Groundwater Risk Assessment

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Introduction

Recover Blaenavon Ltd is applying for a Bespoke Environmental Permit to upgrade their site, to take an increased level of material and cease operating as an exempt activity. The site wishes to apply for the external storage of baled plastic packaging waste with internal treatment plant designed for processing to reach end of waste status. The site wishes to store approximately 1,000T at any one time but have the capability to store approximately 1,500T through times of factory shut down etc, with a total throughput of 20,000T per year.

Infrastructure

The site has dedicated plant installed within a brick/block and steel framed building that is fitted with a CO2 fire suppressing system. Externally, the site is laid to concrete with sealed drainage system, the bays in which the plastic are to be stored are made from concrete legato blocks which are sealed at the base to ensure a water-tight fit. The entire site permitter is now sealed with standard highways kerb to a height of 150mm.

However, within the permitted boundary are 5 areas of soft landscaping (that are separated by the 150mm kerb), that have the potential to receive water from the site and allow it infiltrate to the groundwater system located under the site and in the wider area, this groundwater is a Source Protected Zone 1 (SPZ1) and therefore requires detailed risk assessment.

Site Layout

The below plan shows the layout of the site regarding the soft landscaping areas and so the potential pathways to groundwater, also shown are the areas where there is a kerb boundary and the locations of the waste storage bays.

The site itself is located within a heritage area for historic industry and is situated on the northern edge of a larger industrial estate. There are several sensitive receptors nearby (please see the submitted FPMP etc for further details), the Afon Clwyd flows approximately 400m to the South of the site and there are several small watercourses nearby which are detailed on the plan below. However, none of these have a direct link to the site and are relatively far away.

Watercourses in the Local Area

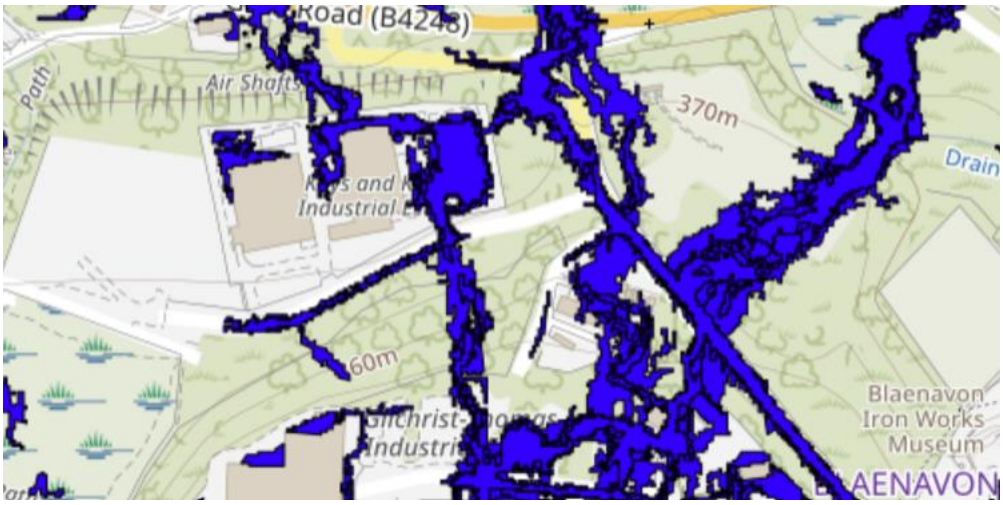
The plan below shows the local watercourses that are within a reasonable distance to the site. The map shows that the closest watercourses are at 95m to the Northeast and 126m to the West, with an area of marshland being 60m to the Southwest. From a risk perspective of flooding from a small watercourse, these are the closest and so pose the highest risk.

From a surface water perspective, the site is bordered by a very steep bank to the North, this can be seen in the map above as 'Air shafts', the areas directly to the East and West are an old inert recycling yard and an area of scrubland/trees respectively. To the South is the highway that leads to the site and beyond is a steep downward slope to the next industrial area. Out of these points, the highest risk is from the slope to the North where in prolonged periods of heavy rain, could see surface water flooding into the site. There would be no/low risk from the side areas and a non-existent risk from the land and road to the South.

Risk Areas for Flooding by Surface Water and Small Watercourses

The site has been shown to be at high risk from surface water and small watercourse flooding, as can be seen on the map extract below. However, as detailed above, it is believed to be the risk from surface water that is high risk and not that posed by any small watercourses due to the distances from the site. Based on the graphic layer of the mapping tool (New map | DataMapWales (gov.wales), the site is at risk from surface water flooding originating at two locations. The first location is through a central section of the Northern boundary and the second through an area located in the North-eastern corner of the site, this is where the slope that is to the North of the site, drops to the level land to the East. The main area of focus for this risk assessment will be the area to the front of the building (eastern side of the site), where the mapping tool illustrates that the waste storage area is totally covered by the high-risk zone. All other waste storage areas are unaffected

and are therefore discounted from this section of the assessment (fire water runoff dealt with below for all waste storage areas and their link to the landscaped areas).



According to the Welsh Government Mapping tool (Home | DataMapWales (gov.wales)), the site shows as being the following risk levels:

Mapping Parameter	Overall Risk Level	Justification and score
Flood Risk from Rivers	Low	Site is outside of risk zones from Rivers.
Flood Risk from Surface Water and Small Watercourses	High	No justification provided. See assessment above discounting small watercourses.
National Flood Risk Maps-NRW National Flood Risk (Rivers:Environment)	High	Low risk score- 61,350 Medium risk score- 23,277 High risk score-99,752 The justification of these ratings is heavily weighted towards the wider area being in an area of Heritage and National importance due to its industrial past. The heritage score alone has been attributed as 98,362 of the High Risk total with Ancient Monuments making up the final 1,384 scoring (licenced abstraction 6). All the special areas of conservation, special protection area, sites of special scientific importance and environmental permitting returned as a zero score for risk factors.
National Flood Risk Maps-NRW National Flood Risk (Surface Water & Small Watercourses)	Low	Low risk score- 359,938 Medium risk score- 82,753

		High risk score- 312,828 The overall risk rating for this parameter is Low as this justification level was attributed the highest scoring points across all measured criteria. However, the high-risk elements did score significantly and so have been taken into consideration and are justified below. The justification of these ratings is again heavily weighted towards the wider area being in an area of Heritage and National importance due to its industrial past. The heritage score alone has been attributed as 253,002 of the High-Risk totals with Ancient Monuments scoring 26,901 with sites of special scientific importance scoring 32,315. The SSSI at its closest point is located 900m to the Northwest and so the pathway between the site and SSSI have numerous natural, physical and anthropogenic barriers. Consequently, the site has little/no likelihood of impacting the SSSI through surface water and small watercourse pathways as there is no link between them. All the special areas of conservation, special protection area and environmental permitting returned as a zero score for risk factors.

Contaminants of Concern

There are two main areas of concern when considering contamination of the groundwater, the first being material originating from the waste itself and the second being runoff from a fire incident in the form of firewater.

Due to the strict pre-acceptance procedures detailed in the EMS, the site has compliance with the REACH Regulations. The Regulations require that companies accepting plastic wastes for processing to gain end of waste status comply with the parameters set out within. In this instance, the plastic materials accepted to Recover Blaenavon do not contain >0.1% w/w Substances of Very High Concern (SVHC's), detailed within the attached Recycling Lives_Restricted Substance Statement. The plastic to be processed on site is only stored there for a very short space of time and so the likelihood of the plastic breaking down to smaller fragments or leaching contaminants out is negligible and can be discounted from this risk assessment. The plastic accepted is in its largest form possible (not shredded), the typical size of the packaging is >100mm, therefore, the risk of physical contamination of the groundwater is non-existent and can also be discounted from this risk assessment. In summary, the only risk of contamination from the plastic waste through surface water pollution to the groundwater is that of any material that is on the surface of the waste such as grit, dirt, mud etc. that may have been picked up from the site of origin or the transportation of the material that gets washed off if it becomes inundated by surface water flooding.

Firewater runoff is the second area where contamination could originate from that poses a risk to the groundwater locally. The risk of pollution from firewater could have a significant impact on the

environment essentially as the content of the water is largely unknown but extremely likely to contain POPs (including ammoniacal nitrogen), heavy metals and potentially PAHs and TPHs depending on the waste types subjected to the fire. In this case, plastics are oil based and so the runoff would likely contain high levels of oil-based pollutants. Further quantification of the composition of the firewater is not possible at this stage as the incident is a scenario option only.

Potential Pathways

Surface water flooding to the front area of the site (where waste bays are located), could inundate the site and the drainage system. The flood water could top the kerb line that surrounds the soft landscaped areas and create a potential pathway to the groundwater through infiltration of the unmade ground.

Firewater could be produced in vast amounts; the water would carry many different contaminants that have the potential to cause significant environmental harm. If levels of water were significant enough it could top the kerb line that surrounds the soft landscaped areas and create a potential pathway to the groundwater through infiltration of the unmade ground, especially so if the sandbags are being used across the front gates.

Mitigation Measures

Surface water flooding

The site has a pre-existing engineered soakaway (assumed that it was constructed under planning consent when the industrial estate was built) that runs along external to permitted boundary line to the North and Northeast. The soakaway runs parallel to, and at the base of the steep slope that is located here and where identification of the highest risk of surface water flooding originates.

The bank where the surface water is to originate is densely vegetated with trees, shrubs, bushes and grasses, all of which help to both slow and prevent any overland flows. The vegetation is well-established, and this will significantly reduce the likelihood of surface water flooding from the bank.

The drainage externally could take more water from the flood if required, the entrance gate is lower than the kerb line so its reasonably foreseeable that the water would flow out of the site and not into the soft landscaping areas. This scenario is not ideal as the flood water would leave site; however, this would be an emergency situation and would protect the groundwater.

The site will ensure that site drainage systems internally are free flowing by regularly servicing/checking for silt build up etc in line with the checklist in the EMS. If the drainage system is noted to have a build up of silt within it that would hamper the efficiency of the system to service the site in an extreme flood event, a specialist contractor will be employed to flush out/clear the debris within the system to allow for maximum bore of pipe to be utilised.

Most of the soft landscaping areas identified within the permitted boundary are outside of the area highlighted as being high-risk of surface water and small watercourse flooding.

The site has 3 floodgates that are for use across the bays during a fire (total length of approximately 24m due to the arc shape required in construction). If during a flood the site notice that one of the areas of soft landscaping are at risk of being flooded by water that has encountered the waste (likely

to be the area at the front of the building), the floodgates will be deployed to ensure the protection of the groundwater.

The site has never been flooded by surface water or small watercourse throughout the record of the industrial unit being used.

Firewater flooding

The Provision and Management of Firewater section of the submitted FPMP explains how the water will be contained to within the bays impacted by the fire. There are measures in place that allow the FRS to extinguish a fire on site with the use of minimal water. The reduced stockpile sizes and ease of removal of waste from adjacent bays results in the site being able to quite easily contain the small amount of fire water produced to within the bay(s) impacted by the fire. Floodgates will be installed across the entrance of the bay that is on fire and the 2 adjacent bays to allow for excess water to be held, the other bays close to the fire will be emptied to prevent the fire getting bigger, this will eliminate the requirement for more water being used/created. Fortunately, the way in which the site drains, the surface flows are directed away from the landscaped areas and are focussed centrally.

Unfortunately, the site (when under previous ownership) was subject to a fire in 2021 within a building (now where bays are to be constructed to the West of the area permitted). The amount of fire water used on site during the event was minimal as the internal suppression system proved extremely effective. No areas of landscaping were impacted by any runoff as the level of water on site was so low that it stayed within the footprint of the building. If a fire were to occur in the new treatment building, it is assumed that conditions would be similar to those witnessed in 2021 due to the same use of internal suppression.