

Bryn Lane Biomass Plant, Wrexham Industrial Estate Proposed Drainage Strategy

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Quality Management

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1. Introduction

- 1.1 Capita Property and Infrastructure have been appointed by Bester Ltd. to undertake the surface water drainage outfall design and foul drainage diversion for the proposed Biomass Plant at Bryn Lane in Wrexham Industrial Estate.
- 1.2 This document has been prepared in support of proposed drainage drawings BIO-CAP-XX-500-DR-C-0010 and BIO-CAP-XX-500-DR-C-0011 to discharge planning conditions 34 – 37 relating to planning application number ISY P/2010/0642.
- 1.3 This document aims to describe the rationale behind the surface and foul drainage for the proposed development, describing the surface water attenuation, flow control and outfall design in addition to the foul drainage principles.
- 1.4 The drainage strategy for this site has been developed based on advice given in Drainage Statement ref. C602/SBS/JTJ/T0239 by Shepherd Gilmour which was submitted as part of the original planning application.

2. Surface Water Drainage Strategy

2.1 Existing Surface Water Runoff

- 2.1.1 The proposed Biomass site is part of the wider Wrexham Business Park. The Biomass site currently slopes from a high point at the East of the site to a low point at the west. Surface runoff from the site falls to a ditch which runs north, parallel with Bryn Lane along the Western boundary in the site. Runoff discharges into a pond approximately 90m north of the site boundary.
- 2.1.2 The greenfield runoff rate has been calculated for the Biomass Site based on the total site area of 1.2 hectares. Based on values of SAAR and SPR from the UK SuDS website, the greenfield runoff rate for a 1 in 2 year event is 5.2l/s, whilst the runoff rate for a 1 in 100 year event is 12.2l/s. Please refer to Windes calculation BIO-CAP-XX-500-CA-C-1001 – Greenfield Runoff Rate.

2.2 Proposed Surface Water Network

- 2.2.1 Please refer to drawing BIO-CAP-XX-500-DR-C-0010, which shows the proposed attenuation storage and outfall solution for the site.
- 2.2.2 All runoff within the biomass site will be positively drained by rainwater downpipes from the roof areas and channel drains from hard paved areas. Runoff will then flow into a new below ground surface water drainage network and through catchpit manholes before entering the below ground attenuation storage.
- 2.2.3 The runoff rate from site will be restricted by a flow control chamber to tie in with the greenfield runoff rates as described above. A complex flow control arrangement is proposed in which runoff from low intensity storms is restricted to 5.2l/s, but an overflow flow control unit is installed to allow runoff from higher intensity storms, above 1 in 30 year events, to runoff at 12.2l/s. This arrangement will ensure that the existing flow conditions for the undeveloped site are maintained post-development, and that excessive rainwater flows are not discharged from site during low intensity storms.
- 2.2.4 The surface water attenuation storage and route to the outfall has been modelled within Windes, for results please refer to calculation 'BIO-CAP-XX-500-CA-C-1002 – Attenuation Storage Simulation'. The results show that all runoff from a 1 in 100 year storm event are contained within the below ground network. The calculations include a 20% allowance for climate change.
- 2.2.5 All surface water runoff will pass through a Class 1 By-pass separator before leaving the site in line with PPG2 guidance. Alternative SuDS features such as an attenuation pond

were considered, but rejected on engineering grounds due to the Biomass site being approximately 1m lower than the open space adjacent to the site. It is not possible to achieve a gravity connection into a potential pond due to this level difference. A swale was also considered between the site and the pond to which the site discharges. This was also rejected as extensive excavations within the vicinity of the tree roots would compromise this ecological benefit, and a shallow swale would pose a flood risk to the neighbouring Bryn Road.

- 2.2.6 No surface water runoff from the site, including land drainage, will connect into the public sewerage system.

3. Foul Drainage Strategy

3.1 Existing Foul Drainage

- 3.1.1 There is currently no foul discharge from the Biomass site. A Welsh Water manhole (reference SJ38509102) is located within the site boundary which flows west from the site and across Bryn Lane.
- 3.1.2 An existing foul drain from the neighbouring XPO Logistics site flows from east to west across the site and connects into the public sewerage system at the Welsh Water manhole described above.

3.2 Proposed Foul Drainage Strategy

- 3.2.1 The foul drainage strategy includes the diversion of the existing foul drain which is located beneath the footprint of the proposed Biomass building. Please refer to drawing BIO-CAP-XX-500-DR-C-0011. This drawing shows the route of the proposed diversion to the south of the site. The XPO foul drain shall connect to a new manhole upstream of Welsh Water manhole SJ38509102, before connecting into Welsh Water's manhole.
- 3.2.2 Domestic foul drainage flows from the Biomass site will be minimal. Flows from domestic appliances within the site will be drained to a below ground drainage network which will connect into the public sewerage system through FMH03 as shown on the drawing.
- 3.2.3 The processes used within the biomass plant will have some trade effluent discharge. As stated in Shepherd Gilmour's drainage report, the plant will generate 0.13l/s of trade effluent discharge. This trade effluent will be treated and monitored on site before discharging into the public sewerage system via FMH03. A trade effluent agreement will be approved by Welsh Water before this connection is made.

4. Summary & Conclusions

- 4.1 Surface water from the site will discharge into a pond to the north of the site, as per the existing arrangements. Runoff will be restricted to mimic the greenfield runoff rates such that flows for low intensity storms will discharge at 5.2l/s and discharge from high intensity storms will discharge at 12.2l/s.
- 4.2 Foul flows from the site will be low, and will consist of small domestic flows as well as some trade effluent discharge. Both will connect into the public sewerage system into a Welsh Water manhole located within the site.
- 4.3 An existing foul drain serving the neighbouring XPO logistics site will be diverted around the site.
- 4.4 Foul and surface water drainage will be discharged separately from the site. No surface water or land drainage will connect into the public sewerage system.

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