

**Notice of request for more information**

Environmental Permitting (England and  
Wales) Regulations 2016

## Notice requiring further information

**To:**

Mr Simon Stone  
Unit 1009 Caerwent Army Training Estate  
Caerwent  
Monmouthshire  
NP26 5XL

**Application number: PAN-0065814**

Natural Resources Wales, in exercise of its powers under paragraph 4 of Part 1 of Schedule 5 of the above Regulations, requires you to provide the information detailed in the attached schedule. The information is required in order to determine your application for a permit, dated **29/08/19**.

The information requested should be sent to the following address by 17<sup>th</sup> January 2020.

**Information should be sent to:**

Permitting Service (Cardiff)  
Natural Resources Wales  
Cambria House  
29 Newport Road  
Cardiff  
CF24 0TP

OR

[Huw.davies@naturalresourceswales.gov.uk](mailto:Huw.davies@naturalresourceswales.gov.uk)

Name	Date
Huw Davies	06/12/19

Authorised on behalf of Natural Resources Wales

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## Schedule

The site is located on Carboniferous Limestone which has been classified as a Principal aquifer. This aquifer type is able to support large potable water supplies and given the karstic nature of the Carboniferous limestone in this area it is vulnerable to pollution via infiltration from ground level. The site is also located within the Source Protection Zone 1 for the Great Spring, which is a potable water supply abstraction. The zone 1 designation means that within a 50-day travel time any pollutant within the groundwater will reach the abstraction. Based on this hydrogeological setting we consider the controlled waters to be highly sensitive and vulnerable to pollution and any contaminative activity should only be accepted following a comprehensive risk assessment.

We therefore need to ensure appropriate measures are in place to ensure there is no risk from the operations to the controlled waters and therefore require further information as outlined below.

### Historical contamination

We understand that the site was formerly used for military use from 1939 onwards for propellant manufacture and storage, storage of equipment and finally for training.

We note that waste material from the former Wormtech operation is still present on site, this is green waste and will be used in the operation going forward. We wish to highlight that although the new waste material accepted on to the site will be checked with strict criteria, the old waste material (from Wormtech activities) may not be inert and therefore still producing leachate – this should be considered in all assessments for the site.

### Actions:

- Please provide information in relation to the historic use of the site, prior to the previous waste facility being present – [We have requested information on the use of Unit 1009 prior to Wormtech occupying the site but Landmarc do not have this information and Defence Infrastructure Organisation has declined to issue information.](#)
- Please provide information outlining how the old wormtech waste will be checked to ensure it is suitable for processing and that it is not producing and if it is producing leachate what measures will be put in place to prevent the leachate entering the controlled waters – [Crownhill Topsoil and Aggregates do not currently intend to utilise the wormtech waste within their operations.](#)

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This material does not sit within Crownhill's site boundary. They are able to produce the products they would like to produce, without this material. It would be desirable to include this material within future operations to enable recovery of the material and to remove it from site, however due to the complexity this brings to the Environmental Permitting process, this material is not included within this permit application. This application is based on Standard rules SR2010No12 – Treatment of waste to produce soil, soil substitutes and aggregate but due to the sensitivity of the underlying aquifer, it is only proposed to accept and treat the following materials:

**Table 2.3 Waste types accepted by Crownhill Topsoil and Aggregates**

<b>Exclusions</b>	
<b>Wastes having any of the following characteristics shall not be accepted:</b> <ul style="list-style-type: none"> <li>• Consisting solely or mainly of dusts, powders or loose fibres</li> <li>• Hazardous wastes</li> <li>• Wastes in liquid form</li> </ul>	
<b>Waste Code</b>	<b>Description</b>
<b>01</b>	<b>WASTES RESULTING FROM EXPLORATION, MINING, QUARRYING AND PHYSICAL AND CHEMICAL TREATMENT OF MINERALS</b>
<b>01 04</b>	<b>wastes from physical and chemical processing of non-metalliferous minerals</b>
01 04 08	waste gravel and crushed rocks other than those mentioned in 01 04 07
01 04 09	waste sand and clays
<b>10 11</b>	<b>wastes from manufacture of glass and glass products</b>
10 11 12	clean glass other than those mentioned in 10 11 11
<b>10 12</b>	<b>wastes from manufacture of ceramic goods, bricks, tiles and construction products</b>
10 12 08	waste ceramics, bricks, tiles and construction products(after thermal processing)
<b>10 13</b>	<b>wastes from manufacture of cement, lime and plaster products and articles and products made from them</b>
10 13 14	waste concrete only
<b>15</b>	<b>WASTE PACKAGING</b>

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<b>15 01</b>	<b>packaging</b>
15 01 07	clean glass only
<b>17</b>	<b>CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)</b>
<b>17 01</b>	<b>concrete, bricks, tiles and ceramics</b>
17 01 01	concrete
17 01 02	bricks
17 01 03	tiles and ceramics
17 01 07	mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06
<b>17 02</b>	<b>wood, glass and plastic</b>
17 02 02	clean glass only
<b>17 03</b>	<b>bituminous mixtures, coal tar and tarred products</b>
17 03 02	road base and road planings (other than those containing coal tar) only
<b>19</b>	<b>WASTES FROM WASTE MANAGEMENT FACILITIES, OFF SITE WASTE WATER TREATMENT PLANTS AND PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION / INDUSTRIAL WASTE</b>
<b>19 12</b>	<b>wastes from the mechanical treatment of wastes</b>
19 12 05	clean glass only
19 12 09	minerals (for example sand, stones)
<b>20</b>	<b>MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS</b>
<b>20 01</b>	<b>separately collected fractions</b>
20 01 02	clean glass only
<b>20 02</b>	<b>garden and park wastes</b>
20 02 02	soil and stones

Due to the sensitivity of the SPZ1 all materials containing organic content, were removed from the application. The likelihood of road planings being brought to site is very low as these materials tend to have a direct market of their own, the economics of which are dependent on them being taken straight from the point of production to the end user.

Crownhill would like to meet with NRW to discuss their aspirations for the former Wromtech waste remaining adjacent to Unit 1009.

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- Please outline if any recent monitoring of the boreholes and surface water monitoring points has been undertaken to establish current baseline quality for both ground and surface water. The SKM report submitted with the application uses data that is six years old and therefore does not provide a true reflection of current baseline levels on site. Please provide current baseline monitoring data for both ground and surface water – [As part of the Preliminary Groundwater Risk Assessment, a copy of DTE Caerwent: Former Wormtech Area – LQA2 Addendum: Environmental Monitoring at DTE Caerwent, July 2016 produced by Jacobs, was included within the document.](#)

Further assessments were carried out by Jacobs in June 2015, April 2017 and November 2019. Details of these have been include within an updated Ground Water Risk Assessment which will be submitted as part of the response to this schedule 5 notice. EcoVigour has not yet seen the June 2015 or April 2017 LQA2 Addendum reports but these have been requested from DIO and they have stated that they will supply these as they are in the public domain.

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## Site infrastructure

The current ground surface of the site has been described as hardstanding impermeable, within buildings on concrete slabs, stone surface (potentially permeable), roads and in the aerial photos some grassed areas. A map showing all the surface types at the site would be helpful to understand potential pathway areas to the aquifer below the site.

It is proposed that waste material is processed and stored in buildings, although this limits direct rainfall on to the material, the condition of the building floor and walls are unknown – when was this last inspected and what is the maintenance regime to repair cracks and holes?

We note that stone surface is used, this does not imply impermeable – what is this surface type made up of? How is it maintained? This surface type appears to reduce percolation of silts into the ground, but any leachate/run off generated would not be collected and allowed to infiltrate to the aquifer.

Is the soil stored on the permeable surface the final product?

### Actions:

- Provide a site plan clearly outlining the different surfaces that make up the site – [The site layout plan has been amended to include details on surfaces at the site. These have been broken down into:](#)
  - Concrete surfaced areas;
  - Stone surfaced areas;
  - Soft landscaped, soil covered areas.

[This are illustrated on Drawing will be submitted as part of the response to this Schedule 5 Notice.](#)

- Provide an outline of the condition of the buildings in which the waste will be stored including information on the flooring and walls – [A rudimentary condition survey has been undertaken of the buildings at the site and an Outline Condition Survey Report has been produced. This will be submitted as part of the response to this Schedule 5 Notice.](#)

In relation to the two actions above – once the response to this schedule 5 notice has been received and assessed we may require all operations on site including storage pre and post treatment and the treatment of the waste itself to be undertaken on an impermeable surface with sealed drainage.

- Provide information as to what the stone surface is, how it is maintained and how any run off from the waste operations would be prevented from collecting and infiltrating down to the aquifer – [This information has been included within a revision to the Environmental Management System for the Crownhill's operations at Unit1009. This This will be submitted as part of the](#)

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response to this Schedule 5 Notice.

- Please provide information on the current state of the site infrastructure, inspection routine for the site infrastructure and maintenance regime for the infrastructure - This information has been included within a revision to the Environmental Management System for the Crownhill's operations at Unit1009. This This will be submitted as part of the response to this Schedule 5 Notice.
- Please outline where the final "products" will be stored prior to removal from the site – Topsoil products will be stored within Building 5 as this is a moisture sensitive product. Aggregates will be segregated into the relevant bays against Building 5, dependant on the grading of the materials.

Feed stock products which are moisture sensitive i.e. any materials with a high percentage of fines will be stored within Buildings 3 and 4. Soils which are granular in composition will be stored in the open, in the area east of building 5, with overflow materials stored between Buildings 2, 3 and 4.

## Drainage – collection

Within the Environment Management System (EMS) it explains that road drainage with kerbs will allow open drains to channel the run off to the attenuation ponds. The drains are open to limit blockages of silt, but what is the height of the kerbs and will they be high enough to cope with heavy rain fall at the site and prevent overtopping of the channels?

A map showing the drainage at the site would be helpful to understand the drainage pathways around the site. The map should include concrete, non-concrete, grass areas, kerb locations and flow direction of the channels route to the attenuation ponds.

There is a comment about clean water within the drainage strategy stating it will be diverted and kept separate from the dirty water. It is assumed this will be only roof runoff from the buildings – how will be kept separate and where and how will be disposed of?

The drainage ditch through the site is reported to have been diverted by the previous tenant, are there any records of the original route compared to new route of this ditch?

## Actions:

- Provide the specifications of the kerbs and show how these kerbs are of a suitable size to cope with any periods of heavy rainfall – Kerbs are standard 914 x 125 x 255mm bullnosed concrete kerbs in straights and radiuses. The average upstand (height of kerb exposed above the adjacent concrete surface) is between 50mm and 70mm. In many places along the boundaries of concrete surfaced areas, kerbs have become

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buried with soils from surrounding areas. One area of damaged kerbs was noted where they had been impacted by plant and this was raised as a defect with Crownhill. Kerbs along the section of hard standing in front of Buildings 2 and 3 had been removed, or filled over to allow access for plant onto the area to the east of Building 5. Runoff in this location was flowing against the built up earth along the edge of the slab. As the concrete slabs are relatively flat across their section, the width of the area available for flow, increases with flow and hence there was no evidence of kerbs being over topped.



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Transition into area where kerbs have been removed.

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*Runoff flowing along soils on the edge of the slab. Not clear if kerbs have been removed or buried.*

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*Runoff flowing along slab across southern section of site.*

- Provide a map outlining the site drainage including the flow direction of run-off on site and the channel routes to the attenuation ponds. It should also include the location of the different types of site infrastructure, grassed areas and buildings – The Drainage Strategy and Drainage Plan has been updated with information on how rainfall runoff flows across the site. This uses data from a survey undertaken in January during a period of sustained heavy rain.
- Confirm that the clean water in the drainage strategy is rainfall dependent run-off from the roofs of the buildings on site. Provide information as to how this “clean” run off is kept separate from the “dirty” runoff and how and where will it be disposed of – Segregating clean rainfall dependent runoff from the roofs of buildings has been an aspiration from the previous 2016/17 application, in order to minimise the volume of water entering the ponds and increase residence time. This has been partially achieved. The buildings sit on slabs, which extent approximately 2m to the sides and rear of the buildings, in most instances, but with the exception of the western side of Building 2, the eastern side of Building 4 and the eastern and western sides of Buildings 6 and 7, which are abutted by vegetated areas. Building roofs are pitched, with central

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gutters between 'roof bays'. Gutters have been installed along the roofline of the eastern and western facades of all buildings. Down pipes, discharge either onto the concrete slab or onto soil surfaced vegetated areas. In the majority of cases, water discharged onto the slab flows to the edge of the slab and then into soft surfaced areas. In some locations, downpipes on the front of the building discharge into areas which will be used operationally. Full details of this are provided in the Building Condition Survey Report and within the drainage strategy.

- Please provide any records or information on the original route of the drainage ditch and its diversion – We have illustrated this on the revised drainage drawing.

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## Pond

The details on the construction of the attenuation ponds does not include the depth of the ponds – how deep will the ponds be and what volume will each of the five ponds hold?

**Action:** Please provide the specifications of the pond including the depth of each pond and the volume that each pond can hold – [This information has been included within the revised Drainage Strategy.](#)

## Discharge

The use of a bypass hydrocarbon separator for trade effluent discharge is not acceptable within a Source Protection Zone 1 as per the “Approach to Groundwater Protection” guidance and position statement G4. A bypass separator allows high flows, during a rainfall event, to bypass the installation without treatment thereby allowing contamination to enter the watercourse. A full retention separator will be required.

“Inside SPZ1 we will object to any new trade effluent, storm overflow from sewerage system or other significantly contaminated discharges to ground where the risk of groundwater pollution is high and cannot be adequately mitigated. If necessary, the we will use a prohibition notice to stop any such existing discharge.”

As per: “Approach to Groundwater Protection” (Feb 2018, version 1.2) adopted by NRW for use, which can be found following the below link.

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/692989/Environment-Agency-approach-to-groundwater-protection.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/692989/Environment-Agency-approach-to-groundwater-protection.pdf)

There is no detail on the likely volumes generated by the two discharge points from the attenuation ponds – what will be the volumes per day into the ditch?

As the ditch is dry, unless under heavy rainfall (seasonally dry), the discharge from the site to the ditch will effectively be acting as a soakaway with discharge water entering the ground and infiltrating to the groundwater – we do not accept this as disposal method due to the Principal aquifer and Source Protection Zone designations. Therefore, a more robust quantitative groundwater risk assessment or alternative disposal method is required.

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## Actions:

- Please revise your proposals to include a suitable separator to ensure there is no pollution to groundwater – The separator has been amended to a full retention separator, details of which have been included within the revised drainage strategy.
- Please provide data to show volumes of run-off generated by each discharge points from the attenuation ponds and the volumes per day to the ditch – Details have been included within the revised Drainage Strategy and associated drawing.
- Please provide a more detailed and robust quantitative groundwater risk assessment or an alternative disposal method for the run-off – We are not sure whether this query has been raised as it was believed that the Wormtech waste would be included within Crownhill's operations at the site, and whether following confirmation that these materials will not be bought onto site or processed, this requirement could be removed. We have reviewed the Groundwater Risk Assessment and include information and conclusions from recent monitoring and the risk assessment reaches the conclusion that the risk to ground water from the storage and treatment of inert wastes is low. Water discharged from the site will have been passed through a series of attenuation ponds and a full retention hydrocarbon separator is to be installed. It is likely that water discharged could have slightly elevated levels of suspended solids, but that if water were to infiltrate along the line of the drain, these solids would be removed by the percolation action of the water through the soils.

The drainage ditch along the southern boundary of Unit 1009, into which the surface runoff from the site drains flows for approximately 513m prior to entering an existing culvert, which discharges into the Castrogi Brook. This ditch is dry during periods of dry weather, which would be expected as there is no upstream source. We have however visited site during periods of rain in December 2019 and January 2020 and have consistently noted flow within the ditch.

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*Drainage ditch adjacent to Unit 1009 following periods of rainfall.*

Crownhill have stated, that if required, they would culvert the remainder of the ditch to tie into this culvert and would undertake a camera survey of this culvert to assess the integrity of the culvert. This would mean that surface runoff from the site would discharge directly to surface water.

Could NRW clarify whether this requirement is associated with the processing of materials from the former Wormtech facility.

## Compliance

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The Preliminary Ground and Surface Water Risk Assessment details the three locations for the compliance points on-site, off-site and at a surface water downstream to the site. The proposal is to have one on-site compliance point close to the attenuation ponds and on the likely downgradient boundary – we accept this location but suggest at least one more groundwater compliance point on site given the width of the site. The off-site groundwater compliance point is over 700m from the site boundary and potentially not in the same groundwater catchment, i.e. more likely cross gradient as it is in a south-southeast direction with ground water roughly southwards. We recommend that the off-site compliance point is closer to the site boundary and within the same groundwater catchment.

The surface water compliance point is over 1,100 m downstream from the discharge points and site boundary – we consider that too much dilution would occur over this distance and suggest a surface water compliance point closer to the site boundary.

We require details on the groundwater compliance points to include a map showing the locations of the boreholes and the geological and construction logs, details on the frequency of monitoring and determinants to be sampled for and the assessment criteria values (compliance limits) stated. We also require a contingency plan to be submitted that outlines what action will be taken should the compliance limits be exceeded.

Regarding the two discharge from the attenuation ponds we require details on monitoring this discharge for silt and water quality.

### **Actions:**

- Please amend the location of the off-site compliance/monitoring point to one which is closer to the site boundary and is within the same groundwater catchment area – Due to the layout of boreholes at the site – [Please see below](#).
- Please amend the location of the surface water compliance/monitoring point to one that is closer to the site boundary – [Please see below](#).
- Please provide a map showing the locations of the boreholes and the geological and construction logs, details on the frequency of monitoring and determinants to be sampled for and the assessment criteria values (compliance limits) stated and a contingency plan should the limits be exceeded – [Map illustrating locations of boreholes attached](#). We do not have geological and construction logs for these boreholes. The MoD have agreed to replace / repair the five damaged boreholes and we will request geological and construction logs for these. Monitoring of surface and groundwater at the site is complicated by the historic contamination from the Wormtech operations and the remainder of the green waste which was left on site following this. Jacobs have recommended quarterly monitoring of surface water and biannual groundwater monitoring of the locations

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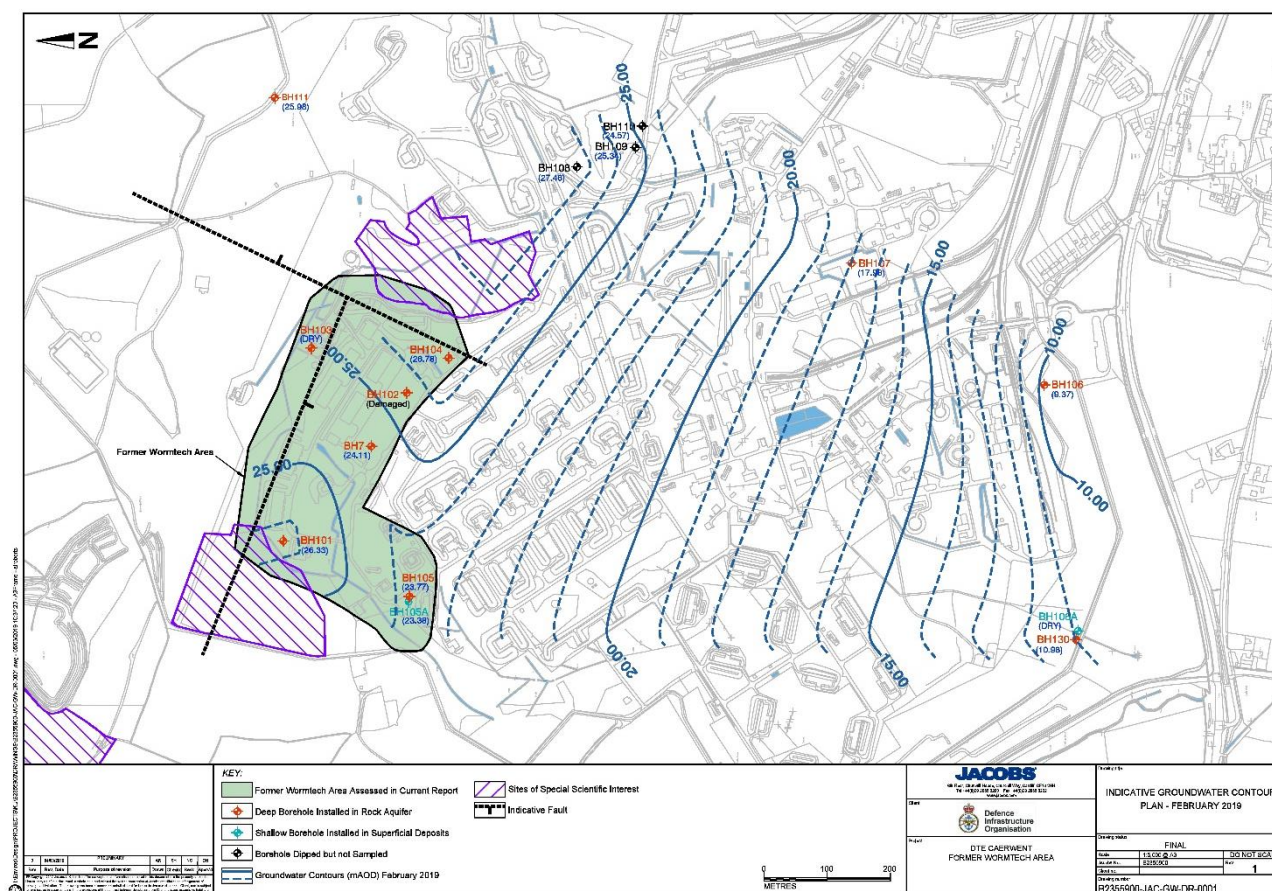
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monitored during their 2016 screening visit.

Crownhill establish surface water compliance points on the drainage ditch at the SW corner of the site (CHSW001) and at the discharge point into the Castrogi Brook (CHSW002). Monitoring will be undertaken at monthly at these compliance points (except for periods when there is not flow), for suspended solids, BOD ATU, electrical conductivity, TPH (speciated), and ammonia.



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Further sampling will be undertaken by Crownhill, with surface water samples from CHSW001-02 submitted for analysis against the same parameters as have been used within the Jacobs LQA and groundwater monitored at BH07, BH102 (once this has been reinstated) BH104, BH105 every six months. From groundwater levels measures during the Jacobs April 2019 round of monitoring it appears that groundwater flow immediately below the site is to the SW and hence BH105 is proposed as the off site compliance point. As these groundwater contours have been developed from limited level information, BH104 will also be included. This monitoring will be undertaken by EcoVigour with samples tested against the same parameters as Jacobs, both at the SWP/BH and at the laboratory. This will allow easy comparison of data to enable conclusion to be drawn on potential impacts from Crownhill's operations, against the ongoing residual Wormtech contamination.

Impacts to surface water would be detectable quickly, but impacts on groundwater are likely to be slow occurring and longer term. If it is found that surface or groundwater is being impacted by the operation of the Crownhill facility, sources of contamination will immediately be investigated. This will commence with a review of the Duty of Care process, followed by the sampling and testing of materials at the site. Any materials which are found to be out of specification will be removed to the quarantine area, pending removal from site. This will include feed stock and product.

This process is described in full within the EMS.

- Please provide details on the monitoring of the discharge from the attenuation ponds for silt and water quality – [Please see above](#).

## Maintenance

We note that silt removal will happen following inspections of the site, but we require details of the frequency of inspection and the how and where the silt is disposed of.

### Actions:

- Please provide information as to the inspection frequency of the site, how the silt is removed and where it is disposed – [A procedure for this has been included within the Environmental Management System](#).

## Fire Water

We note that fire water is only a problem if there is a fire, but will the drainage system used on site be able to cope with the extra volumes?

**Actions:** Please provide evidence to show that the drainage system will have the

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capacity to cope with fire water generated in the event of an incident – Volumes of water likely to be used for fire fighting are difficult to predict as this depends on a number of factors, including the nature and extent of the fire.

A Fire Prevention Plan has been produced by Crownhill and this states the following:

‘The area of the site with the highest risk of fire is the workshop and adjacent site waste storage area. All other materials stored within the site are inert. If fire were to occur within this area it would most likely be due to vehicle fire or the combustion of stored oils within the workshop. From discussions with South Wales Fire and Rescue, these sorts of fires would be tackled using foam or if small scale CO2.

If water is required for firefighting it will be abstracted from the attenuation ponds and the duck pond, this water will be recirculated back into the attenuation ponds. The outlet from the hydrocarbon separator would be shut off to prevent water leaving site. South Wales Fire and Rescue have told us that as part of their standard practice they deploy water filled booms to channel water away from sensitive receptors. A stock of sand bags will be stored at the site and these will be used to direct firewater.

If required, water flowing into the attenuation ponds could be recirculated, either at the outlet of the ponds so that suspended solids are removed or upstream of the pond.

An additional pond to retain firewater can be formed within the soil storage area. A 14m x 30m HDPE liner will be retained at the site as part of the firefighting inventory. A pond can be formed using plant on site and can be lined with the HDPE sheet. Firefighting water can then be diverted into here, through the construction of a drain and can be retained. This would provide an additional capacity of 275,000l of storage.

Water from this and other attenuation ponds will be tankered to the mains sewer if additional capacity is required.

Provision would need to be made to remove solids from the ponds, test this material and dispose of it within the Duty of Care for the material, following the fire.’

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