emission limits (Outfall 1)	
Parameter	Limit (units)
Maximum daily discharge volume	9.0 m3/day
Ammoniacal nitrogen (expressed as N)	5.45 mg/l
ATU - Biological Oxygen Demand as O2	20 mg/l
Suspended Solids (measured after drying at 105°C)	30 mg/l
Visible oil or grease	No significant trace present

Outfall 1- Existing outfall to Nant y Graig (SO 05057 03532).

Existing watercourse Nant y Graig

Bikewash effluent drain run from existing reed bed **EX Reed Bed**

EX Reed Bed

Existing foul drain run towards Outfall 1 to serve bike wash runoff only

Existing package treatment plant to be removed

Existing foul drain run from existing building/cafe to be re-directed to **PTP01** to the northeast of the site

Bikewash effluent from relocated bike wash facility to connect to existing bike wash effluent drain and discharge to existing reed bed **EX Reed Bed**.

EXRB

Workshop storage shed

Decommissioned existing bike wash

Effluent from relocated bike wash facility to connect to existing bike wash effluent drain.

Foul water from existing building/cafe to now discharge to **PTP01. Ensure suitably sized grease separator to BS EN 1825 is installed to serve catering facilities.**

Existing Site Area

Existing cafe building

External catering unit

Bike wash effluent from relocated bike wash facility to discharge to existing reed bed **EX Reed Bed.**

Borehole

Play area

Changing village

Proposed changing village location TBC

Chemical toilet disposal point

9no. Motorhome Parking Area.
Guests within this area are required to use the on-site shower/toilet facilities. All foul water generated by the units shall be collected by the user(s) and removed from the site for appropriate disposal.

Foul water from Proposed Development Area A to discharge to Proposed Package Treatment Plant **PTP01**.

Proposed Development Area C

Proposed Development Area A

Proposed Development Area B

Linen
Camping pod
Camper hook-up
Shepherd's hut
Shower/toilet pod
Workshop pod
Cabins/Lodges

Outfall 2 (Not Shown on Layout)
Proposed outfall to discharge to Nant y Graig (SO 05198 03583).
NRW environmental permit reference: EPR/CB3893CC

TTP 01
Proposed Horizontal Granular Tertiary Treatment Module or similar approved.
Sizing and detail TBC by specialist.

TTP

PTP01
Proposed Package Treatment Plant to serve foul water from Existing Site Area, Proposed Development Area A & Proposed Development Area B

PTP

Foul water from Proposed Development Area B to discharge to proposed Proposed Package Treatment Plant **PTP01**.

NOTE:

THIS DRAWING HAS BEEN PRODUCED TO SUMMARISE THE DRAINAGE INTENT AND CALCULATIONS ONLY. REFER TO DRAWING P0665 C01 FOR DETAILED DRAINAGE LAYOUT.

Summary of Proposed Foul Drainage

Existing Site Area:
Effluent from the relocated bike wash facility shall discharge to the existing reed bed (EX Reed Bed) and continue to discharge via Outfall 1. Foul water from the existing building/café shall be redirected to the proposed package treatment plant (PTP01), located to the east of the site and will then ultimately discharge via Outfall 2.
Following discussions with the manufacturer, PTP01 has been sized based on the anticipated usage and is considered capable of achieving effluent quality compliant with the latest NRW permit limits. The proposed tertiary treatment plant will be designed and constructed by a specialist to provide tertiary treatment and support compliance with the NRW permit requirements.

Proposed Development Areas A and B:
Foul water from Areas A and B shall discharge to the proposed package treatment plant (PTP01) for primary and secondary treatment, followed by tertiary treatment, before final discharge at Outfall 2.
PTP01 has been sized in consultation with the manufacturer and is considered capable of treating flows and loads generated by the proposed development. The tertiary treatment plant shall be specialist-designed and constructed to ensure adequate tertiary treatment to assist in meeting NRW permit limits.

Proposed Development Area C:
9 no. Motorhome Parking Area - Guests within this area are required to use the on-site shower/toilet facilities. All foul water generated by the motorhome units shall be collected by the users and removed from the site for appropriate disposal.

PROPOSED FOUL WATER SCHEMATIC
SCALE: 1:500

NRW permit (EPR/CB3893CC) emission limits (Outfall 2)	
Parameter	Limit (units)
Maximum daily discharge volume	10.2 m3/day
Ammoniacal nitrogen (expressed as N)	4.0 mg/l
ATU - Biological Oxygen Demand as O2	10 mg/l
Suspended Solids (measured after drying at 105°C)	30 mg/l
Visual appearance	The discharge must have no adverse visible effect on the receiving water, the bed of the watercourse or any plants or animals within the watercourse
Visible oil or grease	No significant trace present

Notes:
1. This drawing is to be read in conjunction with all other relevant drawings, surveys and Bear Consulting project drawings/specifications.
2. This drawing has been produced for information only and is not to be used for any other purposes.
3. Exact location of all apparatus to be determined on site.
4. Existing site plan and foul water information was provided by the client (Ref: 6747-BHP-ZZ-XX-DR-C-(50)003_P04 - Bike Wash Drainage.pdf).
5. Existing and proposed foul water flow rate calculations was based on information provided by the client and British Water Code of Practice Flows and Loads 4. Calculation was made based on assumptions.

KEY

- Approx. Existing Site Area (Foul Drainage)
- Approx. Development Area (Foul Drainage)
- Development Area Discharging to PTP01
- Existing watercourse Nant y Graig
- Existing Bike Wash Drainage
- Existing Foul Drainage (serving existing building/cafe)
- EXRB — Existing Reed Bed
- Existing Silt Trap
- Outfall 1 - Existing Outfall
- Proposed Foul Drainage
- TTP — Proposed Tertiary Treatment Plant
- PTP — Proposed Package Treatment Plant
- Existing Drain Run to be Capped

PTP01 Summary (EXISTING SITE AREA | PROPOSED DEVELOPMENT AREA 'A' | PROPOSED DEVELOPMENT AREA 'B' | PROPOSED DEVELOPMENT AREA 'C')

Proposed Building Type	Units	people per unit	Volume(l)/person/day	Volume(l)/day	Notes
Proposed Development Area A					
Shepherd's Hut	11	2	75	1650	Assumed 'tent site' usage as it is understood low flow appliances will be used
Camping Pods	10	4	50	2000	Assumed 1 toilet (WC) usage and 1 shower usage
Changing village (toilet - WC)	1	300	10	3000	Assumed half of maximum day visitors will use toilet (WC)
Changing village (Shower)	1	50	40	2000	Assumed 50 shower usage by day visitors
Proposed Development Area B					
Cabins/Lodges	5	8	75	3000	Assumed 'tent site' usage as it is understood low flow appliances will be used
Proposed Development Area C					
Motor Home	9	2	100	1800	Assumed 'not serviced' usage - people to use on site facilities
Expected Existing Building/Cafe Usage					
Existing Building/Cafe (Restaurant)	1	420	12	5040	Assumed maximum overnight visitors (120) and half of the maximum daily visitors (300 of 600) will use the building/cafe
Total expected maximum overnight visitors = 120 people, Total expected maximum day visitors = 600 people					
Total expected proposed foul water usage = 18,490 l/day = 18.5 m³/day					

Bike Park Wales has confirmed that, over a one-week operating cycle, the percentage of maximum usage is as follows: Monday – 70%; Tuesday – 20%; Wednesday – 20%; Thursday – 50%; Friday – 80%; Saturday – 100%; and Sunday – 100%. Therefore, the expected daily foul water volume from the proposed development is considered to be **11.7** m³/day, equivalent to 63% of the expected proposed foul water daily usage.
It is acknowledged that the proposed discharge volume shown above exceeds the 10.2m³/day NRW permit limit and therefore liaison with NRW is required to confirm amalgamation of both permits or to amend existing permit. (Note: it is acknowledged that the Shepherd's Hut and Cabins/Lodges will be serviced. It should be noted that low water usage appliances shall be incorporated into the accommodation to reduce expected foul water usage. These building types have been assumed as 'tent sites' (as categorised in British Water Flows and Loads – 4) to reflect the anticipated lowered foul water usage. The above assumptions will need to be confirmed with NRW & Local Authority prior to approval.

Existing Reed Bed (EXRB) Summary

Proposed Building Type	Volume(l)/day
Relocated Bike Wash Facility	2290

The above bike wash effluent volume figure is based on half of the maximum average recorded daily usage (refer to Drawing SKc01). It is understood that the client has advised that the relocated bike wash facility will not be subject to any additional usage compared to the existing facility. It is therefore considered that this represents a conservative value suitable to reflect the proposed discharge

Foul Water Flow Assessment Note

The calculated maximum daily foul water flow from the proposed development is 18.5 m³/day, based on full occupancy and peak usage assumptions in accordance with British Water Flows and Loads - 4. Actual site usage varies throughout the week and BPW has confirmed typical daily utilisation ranging from 20% to 100% of the maximum. This results in an expected average daily flow of approximately 11.7 m³/day over a standard operating week.

For regulatory purposes, the maximum daily design flow is presented to demonstrate the upper limit of potential foul water loading, while the weekly average flow provides a realistic indication of day-to-day operational conditions on site.

Rev.	Date.	Details.	By.	Chk.

Amendments

Bear Consulting
Civil and Structural Engineers
Cardiff | Newport | Wales | United Kingdom
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Project:
BIKE PARK WALES, MERTHYR TYDFIL

Title:
PROPOSED FOUL WATER DRAINAGE CALCULATION SUMMARY

Drawing Status:
FOR INFORMATION

Drawn:	Checked:	Scale(s) at A1:	
-	PC	AS SHOWN	
Date:	Job No.	Drawing No.	Revision
09.12.2025	**P0665**	**SKc04**	**-**

Drawing Notes:

1. This drawing is to be read in conjunction with all other relevant Architect/Designer's drawings, surveys and Bear Consulting project drawings/specifications.
2. This drawing has been produced for tender purposes only and is not to be used for construction.
3. Exact location of all apparatus to be determined on site.
4. Existing site plan and existing foul water information has been provided by the client (Ref: 6747-BHP-ZZ-XX-DR-C-(50)003_P04 - Bike Wash Drainage.pdf).
5. Proposed site plan and root protection area information has been provided by landscape architect's drawing (Ref: 2025 11 2nd Nov MASTERPLAN Rev L.dwg)
6. Topographical information has been obtained from drawings (Ref: 'BIKE.dwg' and '2025 11 2nd Nov MASTERPLAN Rev L.dwg') and LiDAR data. Further topographical survey to be carried out prior to construction to cover all necessary areas of the site to confirm levels.
7. Proposed SVP and gully locations shown indicatively, TBC with Architect.

Outfall 1- Existing outfall to Nant y Graig (SO 05057 03532).

Existing watercourse Nant y Graig

Existing foul drain run to outfall to remain operational for bikewash facility only

Existing package treatment plant to be removed

Existing foul drain run from existing building/cafe to be diverted to **PTP01**

Foul water from relocated bike wash facility to connect to existing bike wash effluent drain.

FW01, to replace existing foul chamber. **Connection IL TBC prior to construction**

EXFW04 IL TBC

Existing foul drain run serving domestic foul and catering facilities to be diverted to proposed foul drainage system

EXFW03

FW02

FWBW03

Foul water from existing building/cafe to discharge to **PTP01**

EXFW02

EXFW01

FWBW02

Existing bike wash area

Foul drain run and outfall to Nant y Graig from existing reed bed **EX Reed Bed** to remain.

EXRB

Existing Reed Bed

Existing silt trap

Proposed changing room & shower unit - location TBC by client

FW03

FW05-D

FW05-A

FW05-C

FW05-B

FW04

FW05

FW06

All FFL levels and external levels are TBC with Architect/Landscape Architect prior to construction.

GREASE SEPARATOR TO BS EN 1825-1, SIZED IN ACCORDANCE WITH BS EN 1825-2 TO BE INSTALLED IN CATERING AREA. CONTRACTOR TO CONFIRM NOMINAL SIZE AND MODEL WITH SPECIALIST SUPPLIER, BASED ON THE KITCHEN EQUIPMENT SCHEDULE AND THE EXPECTED NUMBER OF COVERS.

ALL FOUL PRIVATE DRAINAGE - INCLUDING TREATMENT MEASURES - ARE TO BE DESIGNED AND SIZED IN ACCORDANCE WITH BUILDING REGULATIONS 2010 - APPROVED DOCUMENT PART H. CONTRACTOR TO SUBMIT PROPOSALS OF TREATMENT UNITS FOR APPROVAL.

9no. Motorhome Parking Area.
Guests within this area are required to use the on-site shower/toilet facilities. All foul water generated by the units shall be collected by the user(s) and removed from the site for appropriate disposal.

FW06a FW06b FW06c FW06d FW06e FW08 FW07 FW07-A FW07-B FW07-C FW07-D FW09 FW10 FW11 FW11-A FW11-B FW11-C FW11-D FW11-E FW11-F FW12 FW12-A FW12-B FW13 FW13-A FW14 FW14-A FW15 FW16 FW16-A

All FFL levels and external levels are TBC with Architect/Landscape Architect prior to construction.

Re-grading required in this area to suit foul design assumptions

EXISTING SERVICES LIKELY TO BE PRESENT WITHIN CONSTRUCTION AREA. CONTRACTOR TO ENSURE SUITABLE TRACING IS CARRIED OUT AND TO EXCAVATE WITH CAUTION

Outfall 2
Proposed outfall to discharge to Nant y Graig (SO 05198 03583).
NRW environmental permit reference: EPR/CB3893CC
(PERMIT NEEDS TO BE UPDATED/AMENDED TO SUIT DESIGN SHOWN)

Approx. watercourse location TBC with further topographical survey

FOUL DRAINAGE CONSTRUCTION WORKS SHALL NOT COMMENCE UNTIL ALL APPLICABLE PERMIT REQUIREMENTS HAVE BEEN CONFIRMED AND WRITTEN ACCEPTABILITY HAS BEEN OBTAINED FROM NRW.

Proposed retaining wall Detail & design by others.

FW29b Sample Chamber

FW29a FW29 FW28 FW27b FW27a

TTP 01
Proposed Horizontal Granular Tertiary Treatment Module ('Kingspan Klargeseter BioTreat 13') or similar approved.
CONTRACTOR TO SUBMIT PROPOSALS FOR APPROVAL.

PTP01
Proposed Package Treatment Plant ('Kingspan Klargester **NN max recycle** BioDisc unit up to 300 Persons Commercial Sewage Treatment Plant') or similar approved.
CONTRACTOR TO SUBMIT PROPOSALS FOR APPROVAL.
Cover level 227.680
Inlet level 226.680
Outlet level 226.530

FW26 FW25-A FW25 FW24 FW24-A FW24-B FW23 FW22 FW21 FW21-A FW19 FW20

All chalets/lodges units FFL assumed to be 229.650 mAOD. TBC with Architect/Landscape Architect prior to construction. Re-grading of levels required in this area.

All FFL levels and external levels are TBC with Architect/Landscape Architect prior to construction.

Re-grading required in this area to suit foul design assumptions

The proposed foul water drainage design as shown assumes no shallow groundwater encountered. Contractor to confirm groundwater level prior to construction.

Surface water drainage design by others. To be coordinated prior to construction.

All existing foul water drainage invert levels to be confirmed prior to construction. It is recommended a CCTV survey is carried out prior to construction to confirm condition and levels of existing drainage.

All proposed FFLs to be confirmed by the Architect. All proposed external levels to be confirmed by the landscape architect prior to construction.

PROPOSED FOUL WATER DRAINAGE LAYOUT
SCALE 1:500

KEY

- Existing watercourse Nant y Graig (From Topo Survey)
- Existing watercourse Nant y Graig (Assumed Route)
- Existing Bike Wash Effluent Drainage
- Existing Foul Drainage (serving existing building/cafe)
- EXRB — Existing Reed Bed
- ST — Existing Silt Trap
- Outfall 1 - Existing Outfall
- Outfall 2 - Proposed Outfall (160mm ACO SuDS Swale inlet or similar approved)
- Proposed Private Foul Drain
- Proposed Private Foul Drainage Chamber (Chamber types - refer to manhole schedule)
- SVP — Proposed SVP (Locations TBC by Architect)
- SG — Proposed Suitably Trapped Shower Gully (Detail & Location TBC by Architect)
- PTP — Proposed Package Treatment Plant
- TTP — Proposed Tertiary Treatment Plant
- X X — Existing Drain Run to be Capped
- Root Protection Area

Drainage Notes:

1. All existing drainage levels and outfall points shall be surveyed and verified by the contractor prior to the commencement of the works. any discrepancies shall be reported to the engineer immediately
2. Pipework under heavy trafficked aeas with less than 1.2m cover, and other trafficked areas with less than 0.9m cover to receive concrete encasement
3. Manhole/inspection chamber covers should not bridge different surfaces. chamber cover class to be D400 in trafficked areas or C250 in pedestrian-only areas
4. Where two pipelines (other than plastic pipes) cross with less than 300mm separation pipes are to be surrounded with class z concrete surround for not less than 1m centered on the crossing point. Concrete surround to be extended as necessary to within 150mm of nearest flexible joints
5. All pipework to be laid with soffit to soffit connections unless noted otherwise.
6. All private drainage to be installed in accordance with current approved document - building regulations part H.
7. It is recommended that the downstream connections and inverts are confirmed prior to construction of any drainage. Drainage should then be installed from the connection point to the discharge collection points.
8. All proposed foul water drain runs to be Ø100mm uPVC pipe unless noted otherwise.
9. All proposed foul water drain runs o be SN8 ring stiffness class unless noted otherwise.
10. All existing foul water drainage is to be verified prior to construction. Any discrepancies identified are to be reported to the engineer immediately.
11. All proposed units locations to be confirmed with client.
12. All proposed foul gullies to be suitably trapped.
13. No construction to commence prior to confirmed permit requirements and acceptability by NRW.
14. No surface water or roof/yard drainage shall enter the foul drainage system or PTP.

Rev.	Date.	Details.	By.	Chk.
C	05.02.25	Updated shower block arrangement		PC
B	15.12.25	Updated drainage route and amended strategy for motorhome area following client meeting		PC
A	03.12.25	Klargester PTP model updated. Note added regarding grease separator to be installed near commercial kitchen unit		PC

Amendments

Bear Consulting
Civil and Structural Engineers
Cardiff | Newport | Wales | United Kingdom
www.bear-consult.com | info@bear-consult.com

Project:
BIKE PARK WALES, MERTHYR TYDFIL

Title:
PROPOSED DRAINAGE LAYOUT FOUL WATER

Drawing Status:
FOR TENDER

Drawn:	Checked:	Scale(s) at A1:	
WH	PC	1:500	
Date:	Job No.	Drawing No.	Revision
20/11/2025	**P0667**	**c01**	**C**

Appendix C

Total Working Volume = 3570L

Product	Size
NSG	09

Inlet Invert	
ww	Invert
05	0.5m Invert
10	1.0m Invert
15	1.5m Invert

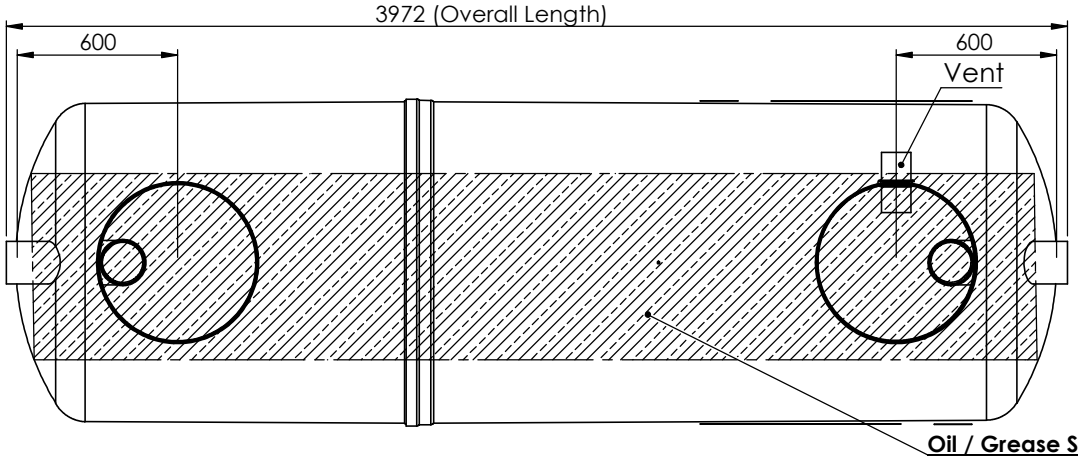
Pipework Orientation	
x	Orientation
A	Refer To TDS0033
B	
C	
D	
E	
F	
G	
H	
K	

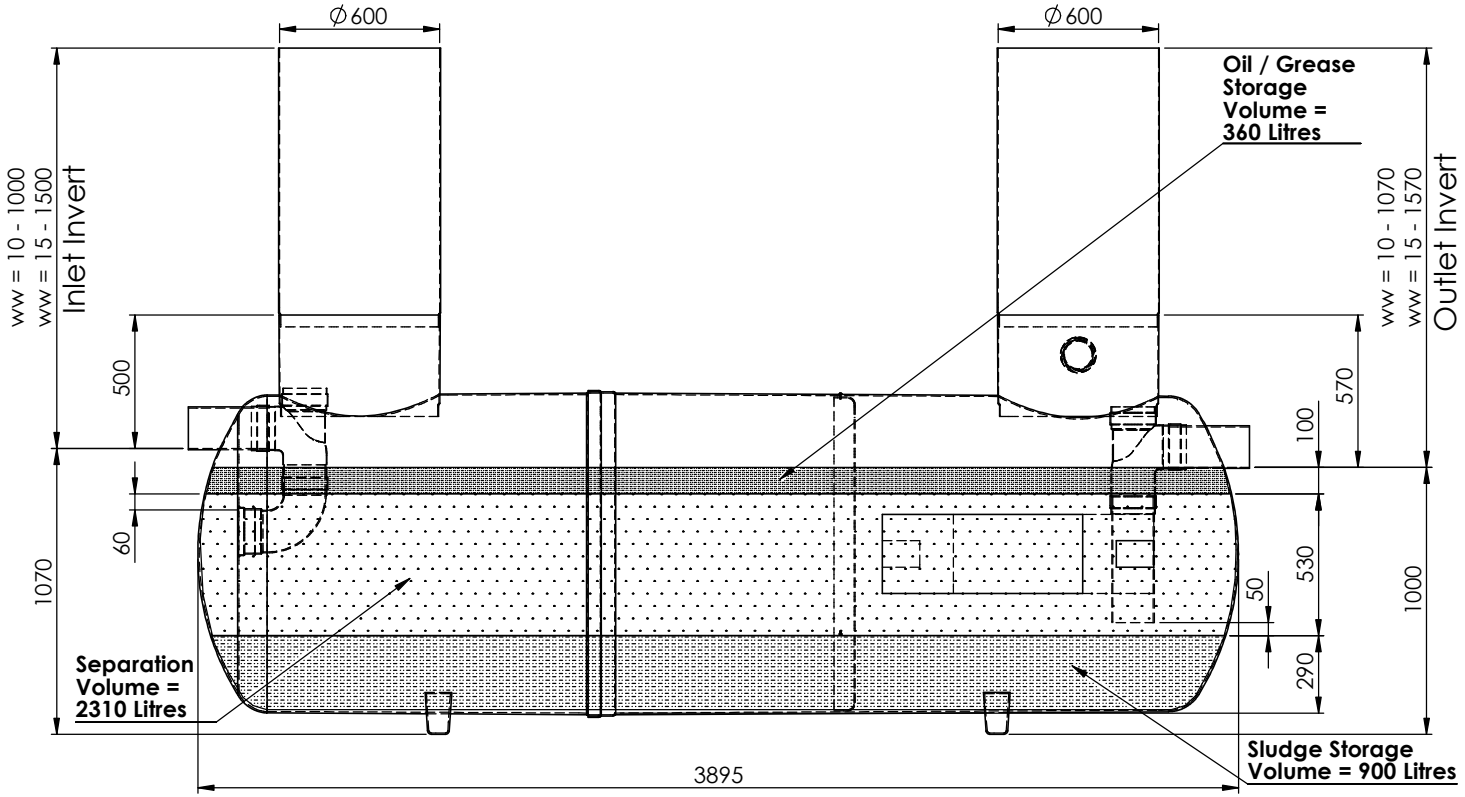
Notes:-

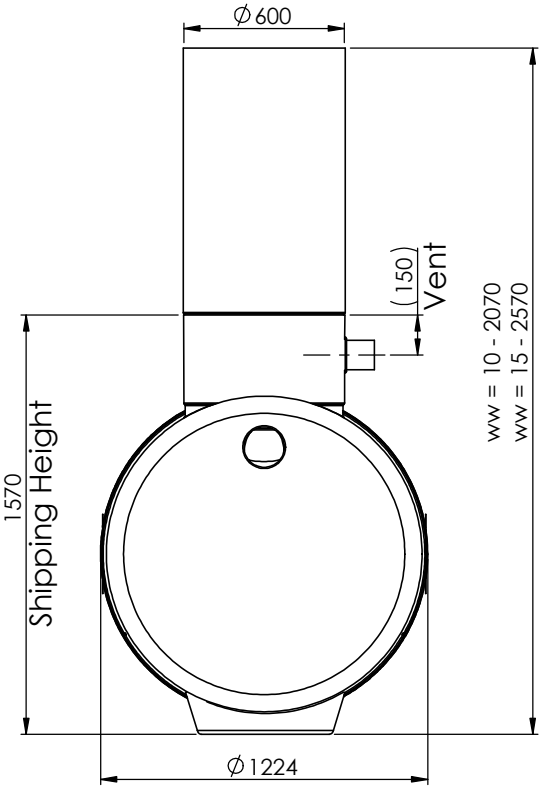
1. Inlet Invert To Be Confirmed By Customer
2. Pipework Orientation (A, B, C etc.) Dependant On Site Pipework Layout. To Be Specified At Order Stage.
3. Standard Minimum Pipework Size Is Ø160mm.
4. If Required, Extensions Will Be Supplied Loose To Be Fitted On-Site Using Silicon Sealant (Supplied By Others).
5. This Unit Can Be Installed In Either Granular Or Concrete Backfill - Please See Manual For Details.

Standard Connections Size	
y	Connection (Ø)
C	Ø160

z	Branding
K	Klargester







Please Check with Environmental Treatment Systems Limited For The Latest Issue Of This Drawing				
Issue	Date	Drawn by	Approved by	Description
03	11/02/16	L.Steward		CC1294 - Overal Dimensions Added
02	04/09/15	L.Steward		Product Code Updated

Material : Various	Tolerance (unless stated) :
Finish :	Thickness : n/a
Weight : 161.85 Kg	Surface Area : m²
Modelled By : Name	

Drawing : DS1271P

Ø1.2 NSG09 Grease Separator - 4000L

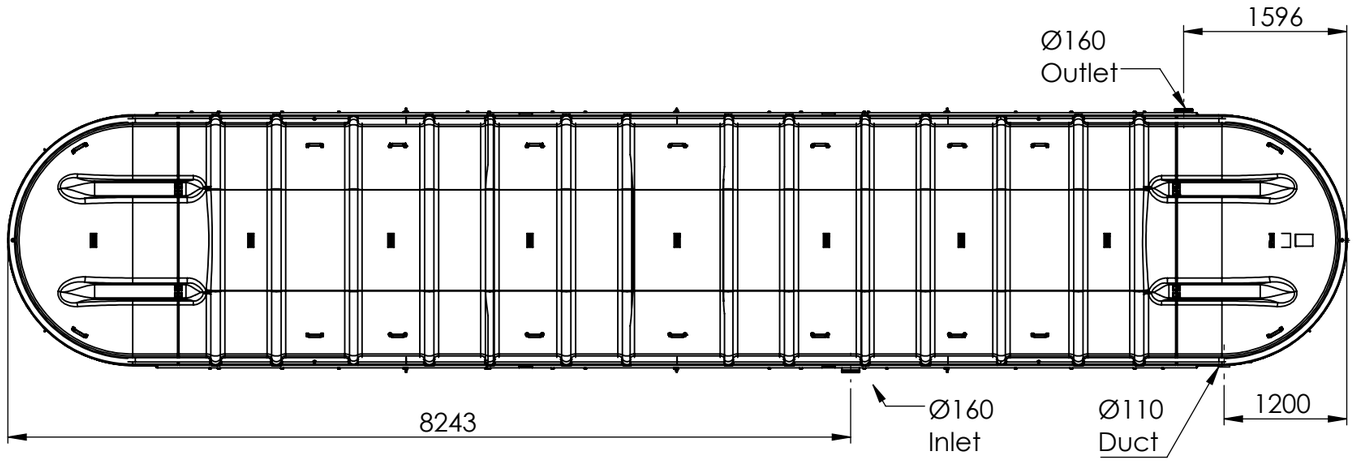
All Dimensions In mm

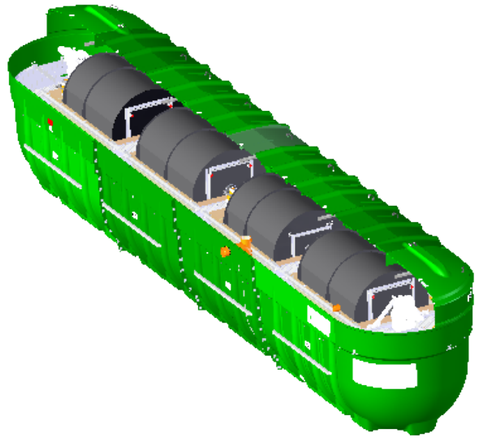
Scale: Do Not Scale

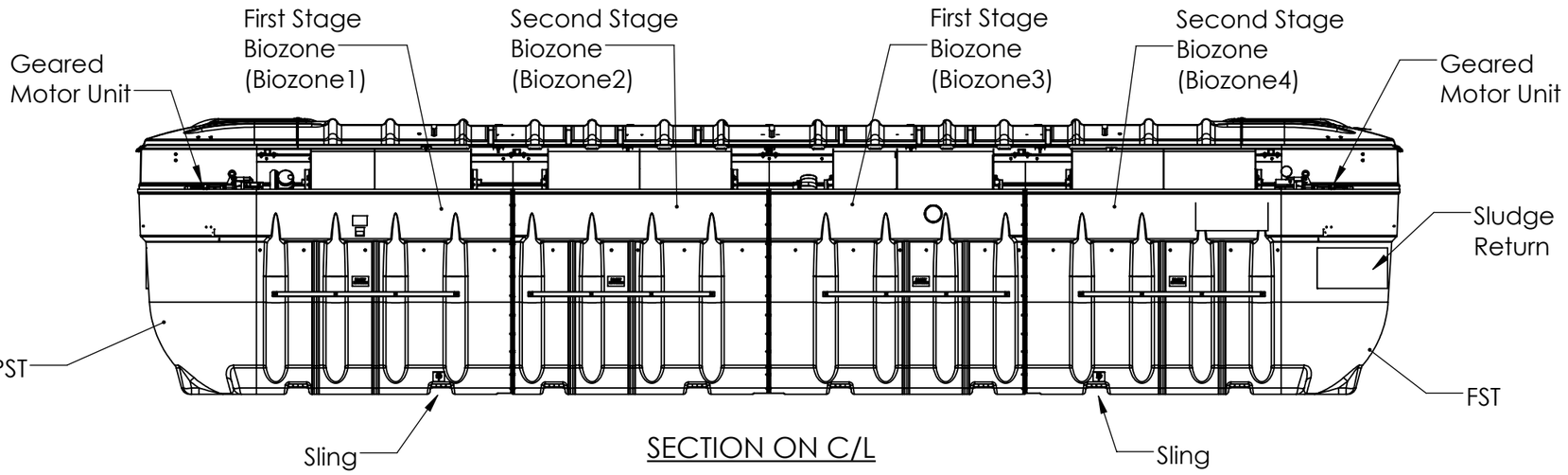
Third Angle Projection

T:\Drawing Data\02 - Sales Drawings\DS\DS - 12\DS1271P

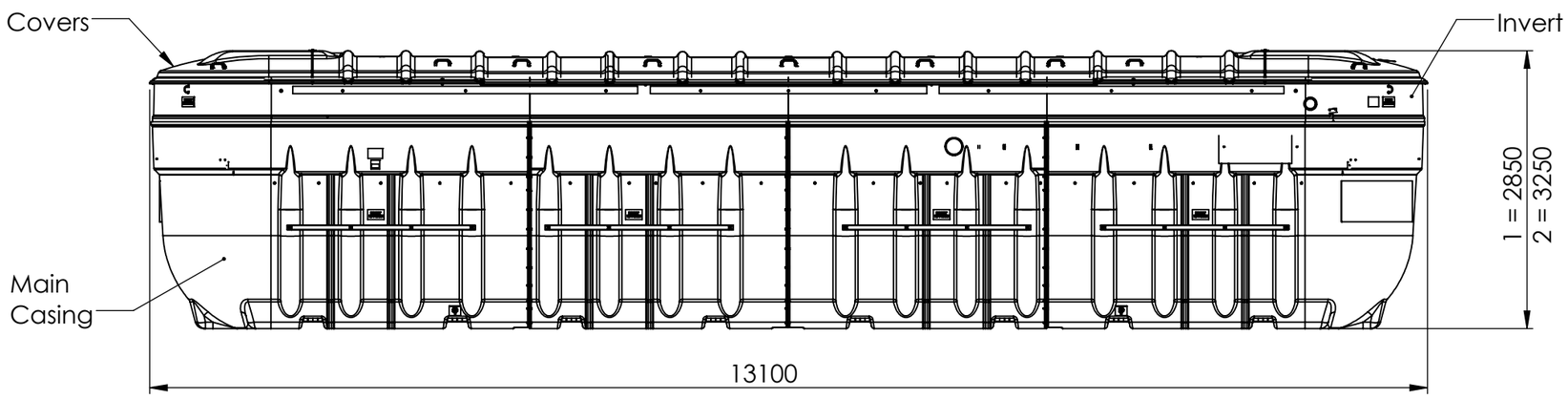
Kingspan Environmental







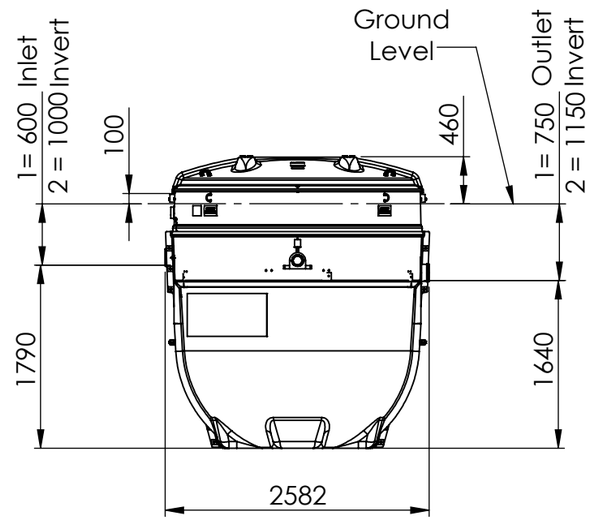
SECTION ON C/L



Notes:-

1. Inlet And Outlet Pipework To Be 6" PVCu
2. Unit Must Be Slung In Positions Shown.

	Min. Dry Weight (kg)
BN 600mm Invert	6010 kg
BN 1000mm Invert	6500 kg



Please check with Kingspan Water & Energy for the latest Issue of the drawing				
Issue	Date	Drawn By	Approved By	Description
02	22/10/2024	Viaasan K		ECN 2127 - Weight Change
03	07/072025	TGY	TGY	ECN 2216 - Duct Added

All Dimensions In mm

Scale: Do Not Scale

Third Angle Projection

A:\Wastewater\Engineering\Drawing Data\02 - Sales Drawings\DS\DS - 13\DS1334

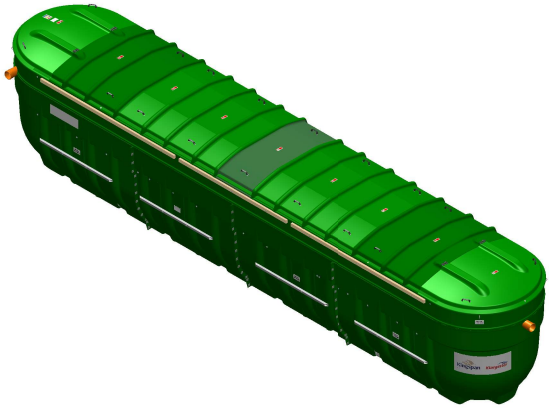
LN Number :	Tolerance (unless stated) :
Finish :	Thickness : n/a
Weight : See Table	Surface Area : m²
Modelled By : T.Kelly	Material : Various

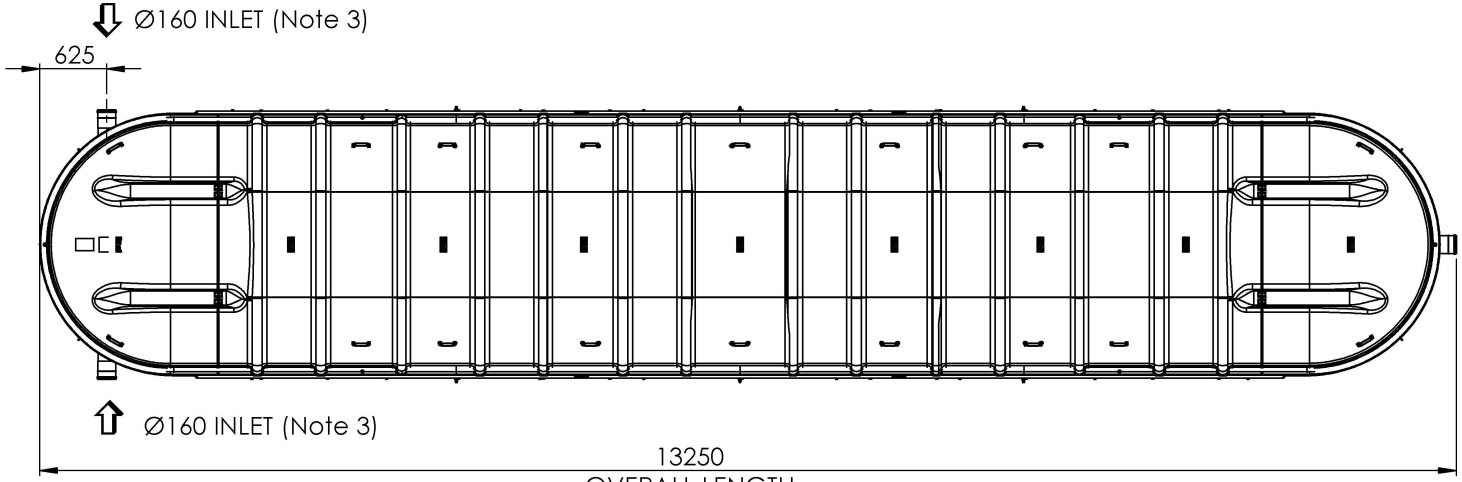
Drawing : DS1334

BN Biodisc General Assembly - Sales Drawing

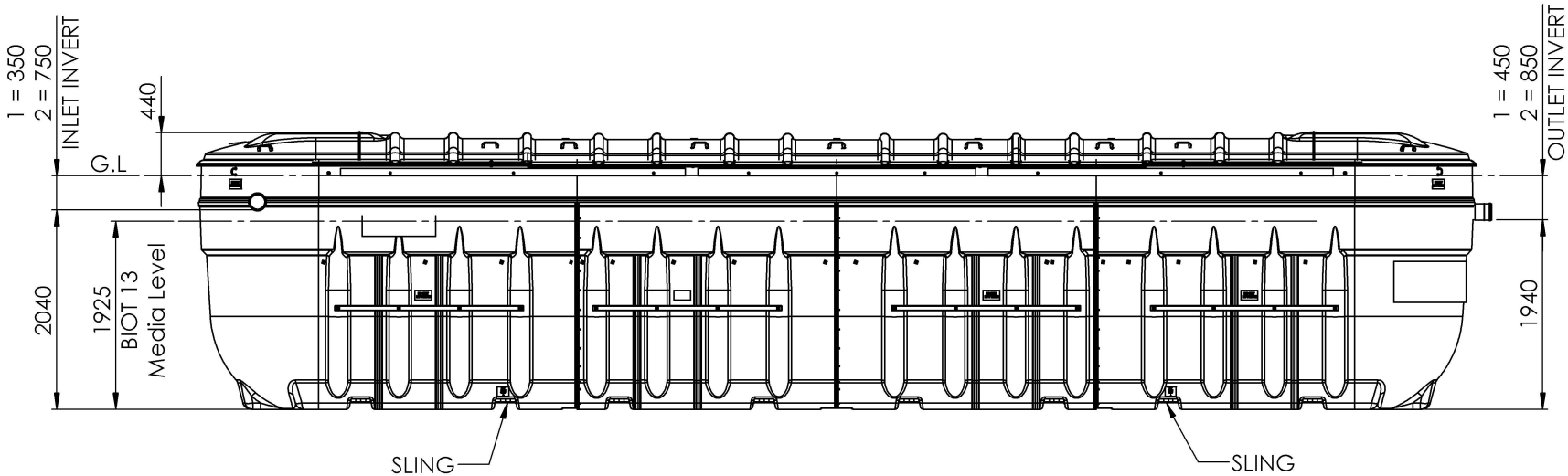
Kingspan

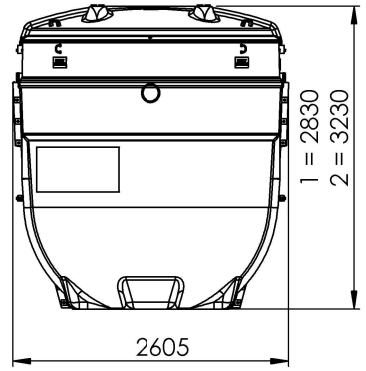
Notes:
1. This drawing is for 'Dimensional Information Only'. It is essential that this drawing is read in conjunction with the 'Installation Guidelines' supplied with the unit.
2. All pipe connections are Ø160mm PVCu.
3. Unit has two Inlet options,blank off unused Inlet with provided Blanking cap.
4. Unit must be slung in posiions shown.
5. Keys supplied to open the pedestrian duty cover latches.
6. Installer to provide and connect the interconnecting pipework between the Treatmentplant and the Tertiary Treatment Module
7. Tank Weight (Empty) - 3500Kg





Media Quantity		
UNIT	Media Volume Per Unit m^3	Media Weight Kg
BIOT13	44	21230





Please check with Kingspan Water & Energy for the latest Issue of the drawing				
Issue	Date	Drawn By	Approved By	Description
01	21/03/2023	D. Musvaburi	D.M	Initial Issue

LN Number :	Tolerance (unless stated) :
Finish :	Thickness :
Weight :	Surface Area : m^2
Modelled By :	Material :

Drawing : DS1414P Page 1 of 1

BioTreat 13 Tertiary Treatment Module

All Dimensions In mm | Scale: Do Not Scale | Third Angle Projection

A:\Dept\Wastewater\Engineering\Drawing Data\02 - Sales Drawings\DS\DS - 14\DS1414P

Kingspan