

**DRAINAGE STRATEGY
A6CI-100-10-SP-004**

Outline Planning Consent has been granted for the project with conditions. Condition 7 states:-

No part of the development shall commence until a scheme for the comprehensive and integrated drainage of the site indicating provision for foul water, surface water and land drainage has been submitted to and approved in writing by the Local Planning Authority. Prior to the submission of those details, an assessment shall be carried out into the potential for disposing of surface water by means of Sustainable urban Drainage Systems (SuDS) in accordance with the principles of sustainable drainage systems set out in Technical Advice Note 15: Development and Flood Risk, and the results of the assessment shall be submitted in writing to the Local Planning Authority. Where a SuDS scheme is to be implemented, the submitted details shall:

- i) Provide information about the design storm period and intensity, the method employed to delay and control the surface water discharged from the site and the measures taken to prevent pollution of receiving ground water and/or surface waters;*
- ii) Specify the responsibilities of each party for the implementation of the SuDS scheme, together with a timetable for that implementation; and,*
- iii) Provide a timescale for implementation, management and maintenance plan for the lifetime of the development which shall include the arrangements for adoption by any public authority or statutory undertaker and any other arrangements to secure the operation of the scheme throughout its lifetime.*

Land Drainage

The site slopes naturally from East to West, with the highest point (42.000) at the north east corner of the site. Ditches surround the site to the north and east and run laterally across the site towards the south. These all lead to a stream that forms the low point (36.300) and west boundary of the site. All surface water run-off from the site currently leads to this stream. The feature appears on the Welsh Water drainage records and it also accepts surface water piped from the land to the west of the site.

The site investigation identifies artesian water pressure beneath the site beginning at a level of 25.500 approx.15m depth with full pressure at a level of 15.520. The pressure head of water recorded was at 41.000 level which is 700mm above the existing ground level at the borehole location.

Natural land drainage of the site will be maintained by the introduction of a large drainage pipe on the natural line running from East to West on the site. This is combined with the Newt Underpass to comply with the ecological strategy.

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Surface Water

A SuDS scheme has been designed to cater for run-off from new impermeable surfaces. The design allows for the 1 in 100 year storm with the appropriate allowance of an additional 30% flow for climatic change. For the design calculation, see the document attached below:-



Cytec Preliminary
Storage Calculation R

The proposed Surface Water system will consist of two separate networks each with its own outfall to the existing stream. Each network will include a modular stormwater storage system (Hydrocell - Stormbloc or similar) positioned upstream of the outfall pipes, with a flow control device (Hydro-Brake or similar) constructed within a precast concrete manhole. The flow control will be located between the storage system and the outfall pipe. This arrangement will allow attenuation of the surface water discharge into the stream to a flow rate of less than or equal to that of the existing Greenfield Run-off Rate. As indicated on page 2 of the above document, this flow rate is 8.43 litres per second (l/s). In order to restrict the flow from the proposed site to that of the existing site, the storage structures will need to have a combined volume in excess of 502m³, as stated on page 9 of the calculation. Surface Water Network 1 will have at least 301m³ of storage with a flow control device allowing 5 l/s into the stream. Network 2 will have a minimum of 201m³ of storage and allow no more than 3.43 l/s to pass through its flow control device. This design will ensure that there is no increase in site run-off post development and will prevent this development plus the neighbouring sites from being subjected to flood risk.

In the summer storm situation where run off can sometimes be much faster due to a hardened upper crust on the soil so the new rate of flow will in fact be much slower and thus an improvement in flood alleviation downstream. Surface water run-off from the service yard used by goods vehicles will be passed through a full retention separator in accordance with PPG 3 before entering the storm retention system.

Work to provide the storm retention facility will be in the early phase of the project, however, during the bulk excavation there will be a release of perched ground water in the upper soils. To mitigate this effect the two new outfalls to the stream will be provided as part of the site enabling works prior to bulk excavation. The new outfalls will be offered to Welsh Water for adoption.

In order to ensure that the site operator will maintain the surface water drainage system, Cytec will develop a maintenance plan with the approval of the local authority, during detailed design.

Foul Water

A public sewer is present along the frontage to Abenbury Way with an adopted manhole located on the site. The depth of the manhole is not sufficient to allow a gravity system therefore all new foul drains will lead to a packaged pump system which will be located below one of the parking bays. Sewage will then be pumped up to a receiving chamber with later a gravity lateral drain feeding into the public system. An application will be made to Welsh Water for permission to connect.

Trade Effluent

There is no requirement for any trade effluent from the facility. The Process areas do not have drainage. Possible spills of solvents and materials will be within bunded areas which will be mopped up and disposed of by a specialist waste disposal company retained by Cytec.