



Bike Park Wales

Proposed

Development Works

FOUL DRAINAGE DESIGN

Prepared by:

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— & SON LTD —

FOUL DRAINAGE

There are no DCWW public foul or combined sewer networks within relatively close proximity to the development.

We understand that the foul water drainage from the existing site is routed through a local site network to a packaged treatment plant located to the north west of the site. Natural Resources Wales has advised that the treated effluent discharged from the existing treatment plant outfalls to a receiving watercourse named the Nant Graig.

We understand that flows from the existing bike wash areas are routed through a local site network to a reed bed also located to the north west of the site. The Client has advised that the reed bed has been specifically designed to accommodate foul flows from the bike wash. The Client has also provided us with information relating to the existing reed bed which indicates that following treatment the effluent flows, by gravity, from the reed bed to the reed bed level control chamber and onto a manhole connection downstream of the existing foul water treatment facility prior to exiting to the outfall to the above noted watercourse.

Our foul water drainage proposals are indicated on our proposed site wide external works scheme drawing referenced 6655-BHP-ZZ-XX-DR-S-(60)P01S, a copy of which is included at the end of this report.

The effluent from the bike wash area will be routed to the existing reed bed which has been appropriately designed to accommodate such effluent. The Client has advised that the proposed bike wash and trail maintenance installations will be subject to no more uses, the additional facilities merely reducing the demand on the existing.

The Client has advised that there will be no drainage provision required for the workshop and storage shed.

Generally, the proposed development foul water will be routed through a local site network to a proposed new foul water treatment facility located to the north east of the site. Appropriate measures for the trapping of grease prior to effluent entry into the treatment facility will be incorporated into the system as any fat and/or grease passing through the proposed foul drainage system into the final discharge off site to the watercourse would be detrimental. Further the final design of the foul water treatment facility will include a provision to counter fluctuating loads.

The breakdown of foul effluent proposed for discharge to the new foul water treatment facility is as noted below:

- 5 number Cabins/Lodges
- 1 number Camping Pod converted to a Toilet Pod and 1 number Camping Pod converted to a Shower Pod
- 3 number Shepherd Huts
- 21 number camping pods
- Changing village

The proposed area with provision for 7 motorhomes will have a facility for discharge of foul waste. In consideration that such waste is likely to contain chemicals, this provision will discharge to a separate sealed cesspool which will be used to store the waste until it is pumped clean to a tanker and appropriately disposed at an off-site facility. The Client has advised that this area will be used infrequently, mainly for event days and as such it is proposed to provide an above ground storage system.

The 21 number camping pods do not have any water or drainage connection and will utilise the proposed shower and toilet pods and changing village.

Considering the results of the BS 6297:2007 Percolation Compliant Testing, in accordance with Approved Document H, Part H1 of the Building Regulations (for use in Wales), we would propose one of the following two options for the disposal of foul water, as the results of the above percolation testing precludes option (C)(i).

Option (C) (ii) Either a septic tank or packaged treatment plant with an outfall to a watercourse, effluent treated to 20 (BOD)/30 (Suspended Solids) 20 (NH3) quality. This option is to be approved and consented by Natural Resources Wales.

Option (D) A cesspool with a capacity of 45 days foul effluent inflow. This option is to be approved and consented by Natural Resource Wales.

In accordance with the hierarchy as set out in Part H1, Option (C) (ii) packaged treatment plant is the option we will implement and is indicated on our strategy drawing.

The design team will engage with the NRW Permitting Team at the earliest opportunity, at a stage when the design is sufficiently developed in order to obtain both a new permit for the proposed foul water treatment facility and, if necessary, an appropriate variation to any existing permit with respect to the existing packaged treatment plant.

Bike Park Wales has provided the maximum anticipated usage data and using British Water Flows and Loads 4 guidance we have estimated the following loads.

PROPOSED TREATMENT FACILITY

21 Camping Pods

168 toilet uses per day, say at 10l/use 1680l

84 shower uses per day at 40l/use 2160l

3 Shepherds Huts (2 person)

3 x 2 150l/day per person 900l

5 Cabins (3 bedrooms, 8 person)

5 x 8 x 150l/day per person 6000l

New Changing Village

100 toilet uses per day at 10l/use 1000l

50 shower uses per day at 40l/use 2000l

Foul Load at Maximum Usage for 1 day 13740 litres (Say 13.74m³)

Bike Park Wales has confirmed that over a one-week operating cycle the percentage of maximum usage is as follows:

Saturday/Sunday	-	maximum usage
Monday	-	70% maximum usage
Tuesday/Wednesday/Thursday	-	50% of maximum usage
Friday	-	80% maximum usage

Total weekly anticipated usage expressed as a proportion of 700% equates to 69.25m³ per week, that is, $\frac{500}{700}$ or 0.72 maximum daily discharge for a seven day cycle.

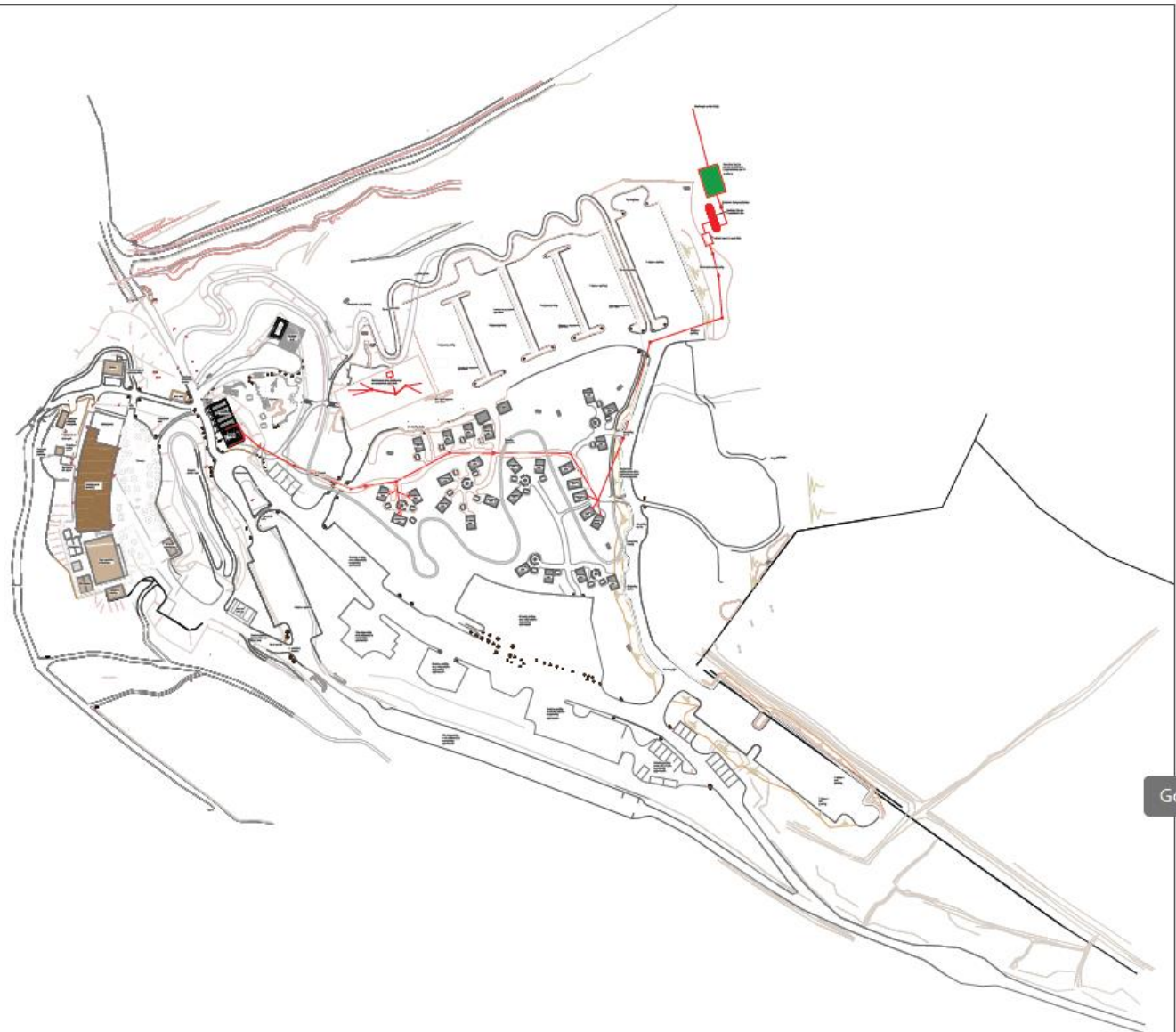
FOUL DISCHARGE PROVISION FOR 7 NUMBER MOTORHOMES (2 person occupancy)

7 x 2 x 100 l/day per motorhome = 1400l

As noted in the foregoing this facility will be infrequently provided for event days and therefore foul waste is proposed to be stored above ground and tankered away as and when necessary.

Specification is based on information provided to us by the Client:

Source of Waste		Flow: Litres/Day		BOD : Grams/Day		Amm : Grams/Day	
Description	No	Per Head	Total	Per Head	Total	Per Head	Total
Amenity - Toilet (WC) per use	168	10	1680	12	2016	2.5	420
Amenity - Shower / per use	84	40	3360	19	1596	2	168
Sites Caravan - (iii) Static fully service	6	150	900	60	360	8	48
Sites Caravan - (iii) Static fully service	40	150	6000	60	2400	8	320
Amenity - Toilet (WC) per use	100	10	1000	12	1200	2.5	250
Amenity - Shower / per use	50	40	2000	19	950	2	100
Totals	448		14940		8522		1306



Go to

A horizontal scale bar with markings at 0, 5, 10, and 50m. The bar is divided into segments corresponding to these values.

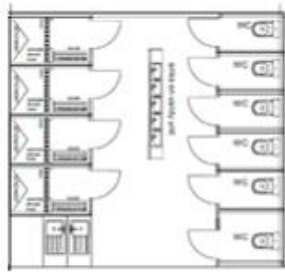
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 E.J. THOMAS a SON LTD	Project title:	Elia Parka Hotel, Rensselaer
	Drawing title:	80% Pool Storage Plan
	Client:	Elia Parka Hotel
	Date:	20th September 2012
	Revisions:	
E.J. Thomas and Son Ltd Can Pannett Rhydyferran Carmarthen Carmarthenshire SA33 6BJ 01292 479 446 www.ejthomasandson.co.uk		
Drawing number:		2104/T001

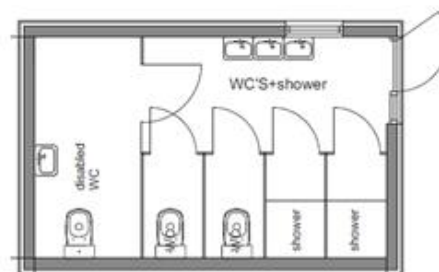
BIKE PARK WALES: FOUL DRAINAGE



Foul Drainage Scheme



Changing Village



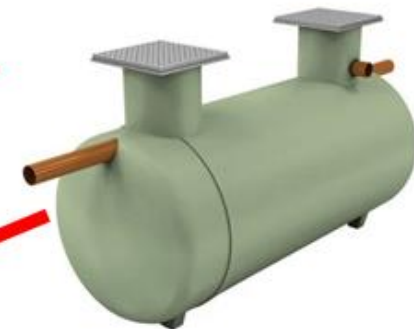
Toilet Block



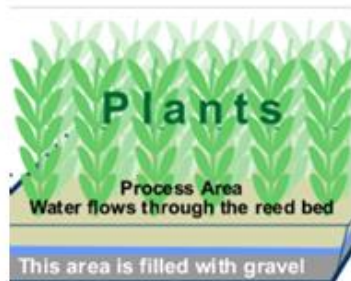
Shepherd's Hut



Sewage Package Treatment
Klargester BM Biodisc
or equivalent



Balance Tank



Reed Bed System



Sampling Chamber



Natural Resources Wales

Discharge Consent

EPR/AB3591CP



Watercourse Discharge
@ Nant y Graig

Existing Package Treatment Plant

During the consultation period NRW raised queries relating to the existing PTP on site and if this can be merged into one single PTP with this new development. NRW have incorrectly assumed in their response that compliance issues with our existing PTP are caused by low flow volumes. We are however investigating how to manage the fluctuations in discharged water quality and if moving this foul discharge to the new PTP were to prove a viable option BPW would consider this. It should be noted though that the new PTP may not be installed for some time if other aspects of the project (e.g the shower block, camping pods) are not constructed in the first phases of development. We will therefore be looking for the best solution that can address this issue, which is separate to this application quickly.

NRW have requested calcs for the total discharge volume from the site for both old and new PRP's. The calcs for the new system are provided elsewhere in this document and suggest at peak load when all phases of development have taken place the max discharge volume could be up to 13.74 m³.

We monitor our daily water extraction figures so can provide an accurate figure on our existing foul discharge levels and can confirm that they peak at a maximum of 6m³ per day.

Therefore, the total combined discharge volume for both PTP's if all development were to take place at peak occupancy would be 19.74m³

Motorhomes

During consultation NRW have fed back some concerns of the use of a sealed septic tank for motorhome use. As motorhomes often use chemical toilets the use of a PTP is not an option here as the chemicals will kill the bacteria required to propagate a healthy and reliable PTP.

We will take all necessary steps to ensure that the cesspit poses a minimal risk to the environment. This will include a level warning device to indicate when the tank needs emptying, meeting specific construction standards i.e. British Standard BS 6297, maintenance and emergency plans, routine emptying/servicing by qualified contractors and documenting all records.

New Foul Drainage Scheme

In the interest of protecting the water environment and public amenity, in accordance with policy EnW4 of the Merthyr Tydfil Replacement Local Development Plan, we provide this drainage scheme for the disposal of foul drainage from the proposed development at Bike Park Wales.

Details have been provided of the foul drainage system to serve the proposed toilet / shower block and some of the camping pods. Essentially, each of these facilities would be connected to a packaged treatment plant located in the eastern part of the site, where the effluent is treated before it is subsequently discharged into the nearby watercourse.

This system is similar to those used by many Water companies, where the main treatment of the sewage is undertaken in a packaged type of sewage treatment plant, and the reed bed is used to act as a tertiary treatment module.

Any excessive storm water that flows into the sewage works, by-passes the main treatment unit (to avoid hydraulically overloading it) and, as they are usually considerably weaker in strength, these excess flows are then treated in the reed bed.

Installation shall only be carried out by suitably qualified and experienced contractors in accordance with the Health and Safety at Work Act. Electrical work shall be carried out by a qualified electrician, working to the latest edition of IEE.

The site also has a permit for the discharge of secondary treated sewage effluent under permit number EPR/AB3591CP. The system shall incorporate a package treatment plant and a tertiary reed bed system with a sampling chamber prior to discharge at Nant y Graig.

The operator shall send all reports and notifications required by the permit to Natural Resources Wales using the contact details supplied in writing at intervals set out in the Environmental Permit.