Cyfoeth Naturiol Cymru
Natural Resources Wales

Natural Resources Wales permitting decisions

Radnor Hills Mineral Water Company Limited – Radnor Hills Decision Document

Contents

New Bespoke Permit

The application number is: PAN - 000849

The applicant /operator is: Radnor Hills Mineral Water Company Limited

The Installation is located at: Radnor Hills, Heartsease, Knighton, Powys, LD7 1LU

We have decided to grant the permit for Radnor Hills operated by Radnor Hills Mineral Water Company Limited.

We consider in reaching that decision we have considered all relevant considerations and legal requirements and that the permit will ensure that the appropriate level of environmental protection is provided.

Purpose of this document

This decision document:

- explains how the application has been determined
- provides a record of the decision-making process
- shows how all relevant factors have been considered
- justifies the specific conditions in the permit other than those in our generic permit template.

Unless the decision document specifies otherwise we have accepted the applicant's proposals.

Structure of this document

- Table of contents
- Key issues
- Annex 1 – improvement conditions
- Annex 2 – the consultation, web publicising responses

Key issues of the decision

Receipt of Application

An application was received on 16th October 2016. The application was 'Not Duly Made on the 4th November 2016 due to incomplete forms, incomplete screening information, incomplete raw materials list and incorrect OPRA profile. This information was submitted and the application was accepted as duly made on the 25th November 2016. This means we considered it was in the correct form and contained sufficient information for us to begin our determination, but not that it necessarily contained all the information we would need to complete the determination.

Consultation

The consultation requirements were identified and implemented under the Environmental Permitting Regulations 2016. The decision was taken in accordance with our Public Participation Statement and our Working Together Agreements.

A copy of the Application and all other documents relevant to our determination were available for the public to view. Anyone wishing to see these documents could arrange for copies to be made.

We sent copies of the Application to the following bodies, which includes those with whom we have "Working Together Agreements":

- Dwr Cymru Welsh Water
- Food Standards Agency
- Environment Agency
- Powys County Council Planning Department
- Powys Teaching Health Board
- Public Health Wales
- Severn Trent Water
- Natural England

These are bodies whose expertise, democratic accountability and/or local knowledge make it appropriate for us to seek their views directly.

The consultation started on the 25th January 2017 and ended on the 22nd February 2017. An advert was also placed on our website during this time.

Further details along with a summary of consultation comments and our response to the representations we received can be found in Annex 2. We have taken all relevant representations into consideration in reaching our determination.

The facility

The regulated facility is an installation which comprises the following activities listed in Part 2 of Schedule 1 to the Environmental Permitting Regulations and the following directly associated activities.

- Section 6.8 A(1)(d)(ii) – Treatment and processing, other than exclusively packaging, of the following raw materials, whether previously processed or unprocessed, intended to produce food or feed (where the weight of the finished product excluding packaging) – only vegetable materials with a finished production capacity greater than 300 tonnes per day or 600 tonnes per day where the installation operated for a period of no more than 90 consecutive days in any year;

- Section 5.4 A(1)(a)(i) – Disposal of non-hazardous waste with a capacity exceeding 50 tonnes per day (or 100 tonnes per day if the only waste treatment activity is anaerobic digestion) involving one or more of the following activities, and excluding activities covered by Council Directive 91/271/EEC concerning urban waste water treatment – biological treatment

An installation may also comprise “directly associated activities”, which at this Installation includes; Combustion Plant and storage & handling of raw materials.

European Directives

All applicable European directives have been considered in the determination of the application.

The site

The installation is in Heartsease in Powys in an area of fields. The installation is a soft drink production facility located and has been operational since 1996.

The process involves the abstraction and bottling of mineral and spring waters, and the blending of syrups and juices to create a range of still and sparkling soft drinks. The facility abstracts water locally from the ground and, after mixing with a range of syrups and juices, bottles this water into a variety of products. Water is pumped from seven boreholes and is filtered prior to use in products. The abstraction of water is not included in this environmental permit application as it is covered under a separate set of regulations.

Flavours are provided by syrups, which are mixed in the syrup room. A wide range of ingredients are mixed and diluted with water until there is a straightforward syrup to water ratio on the bottling lines themselves. Citric acid is used in the syrups to bring their acidity down to within regulation levels for soft drinks. There are seven bottling lines (RV 1 – 7), one of which uses glass bottles and the rest plastic. Many of the bottles used by Radnor Hills are blown on site. Delivered as preforms, the bottles are filled with compressed air within a mould to give them their shape, and rinsed. Bottles are then filled with still/sparkling water or flavoured drink, capped and labelled. Due to the abstraction capacity of the boreholes, the plant has an overall production capacity of 1,680 m^3 per day, however in total the production of the existing seven lines is <350 m^3 per day. The effluent treatment system is a biological process – using microorganisms to digest the contaminants in the effluent. The system is designed to treat an average of 193.5 m^3 per day, with a peak capacity of 290 m^3 per day, however this has been restricted to a maximum discharge volume of 194.4m^3 based on the applicant's impact modelling. The effluent is then piped approximately 1.2km from the installation and discharged via drainage swale to the River Teme.

There are several ecologically sensitive sites within the screening distance including; The River Teme SSSI. The location of the installation is material to our determination of the permit application to the extent that it has implications for the discharge of process effluent to the River Teme SSSI.

The operator has provided a plan which we consider satisfactory, showing the extent of the site of the facility. A plan is included in Schedule 7 of the permit and the operator is required to carry on the permitted activities within the site boundary.

Proposed site design

The applicant has identified the hazards associated with the installation, which could present a risk to the environment in the event of an accident. The risks have been evaluated in the installations environmental impact document. There are numerous procedures that mitigate these risks.

All chemicals will be stored in an appropriate manner incorporating the use of bunding. In addition, spill absorbent materials will be made available on-site at easily accessible locations where liquids are stored. Storage tanks will be bunded at 110% of the tank capacity. Improvement Condition 5 in the permit requires the operator to carry out a full review of the bunding arrangement on site and then make upgrades in-line with CIRIA 736. The applicant intends to operate the site in accordance with ISO14001, which will incorporate staff competence training and an accident management plan. There will also be a regime of routine inspection and maintenance for key plant items, such as containment bunds.

We are satisfied that the pollution risk associated with the installation is low based on the use of appropriate surfacing, inspection measures and the operating procedures which will be put in place as part of the ISO14001 environmental management systems. Improvement Condition 5 will also ensure that the correct bunding arrangements are put into place.

Operation of the Installation – General Issues

Administrative Issues

We are satisfied that the applicant is the person who will have control over the operation of the installation after granting of the permit; and that the applicant will be able to operate the Installation to comply with the conditions included in the permit. The decision was taken in accordance with EPR RGN 1 - Understanding the meaning of operator. We are satisfied that the applicant submitted OPRA profile is accurate; the OPRA score will be used as the basis for subsistence and other charging in accordance with our charging scheme. OPRA is Natural Resources Wales' method of ensuring application and subsistence fees are appropriate and proportionate for the level of regulation required.

Management

The operator has an Environmental Management System (EMS) that complies with ISO14001:2015 in place at the installation, but it has not been externally accredited. There is an Improvement Condition in the permit that ensures that the operator gets the EMS accredited. The EMS provides the framework by which the operator manages the environmental impact of the installation. The Effluent Treatment Plant (ETP) will be added into the EMS once operational. Risk assessment and full management procedures will be put in place for the new ETP.

Site Security

We are satisfied that appropriate infrastructure and procedures will be in place to ensure that the site remains secure.

Accident Management

The applicant has not submitted an Accident Management Plan, but has committed to developing one as part of their Environmental Management System.

However, having considered the other detailed information submitted as part of the application, we are satisfied that the appropriate measures will be in place to ensure that accidents that may cause pollution are prevented but that, if they should occur, their consequences are minimised. To ensure that the management system proposed by the applicant sufficiently manages the residual risks of accidents, permit condition 1.1.1a requires the implementation of a written management system which addresses the pollution risks associated with, amongst other things, accidents.

Off-site conditions

We do not consider that any off-site conditions are necessary.

Operating Techniques

We have specified that the installation must be operated in accordance with the techniques set out in Table S1.2 of the permit. The details referred to in that table describe the techniques that will be used for the operation of the Installation that have been assessed by Natural Resources Wales as BAT; they form part of the permit though permit condition 2.3.1 and Table S1.2 in the permit schedules.

Waste Management

The applicant has identified 11 sources of waste, over 90% of the waste produced on-site is re-used or recycled. The applicant stated that ETP sludge is recovered by chemical means. Bailed plastic, pallets, spent drums, waste preforms, off-specification products, glass, cardboard, mixed plastics and cardboard are all recycled. Only oil and general waste are sent to landfill for disposal.

Energy Efficiency

The plant under normal operating conditions is run in an efficient manner and meets the basic requirements of Environment Agency permit guidance 6.10. Heating/Cooling systems on the bottling lines are recirculated.

Water is used to cool the pasteurised product on the glass line, this in-turn warms the cooling water which is used for gradual pre-heating prior to pasteurisation. The boilers on-site have condensate return to preheat the boiler water.

The applicant has made a several improvements to improve energy efficiency on-site, these include changing from diesel to natural gas boilers, forklifts now run on LPG as opposed to diesel. The electricity supply has also been upgraded to drive further efficiency improvements. As the production capacity of the plant increases, several older process lines are being upgraded to new, more efficient process lines.

Storage and Containment

The main raw material on-site is fresh water, of which 182,277 tonnes per year are used and an additional 2000 tonnes of ingredients. The applicant provided a full list of all chemicals used on-site, this ranged from additives and flavourings for the product, to cleaning chemicals, fuels and water treatment chemicals. In addition to this, information was provided regarding the hazardous properties, primary storage vessels, primary storage capacity, usage and the maximum volumes stored on-site. The applicant carried out a review of the containment on-site, this was driven by the following legislation; Environmental Permitting Regulations (England and Wales) 2016, The Control of Pollution (Oil Storage) (Wales) Regulations 2015, The European Water Framework Directive (2000/60/EC) and The Control of Major Accident Hazards Regulations (COMAH), however, COMAH does not apply to this site. An audit was undertaken in December 2015 by the applicant to identify and categorise the various substances stored on site that may be flammable/combustible or hazardous to the environment. The methodology for the assessment of risk is taken from guidance produced by CIRIA: Containment systems for the prevention of pollution – Secondary, tertiary and other measures for industrial and commercial premises. Improvement Condition 5 in the environmental permit requires the applicant to review the bunding arrangement and make appropriate upgrades in-line with CIRIA 736. A three-tier risk based classification system has been used to establish secondary and tertiary containment requirements. The following definitions are used, consistent with European law:

- A hazard is the intrinsic property, or set of properties, that give a substance or situation the potential to cause harm to persons, property, animals, plants or other natural resources.
- Risk is the probability of some adverse effect resulting from any given hazard. Risk is the combination of consequence and likelihood. Consequence itself can be further divided into extent and severity of harm.

Using the Site Risk Assessment guidance contained within CIRIA (2014) guidance on containment systems, Radnor Hills has been classified as Moderate Risk due to the nature and quantity of inventory and nearby sensitive receptors. Chemicals and ingredients are to be stored in a bunded area, with a roof to minimise rainwater ingress to the bund. The bunded area will drain into a $30m^3$ tank, which can be introduced into the mixing tank within the effluent treatment system. This means that any spills will be contained within an enclosed system, and discharges to surface and ground will be minimised.

To further reduce the chance of substances polluting surface water, a sluice gate is to be introduced at the culvert where the drain meets the stream, in the event of a spillage or fire, the sluice gate would be manually closed and any water would be diverted to the ETP, this will be included within the sites EMS.

In the event of a fire, water from the ETP's balancing tank can be used for firefighting and run-off returned to the ETP for treatment, this has been confirmed as suitable by Powys Fire and Rescue Service.

Site condition report

The operator has provided a description of the condition of the site. We consider this description is satisfactory. The decision was taken in accordance with our guidance on site condition reports – guidance and templates (H5). Article 22(2) of the IED requires the applicant to provide a baseline report containing at least the information set out in paragraphs (a) and (b) of the Article before starting operation.

The baseline report is an important reference document in the assessment of contamination that might arise during the operational lifetime of the installation and at cessation of activities at the installation. The report concluded that there is no historic contamination at the site. Intrusive sampling was undertaken at the site and soil samples were assessed for general contamination and compared with the Generic Assessment Criteria (GACs) screening values for published Soil Guideline Values (SGVs), Category 4 Screening Levels (C4SLs), LQM/CIEH S4ULs and ATRISK SSVs; no exceedances of the GACs was recorded. It can therefore be considered that the soils are unlikely to present a possibility of significant harm to human health.

Poly-cyclic Aromatic Hydrocarbons were tested for and when the samples were compared against the published LQM/CIEH S4UL screening values, no exceedances were present. It can therefore be considered that the soils are unlikely to present a possibility of significant harm to human health. Petroleum Hydrocarbons and associated compounds were tested for and when the samples were compared against the published SGV's, LQM/CIEH and CL:AIRE screening values, no exceedances were present. It can therefore be considered that the soils are unlikely to present a possibility of significant harm to human health. Analysis completed for a suite of 56 Volatile Organic Compounds (VOCs) did not record any exceedance of the laboratory limit of detection within the 4 analysed samples. Similarly, there was no exceedance of the laboratory's limit of detection within the 4 samples subjected to the 55 semi-Volatile Organic compound (SVOC) analysis.

Environmental Risk Assessment

Minimising the Installations environmental impact

Regulated activities can present different types of risk to the environment, these include odour, noise and vibration, accidents, fugitive emissions to air and water; as well as point source releases to air, discharges to ground or groundwater, global warming potential and generation of waste. Consideration may also have to be given to the effect of emissions being subsequently deposited on to land (where there are ecological receptors). These factors are discussed in this document.

For an installation, such as this, the principal emissions are those to water, although we also consider those to air and land. Noise and odour are also considered.

Air Quality Assessment

The site has 4 small natural gas boilers and 1 small oil gas heater. These are all less than 5MW and are therefore not considered to pose a significant risk to the environment. The applicant has carried out an H1 Risk Assessment for the 5 sources and assessed NOx, SOx, Particulates and Carbon Monoxide.

Environment Agency Guidance Document H1 Annex F suggests that; *As stand-alone units, they are not considered to be major sources of pollution but are subject to the requirements of the Clean Air Act. Whilst it is important that the environmental impact of these sources is estimated, it is considered that the risk from these sources will not often warrant detailed dispersion modelling to be undertaken as part of this assessment.'* Despite this a Schedule 5 notice was sent to the applicant on the 9th January requesting the applicant to carry out actual monitoring data and to complete a H1 assessment. The applicant responded on the 3rd February and provided a risk assessment of the boilers, it was shown that when using Scenario 1 – actual running time and monitoring data from the stacks, that all parameters other than NO_x had PC's below 1% and 10% and screened out as insignificant. However, NO_x had PC's that were below the Environmental Assessment Levels (EAL), due to these results and the size of the boilers it wasn't considered significant and no further assessment was required.

Emission limits

Due to the sizes of the boilers no emission limits have been set. The boilers will be listed in the environmental permit as authorised release points and samples will be taken during the annual boiler services and reported to Natural Resources Wales.

Emissions to Surface Water

The operator initially proposed to discharge treated effluent to both groundwater and to the River Teme SSSI. The effluent would be treated in a biological effluent treatment plant prior to discharge to the environment. The system has a 300m^3 balancing tank to hold the effluent prior to treatment and a second balancing tank was later added to the system, this was to add further holding capacity for the effluent, the aim of these tanks is to homogenise the effluent prior to further treatment. Following the balancing the effluent passes into a bioreactor where air blowers force air into the systems to oxygenate the effluent; nutrients and caustic are added to raise the pH if necessary, the aim is to allow micro-organisms to grow in the water and treat the effluent.

The effluent then passes through a membrane separation bank which filters the effluent producing a clean permeate, any micro-organisms are sent back to the reactor. This treated permeate is then discharged to the environment. Under normal conditions approximately 43% of the permeate will be re-used by the plant and the remaining 57% will be discharged. For the basis of providing a worst-case scenario for the assessment, the applicant assumed that 100% of the effluent would be discharged to the environment. The effluent could not be discharged only to the river as during the summer the River Teme often dries up, and a purely groundwater discharge would not be suitable as in wet conditions the water table is too high to allow soakaway. Under normal conditions, the applicant proposed to split the discharge 50/50 between the two locations. Monitoring of the river and groundwater level was proposed to determine when the discharge should be moved up to 100% to the river, or 100% to groundwater. This would be done manually by the applicant, and the EMS would contain a procedure to control this. To assess the impact of the discharge the applicant assumed that 100% of the discharge was going to river and 100% to groundwater.

The applicant based their assessment on a worst-case scenario of 290m^3 per day, however in reality this value would be significantly less as the applicant stated that a large proportion of the water will be re-used within the plant. An H1 assessment was carried out for the discharge based on Ammonia at a maximum rate of 5 mg/l (1.45 kg/year).

Water impact in terms of ammonia, was below 4% of the Environmental Quality Standard (EQS), therefore further modelling of this substances was not required. However, more detailed modelling of the impact on surface water was conducted by the applicant that included Ammonia and other substances not specified in the H1 tool.

In respect to the discharge to ground, the assessment of impact was lacking in detail and several points needed clarification. A Schedule 5 notice was issued on the 31st January requesting further information. One of the concerns raised regarded the design, sizing and location of the drainage field/wetland. The applicant responded on the 31st March 2017 whereby they withdrew the proposals for a discharge to groundwater and proposed a 100% discharge to the River Teme in an alternative location. A discharge location was chosen by the applicant where there is a continuous flow; around Lingen Bridge. This continuous flow was confirmed by the Environment Agency, experience by Radnor Hills and the fact that the location is down gradient of where springs rise to the North. The consultants acting on behalf of the applicant provided river flow data with the application. There is no nearby continuous flow data for the Teme (the nearest gauge is at Tenbury), so the consultants derived the flow statistics using available spot flows for the Teme near Heartsease, correlated to gauged flows on other nearby rivers or river stage measurements at Knighton. The derivation of the data was detailed in the application.

- 95-percentile (stage at Knighton = 0.535 m): 0.09 m^3/s (7,776 m^3/day)
- 50-percentile (stage at Knighton = 0.660 m): 1.32 m^3/s (114,048 m^3/day)
- Mean flow (stage at Knighton = ~0.739 m): 2.29 m^3/s (197,856 m^3/day)

Based on the above statements, the NRW Hydrology team were consulted to check the river flow data that was supplied with the application. The Environment Agency Hydrology team were also consulted due to much of the River being managed by them. Both Natural Resources Wales and the Environment Agency hydrology teams confirmed they were satisfied with the flow data provided with the application.

The maximum concentrations of the treated discharge as quoted by the provider of the treatment technology was used as the discharge quality parameters. The parameters that were assessed based on the process was Biological Oxygen Demand (BOD), Ammonia, Phosphate and Total Suspended Solids. To demonstrate a worst-case scenario, the maximum concentrations were used in the calculations.

We also asked the applicant about relevant hazardous substances from the installation in the Schedule 5 notice as there is historical evidence that various substances may be present. The first substance being toluene; this was identified in relation to groundwater, however it is not a relevant hazardous or priority hazardous substance for surface water, toluene is volatile and will not persist in surface waters. Even though this was the case the applicant has committed to minimise at all costs. The applicant carried out further investigation and found that it is only currently present in the effluent after treatment in the reed bed system. Toluene is being created in the anaerobic conditions of the reed beds and not produced in the process. The effluent will now be piped from the process straight to the effluent treatment plant and then to the discharge location, as such there will be no anaerobic conditions meaning toluene will not be formed and the risk is low.

There was also a concern regarding Nonylphenol, as this substance can be seen at levels above the Environmental Quality Standard (EQS), however previously there was limited effluent treatment on site – the applicant confirmed that the previous treatment process consisted of a balancing tank with limited aeration, this means that there are anaerobic conditions present with very low oxygen content. This explains the presence of nonylphenol within the tank. The applicant has now installed a new effluent treatment plant that will treat process effluent prior to discharge. The plant designers cannot confirm if all nonylphenol will be removed due to lack of experimental evidence however they can show that other hazardous substances are reduced significantly by the plant.

The applicant has conducted their own investigation into nonylphenol and has stated that research shows that nonylphenol can be formed during anaerobic sludge formation and is not generally present during aerobic processes.

As the substance is also volatile it would be removed by aeration, there is a large amount of aeration in the proposed effluent treatment plant process, it is not expected to be present in the final effluent. In addition, nonylphenol is highly hydrophobic and tends to enter soils/sludge during wastewater treatment, therefore the substance would be expected to be present in the sludge from the balancing tanks within the effluent treatment plant and not in the final effluent discharged to the river. As the applicant, has not been able to fully rule out the possibility of it being present in the effluent, an improvement condition has been included in the permit to ensure that the applicant takes regular samples once the effluent treatment plant is running to ensure the limit of detection for nonylphenol is not breached. The applicant has also committed to carrying out additional investigations to identify the root cause of this substance. The information provided was sufficient to satisfy the Schedule 5. As the application now proposed a total discharge to the River Teme SSSI, Natural England and the Environment Agency were consulted on the river discharge.

Natural England responded to the consultation on the 12th April 2017 and raised several concerns. Primarily with the location of discharge in that even though the stretch of the river that the applicant proposed to discharge to does flow continuously during even the driest periods, it is often the preferred location to which rescued fish are translocated. The specific concern was that when the flow is low, dilution of the discharge will be greatly reduced and fish would be congregating below the discharge point, either naturally through reduced habitat availability, or artificially through translocation. This was of concern given the presence of ammonia in the effluent, which can be highly toxic to fish.

Secondly there were concerns regarding the effect on water quality in relation to assessment targets. The applicant used assessment standards that relate to Water Framework Directive (WFD) targets whereas the Common Standards Monitoring Guidance (CSMG) targets that can apply to the SSSI are more stringent. For example, the maximum phosphorous concentration consistent with SSSI favourable condition as stated in the CSMG is 0.025 mg/l. However, Section 4 of the CSMG - Attributes and targets states that;

Where generic targets are provided in the following section they should be applied at site-level unless;

- There is specific allowance made for deviating from generic values in the case of an individual attribute;
- Compliance with a generic target in an individual assessment unit (or part thereof) can be demonstrated to be technically infeasible, even in the long term, such that it is not a suitable management objective.

In this case, we believe that it is technically infeasible to adhere to the targets stated in the CSMG as the current background of the river (without the applicant's discharge) exceeds the phosphorus target by 4 times. There is no evidence to suggest that there is a link between the current exceedances and the activities of the Applicant. However, it is considered likely that diffuse pollution outside of NRW's regulatory control may be a significant factor. Based on this we have applied the Water Framework Targets, and had regard to the Weser Ruling and the 'no deterioration' rule.

The closest monitoring point downstream of the proposed outfall is at Buckton Bridge where the 2016 phosphate mean was 0.1mg/l, considerably higher than either of the figures quoted in the application (a 2009 average is quoted as being 0.02mg/l phosphate as P and 0.613mg/l mg/l phosphorous as PO_4). As part of Natural England's assessment of SSSI condition they also look at growing season mean (Mar – Sept) orthophosphate/Soluble Reactive Phosphate (SRP) against the target. There are also more stringent CSMG targets for BOD and Ammonia. Natural England felt that these targets should form part of the assessment. The water temperature of the effluent was also of concern and in Natural England's view could have the potential to affect the natural functioning of the site and the behaviour of fish.

Questions were raised regarding the near-natural hydrology and geomorphology of the River Teme, modifications to flow, the construction of an outfall and installation of an 'anti-erosion reno mattress' as these could have the potential to impact on the physical integrity of the SSSI. This has been dealt with by the applicant by way of creating a wetland/drainage swale rather than an outfall. This will be permitted as a flood defence activity by the Environment Agency as the outfall lies in England.

Based on the response from Natural England, the Environment Agency's permitting and local area team were consulted regarding the concerns that Natural England raised.

The permitting team responded on the 26th April 2017 and commented that they would expect Natural England to refer to the CSMG to assess the effluent discharge impact on the river. They explained that the targets in the CSMG were more stringent than the WFD targets and are to be used for more sensitive habitats. In relation to the temperature issues they would expect the temperature of the effluent to be modelled to assess the impact on the SSSI.

The Environment Agency's area team responded on the 19th May 2017; they raised concerns with the domestic effluent – however this is subject to a separate permit application and is therefore not covered by the installation permit.

The Environment Agency's main area of concern supported Natural England's comments in that the more stringent CSMG targets had not been used to assess the impact of the discharge and upstream/downstream data used by the applicant was out-of-date. There were also concerns raised about the low flow situations when there is less water in the rivers, this usually occurs during the summer months. The concerns regarding temperature as raised by Natural England were highlighted and further work by the applicant on these issues was recommended.

For this case both Natural England and the Environment Agency advised that the targets set out in the CSMG should be applied. However, whilst it is acknowledged that Natural Resources Wales has signed up to the discretionary CSMG targets we consider that to seek to apply all of the targets in this case would be infeasible.

The proposed effluent discharge can achieve these CSMG targets for both Ammonia and Biological Oxygen Demand as the river background is low for both substances. However, as previously stated, the river background already exceeds the phosphate target by 4 times, based on this and as stated by the guidance we believe that it is technically infeasible to apply these phosphate targets in this case.

Under these conditions the Water Framework Directive targets are more appropriate and have been used to assess the impact of phosphates from the discharge.

Based on the concerns raised by Natural England and the Environment Agency a further Schedule 5 notice was issued to the applicant on the 20th June 2017 that addressed the concerns raised. As part of the Schedule 5 we requested that the applicant remodel the effluent discharge. As part of the re-modelling exercise the applicant was required to look at Soluble Reactive Phosphorus; as this is comparable with the measured standards, Ammonia, Total Suspended Solids (TSS) and Biological Oxygen Demand (BOD). As well as re-modelling the impact based on the flows used in the original model (annual mean), we requested that the applicant also look at the low flow scenario (summer flows March – September) and assess the impact against these flows.

Secondly we asked the applicant to look at the effect of temperature, to monitor temperature throughout the process and then model the impact as the effluent discharges to the environment. Finally, as the effluent treatment plant is a biological process, we requested confirmation that any nutrients or chemicals added to the process would not be present in the final discharge.

A site meeting was scheduled for the 4th July between the applicant, applicant's consultant, Natural Resources Wales, Natural England and the Environment Agency (Geomorphology). The issues highlighted above were discussed in detail and further information given to the applicant relating to the latest Schedule 5 notice. Issues surrounding the outfall were discussed and how the original design of a headwall and piped outfall could have potential issues on the fish population within the river, also as the banks of the river are eroding a concrete headwall and pipe could be problematic. The applicant needs to apply for a permit from the Environment Agency to construct any outfall structure, the applicant proposed a constructed wetland/drainage swale arrangement to discharge the effluent (pending approval by the Environment Agency). In this instance the effluent would flow through a wetland prior to entering the river, this would potentially address any residual temperature and water quality effects before it reached the river. As there wouldn't be a pumped discharge into the river the impact on the fish population would also be reduced.

Following the meeting the applicant requested advice regarding the design and build of the wetland and whether and un-lined swale/wetland would be acceptable, this was discussed between Natural Resources Wales and the Environment Agency's hydrogeologists and the use of an un-lined swale/wetland was found to be unacceptable as it would constitute a direct discharge to ground, which was discounted in the original application as a drainage field constructed to British Standards would be required. This information was communicated to the applicant.

The applicant responded to the Schedule 5 notice on the 2nd August 2017. The applicant confirmed that the headwall and outfall construction originally proposed would not be pursued and instead a lined swale system would be used with full details to follow.

A second discharge location was proposed in the response and the applicant stated that this second location was the preferred option of Natural England and the Environment Agency. At this location, there is a continuous flow but has a lower flow than the original location. Based on a very limited spot flow dataset for 200m upstream of Lingen Bridge, and in the absence of more specific flow data, the applicant assumed that both annual mean and summer flows were 70% of those at the original location. However, it should be noted that this is a conservative approach as the mean flows are likely to be very close to those at the original location. The concerns surrounding how translocated fish could be affected by the effluent discharge were reduced based on the new discharge location. At both locations, the modelling results were similar, only BOD and Total Ammonia were slightly higher in the second location, but still within the assessment limits as noted by the CSMG.

As requested, the applicant modelled the discharge to the river at both locations. The flow rates for the low flow scenario (March – September at Lingen Bridge) were modelled. The flows were derived by applying correlation factors (between the spot flows on the Teme at Lingen Bridge, flows at other gauged catchments and the river stage at Knighton). As there were concerns from the Environment Agency regarding the accuracy of the upstream/downstream data, the applicant requested further background data from them.

This data was received by the applicant on the 25th July 2017. The data provided the most up-to-date background levels for Unionised Ammonia (as NH_3) and SRP (orthophosphate as PO_4). The data for BOD and Total Ammonia was not available so the original data provided with the application was used.

The applicants amended modelling showed that at both discharge locations the BOD and Ammonia would not result in the river exceeding the quality target as stated by the CSMG. There are no quality targets for TSS, the modelling shows that this will be reduced slightly by the proposed effluent discharge, as TSS is lower in the discharge than in the river. For SRP the background river quality exceeded the CSMG target, but as previously discussed this CSMG target is technically infeasible as the background levels exceed this target. The modelling showed that the proposed discharge would not cause any deterioration taking account of the Weser ruling and Water Framework Directive. Based on the modelling carried out by NRW the background quality of the river is 101.5µg/l, when the effluent is included using a worst-case scenario (summer flows, 70% of the actual flow at the new discharge location) the level of phosphate is 102.25µg/l, this represents a small rise. The river Teme currently sits within the moderate status level under Water Framework Directive.

	Annual mean of reactive phosphate (µg/l)			
	High	Good	Moderate	Poor
Upland, high alkalinity	24	48	132	898

Summary of revised standards for phosphorus in river

The target for deterioration into a lower class is 132µg/l. It can be clearly seen that the modelled effluent discharge does not cause the river to drop into the lower class. This can be considered as no deterioration under Water Framework Directive.

The Weser ruling further explains that; 'the *ECJ sees a deterioration of the status as soon as the status classification of at least one of the quality elements falls by one class, even if that fall does not result in a drop of the overall classification of the body of the surface water.'* In this case the above ruling is met as the phosphate level does not fall into a lower class and neither does the water body.

An improvement condition is included in the permit that requires the operator to carry out monthly monitoring of SRP at 3 locations throughout the process;

The operator shall monitor Soluble Reactive Phosphorus at 3 locations throughout the process to determine the impact on the River Teme;

1. At the outfall of the MBR or other treatment, as it leaves the main site for discharge
2. As the effluent leaves the drainage swale
3. In the river after the mixing zone (at Lingen Bridge, for example)
4. In the river, upstream of the discharge, for a background sample

Fortnightly samples shall be taken initially to determine the impact on the river and then monthly samples to be taken once a pattern has been established and approval has been given by Natural Resources Wales. Results will be submitted to Natural Resources Wales monthly to ensure there is no deterioration of the background Soluble Reactive Phosphorus level in the river.

The outcome of this monitoring study will decide whether additional chemical treatment of the effluent is required prior to discharge to the environment. At the end of the 12-month period, the operator shall submit a report with conclusions and timescales for any further work.

The applicant also assessed the temperature effects of the discharge on the river in greater detail. Data provided by the Environment Agency showed that water temperatures for the River Teme SSSI fluctuate annually between 3.9^{o}C and 18.9^{o}C.

The applicant has stated that the effluent treatment system will increase the effluent temperature by up to 3^{o}C, the final effluent temperature is therefore dependant on the input temperature. Based on the current treatment system the applicant has suggested that the effluent would be at a maximum of 25^{o}C as it leaves the plant (most likely 22-23^{o}C). The effluent would travel approximately 1.2km via pipeline to the river and would lose around 1-2^{o}C during this time. The applicant has also proposed to discharge the effluent to a drainage swale/wetland prior to input to the river.

This wetland environment would also serve to reduce the temperature prior to the effluent entering the river. There are too many unknown variables in the process to accurately model the temperature of the effluent, so the applicant has proposed to spend up to a year actively monitoring the temperatures of the effluent at different parts of the treatment process and the final discharge point. If it is found that the river temperature is increased beyond 1^{o}C, then mitigation measures such as the installation of a passive heat exchanger will be installed, this will be dealt with by way of improvement condition in the environmental permit and will ensure that the applicant actively monitors and reports on the effluent temperature and potential impact to the discharge location.

Finally, in regards to the questions asked about the nutrients and chemicals used in the treatment, the applicant and technology provider listed the nutrients and chemicals used in the treatment and confirmed that the any added nutrients and chemicals will be removed by the MBR and will not be present in the discharge to the environment.

The response to the Schedule 5 was assessed and our conclusions were sent to Natural England and the Environment Agency for consultation on the 8th August 2017. Natural England responded on the 5th and 15th September 2017 with a list of questions to better inform their response to the Appendix 4.

Natural England asked; *"How does NRW define "deterioration" in the quality of the water body"* We initially responded by stating that we are defining deterioration based on the impact of the discharge against the current rivers background SRP level. However, after further investigation into the CSMG targets and the fact that they are technically infeasible to comply with, deterioration is based on Water Framework Directive and the Weser Ruling. It was further noted that as the waterbody fails the CSMG target for SRP by 4 times, it is setting an unachievable target for the operator which would cause them to be in breach of their permit. Based on the above information and taking account of the Weser ruling, the Water Framework Directive is complied with. This is the case because the effluent does not cause the river to fall into a lower class.

Natural England enquired as *to "How NRW plans to uphold their duty to further the conservation of the SSSI".* This part of the River Teme is manged by the Environment Agency and Natural England, as the installation is in Wales the memorandum of understanding states that Natural Resources Wales should lead on the permitting and on-going compliance of the site. We have upheld our duty under Section 28G of the Wildlife and Countryside Act 1981 as we have taken reasonable steps which are, consistent with the proper exercise of our functions. When setting conditions and limits in an environmental permit, they are environmentally protective limits and are in-line with current guidance.

In the applicant's response to the Schedule 5, new data was provided to inform the submitted impact assessment. Based on this data, Natural England requested that we; *"Explain the source and dates for current river quality data in the "New Proposed Discharge Location" as it does not appear to correspond with the data provided by Vicki Howden (sourced from the* Environment Agency*). This will need to have statistical rigour and ideally will be the same data set as that which the Environment Agency are working on and show results to at least 2 decimal places".* The data submitted by the applicant as part of the revised modelling was provided by the Environment Agency on the 25th July 2017. There is no updated data for BOD, Total Ammonia or Total Suspended Solids and therefore the data has been taken from an older data set, What's in Your Backyard (WIYBY) and the Environment Agency diffuse pollution plan. The data for Unionised Ammonia and Soluble Reactive Phosphorus was provided in July 2017.

For SRP this was an average of readings taken in the last 2 years, excluding a single high outlier in January 2017.The data used has been taken to 2 decimal places. However, it should be noted that Natural England did not provide their data. The Schedule 5 response and subsequent improvement condition in the permit required the applicant to carry out additional monitoring for SRP. Based on this Natural England requested the monitoring points. However, a specific location has not been finalised yet as the pipeline hasn't been built and the swale design hasn't been finalised, the exact location of the compliance point won't affect the results of any sampling regime so in our view this information isn't necessary to be provided up-front during consultation.

The important thing is that the compliance sampling point will be upstream of the swale and will therefore be representative of the effluent that is leaving the plant.

The background river quality for SRP was provided by the Environment Agency to 2 decimal places, the applicant also provided the impact of the discharge to 2 decimal places. Natural England requested that the *"Accuracy of information provided in "resultant river quality" to at least the number of decimal places that will show the % change to be calculated for soluble reactive phosphate".* As the applicant, has quoted the impact of the discharge to 2 decimal places and the background quality data of the river as provided by the Environment Agency is to 2 decimal places this allows direct comparison for deterioration between the 2 figures. The impact of the discharge is also being compared with the Water Framework Directive and current background in the river and not the CSMG target as the background river quality currently exceeds this target. Comparing the impact of the discharge against a target that is currently exceeded by 4 times will not give a meaningful answer and it is not reasonable to request. Further, this does not enable us to set an enforceable or reasonable permit condition. However, we did request the raw data from the applicant to scrutinise and see how the additional decimal places affected the overall modelled impact on the river. This data was used by NRW to assess the applicant's modelling and run our own check modelling to 3 decimal places.

In addition to the resultant river quality data Natural England requested that we; *"Supply additional detail for the resultant river quality summer flows (i.e. source of data and dates -again enough data to provide statistical rigour will be required)".* Based on the latest Schedule 5 response that was provided to Natural England we believe this question has been answered. The flow rates for the months March – September were calculated at Lingen Bridge by Rukhyrdo, the full approach is in Section 4 of the Rukhyrdo report 'Evaluation of Risks to the Water Environment – Addendum A, (this document was previously provided to Natural England). The approach was modified for the summer flows by applying a correlation factor between the spot flows at Lingen Bridge and other flows at other gauged catchments and the river stage at Knighton to flow (and stage) percentiles for the months March – September from the comparison gauges.

The second location as suggested by Natural England and the Environment Agency due to limited data, it was assumed that the flow was 70% of than the original location. However, this is a conservative approach as the flows are thought to be similar.

As the temperature effect of the effluent is difficult to model an improvement condition has been added to the permit that requires on-going monitoring. Natural England stated; "*Provide a clear guidance of the maximum increase in water temperature that NRW would see as acceptable (a % difference between just upstream water temperature and temperature at discharge point would be more useful than a degree centigrade change in temp) You suggest monthly water sampling. I would like to see sampling more frequently over the months May- September"*. However, we agree with the applicant's proposal that a 1^{o}C rise in temperature would trigger the steps described in the Appendix 4 that was provided to Natural England and the Environmental Agency as part of the consultation process, whereby mitigation in the form of a passive heat exchanger wold be employed. The background temperature data as provided by the Environment Agency is shown to fluctuate in the river across the year and by having a % change triggering the steps mentioned above would be quite restrictive. In this case, NRW's view is that it would be more effective to measure the impact based on a 1^{o}C change. The improvement condition sets the monitoring at monthly temperature monitoring, however if issues are seen then the monitoring frequency would be increased, this would be on a case by case basis. The option of using data loggers to monitor the temperature are being explored by the applicant.

Natural England further requested full details of all other sampling to be completed under the improvement conditions including method and frequency of sampling. As previously stated temperature monitoring will be carried out monthly by the operator for up to a year at 3 locations;

1. At the outfall of the MBR or other treatment, as it leaves the main site for discharge
2. As the effluent leaves the drainage swale
3. In the river after the mixing zone (at Lingen Bridge, for example)
4. In the river, upstream of the discharge, for a background sample

If the temperature is found to increase above an acceptable level then abatement techniques can be employed. In addition to this there are monthly compliance samples that also monitor temperature. The other improvement condition requires the monitoring of SRP at 3 locations; as the effluent leaves the MBR, at the arrival of the head of the swale and at the final discharge location, for the first month samples will be taken fortnightly to establish a pattern and then monthly afterwards. If there is a problem, then as stated in the Appendix 4 that was provided to Natural England and the Environmental Agency as part of the consultation process Phosphate removal options will be explored.

Natural England asked *"Whether the effluent treatment plant could produce a lower "design average effluent quality" for soluble reactive phosphate and provide additional information on any other measures that will be included to strip out Phosphate*". Based on the information provided by the applicant, the figure quoted for the design average of the plant is the lowest figure that can be achieved. The plant is brand new and is classed as Best Available Technique (BAT) for this type of installation and discharge. At present, there are no detailed plans of other methods to strip out Phosphorus, as this is not considered necessary at this point, from a cost-benefit analysis this would be unreasonable and unenforceable. The improvement condition is set in the permit to carry out monitoring to see whether there will be an impact from the discharge and if any additional plant is required.

Finally, Natural England requested additional information on the Conditions under which Natural Resources Wales would request additional monitoring and conditions where we would decide to revise or revoke the consent. For environmental permits, we request additional monitoring to gather more information, as we are doing in the improvement conditions set in the permit. When it comes to revising/revoking a permit, the permits are regularly reviewed in line with compliance and monitoring guidance, technical guidance notes, sector guidance notes and BAT documents, these documents set the standards that installations need to adhere to and the permits are reviewed in line with these standards. NRW's power to revoke a permit is contained in Regulation 22 of the Environmental Permitting Regulations 2016. It is quite wide and allows scope for discretion by the regulator, which in NRW's case would be exercised in accordance with our Enforcement and Prosecutions policy.

It would be inappropriate for a regulator to fetter its discretion in this respect or to pre-judge a situation where revocation is concerned and for that reason, use of such a draconian measure as revocation is exercised on a case-by-case basis.

Further to our responses to Natural England's questions raised on the 5th September, they submitted further questions on the 15th September;

Natural England further requested that the raw data used to define the current background phosphate level for this stretch of the river is provided, they stated that it is needed to rerun the RQP analysis (so that they have the change in concentration to more than 2 decimal places. Natural England stated that; "*As you know the water is currently exceeding the target which is exactly why we need to understand the scale of the increase relative to the target as we need to minimise any further increase so we can achieve the target in the long term".* We believe that this question has been answered previously and as such did not respond directly to this question this time around. As stated above it is not technically feasible to compare the impact of the effluent discharge to a target that cannot currently be achieved. The level of deterioration as previously mentioned is measured against the Water Framework Directive taking account of the Weser Ruling.

Natural England also requested the detailed monitoring plan highlighting the maximum concentration for all the parameters used to measure River Teme SSSI condition and for water temperature. Again, this information has previously been provided to Natural England and as such we believe this question has been satisfactorily answered. The detailed monitoring plans are part of the permit determination process and are not required up-front as part of a consultation process.

Based on our responses to the first set of questions, Natural England requested the conditions that will be included in the permit detailing the thresholds for enforcement. This is not required up-front during a consultation process and is carried out during the determination of the permit and on-going compliance of an installation. We explained our position in the last round of questions regarding further conservation of the SSSI. However, Natural England asked; *"How NRW's decision will further the conservation of the SSSI (and not just maintain it in the current condition)".*

Again, this question was answered during the last round of questions to a satisfactory degree and as such we did not respond directly this time around. As mentioned above, based on the information provided in the Schedule 5 and responses from Natural England and conservation colleagues, we requested the applicant's raw data that was used to assess the impact in the modelling and the background river quality data that was provided by the Environment Agency. The applicant provided the data on the 29th September. We modelled the impact using the Monte Carlo modelling tool to 3 decimal places to ensure accuracy in the results. Data either side of the model was multiplied to account for the 3rd decimal place in the software. The modelling was carried out using the raw data supplied by the applicant and based on a worst-case flow in the river, whereby the applicant assumed that the new discharge location suggested by Natural England and the Environment Agency had 70% of the flow compared to the original proposed/modelled location, this is conservative as realistically the flows are the same. We also used the summer flow rates (Mar-Sept) as suggested by Natural England as these are a lot lower than the annual mean flow and provide a worst-case scenario for river flow. Based on the realistic annual average effluent flow rate of 2.25l/s (194.4m^3/day) with the plant's design average concentration of 0.2mg/l of Phosphorus, the deterioration is 2.6% against the current river background. As stated previously, the effluent discharge results in a slight increase from 101.5µg/l to 102.25µg/l.

The river is in the moderate classification under the Water Framework Directive, the threshold in this category is 132µg/l, as the effluent doesn't cause the river to pass this level, there is no deterioration, this is in line with both the Water Framework Directive and Weser ruling.

The maximum effluent flow rate proposed of 290m^3/day that was originally modelled was above the 3% and consequently the applicant has agreed to limit the effluent flow rate to 194.4m^3/day. This will be controlled with a flow limit in the permit.

The Environment Agency did not respond to the consultation that was carried out in August and therefore it was assumed that the they had no further comments to add.

Based on the information provided in the application and subsequent Schedule 5 requests for information responses we are satisfied with the proposal. The new discharge location as suggested by Natural England and the Environment Agency is shown in Schedule 7 of the sites environmental permit. We have limited the installations effluent volume to the river to 194.4m^3 per day, included improvement conditions in the permit that ensure the modelling assessments are confirmed, the applicant has committed to include mitigation measures if the monitoring shows deterioration, based on this the probability of an adverse impact to the River Teme SSSI is low.

Emissions to Sewer

There will be no emissions to sewer associated with the installation.

Emissions to Land

There will be no emissions to land associated with the installation.

Odour

We consider that the applicant's proposals represent the appropriate measures to prevent/minimise odour from the permitted activities. Odour is of low risk with a proposal such as this.

Noise

Stationary noise sources such as production lines and compressor/pumps are sealed within sound proofed buildings and therefore do not create noise emissions on the site. The site is in a rural setting with the closest receptor 200m away.

Fugitive emissions

The IED specifies that plants must be able to demonstrate that the plant is designed in such a way as to prevent the unauthorised and accidental release of polluting substances into air, soil, surface water and groundwater.

The operator will carry out an assessment of the adequacy and condition of the current bund arrangement on-site. The outcome of this assessment and proposals for further improvements will be in-line with CIRIA 736 and submitted to Natural Resources Wales for approval prior to the commencement of any work. The report will include conclusions and timescales for improvements. This has been captured through Improvement Condition 5 in the permit.

BAT Assessment

In this section, we explain how we have determined whether the applicants' proposals are the Best Available Techniques (BAT) for this installation. To demonstrate that the site is operating to BAT across the range of activities carried out at the site, a review of the BAT as determined by the relevant BRef documents and UK Technical Guidance Notes (TGN) has been carried out.
The applicant reviewed the How to comply with your environmental permit, additional guidance for the Food and Drink Sector (EPR 6.10) and the Integrated Pollution Prevention and Control Reference Document on Best Available Techniques in the Food, Drink and Milk Industries, August 2006, the supporting document '*Appendix G – Radnor Hills Bat Assessment'* shows that BAT is being met.

The document reviews General BAT for the site, Accident Management, Energy Efficiency, Efficient use of raw materials and water, Avoidance, recovery and disposal of wastes, process control, raw material preparation, heat processing using steam/water, cooling/chilling/freezing/freeze drying, cleaning & sanitation, emissions and monitoring, the information in the above-mentioned document shows that the installation is operating to BAT.

We agree with the conclusions reached by the operator and that the proposals to operate the installation are BAT and meet the requirements stated by the 2 guidance documents mentioned above.

Monitoring

We have decided that monitoring should be carried out for the parameters listed in Schedule 3 of the permit using the methods and to the frequencies specified in those tables. These monitoring requirements have been imposed to demonstrate compliance with emission limit values and to enable correction of measured concentration of substances to the appropriate reference conditions. For emissions to air, there are no emission limits as the boilers are small, however the emissions will be monitored as part of the annual boiler service and the results will be submitted to Natural Resources Wales annually.

Emissions to surface water will also be reported to Natural Resources Wales monthly. Based on the information in the application and the requirement set in the conditions of the permit we are satisfied that the applicants techniques, personnel and equipment will have either MCERTS certification or MCERTS accreditation as appropriate.

Reporting

We have specified the reporting requirements in Schedule 4 of the permit to ensure data is reported to enable timely review by Natural Resources Wales to ensure compliance with permit conditions and Emission Limit Values.

ANNEX 1: Improvement Conditions

Table S1.3 Improvement programme requirements		
Ref.	**Requirement**	**Date**
IC1	The operator shall monitor Soluble Reactive Phosphorus at 4 locations to determine the impact on the River Teme; 5. At the outfall of the MBR or other treatment, as it leaves the main site for discharge 6. As the effluent leaves the drainage swale 7. In the river after the mixing zone (at Lingen Bridge, for example) 8. In the river, upstream of the discharge, for a background sample Fortnightly samples shall be taken initially to determine the impact on the river and then monthly samples to be taken once a pattern has been established and approval has been given by Natural Resources Wales. Results will be submitted to Natural Resources Wales monthly to ensure there is no deterioration of the background Soluble Reactive Phosphorus level in the river. The outcome of this monitoring study will decide whether additional chemical treatment of the effluent is required prior to discharge to the environment At the end of the 12-month period, the operator shall submit a report with conclusions and timescales for any further work.	For 12 months from permit issue.
IC2	The operator shall carry out monthly temperature monitoring of the effluent that is discharged to the environment at 4 locations; 5. At the outfall of the MBR or other treatment, as it leaves the main site for discharge 6. As the effluent leaves the drainage swale 7. In the river after the mixing zone (at Lingen Bridge, for example) 8. In the river, upstream of the discharge, for a background sample Results must be submitted to Natural Resources Wales monthly. The outcome of this monitoring study will determine whether a passive heat exchanger will need to be installed to reduce the temperature of the effluent. At the end of the 12-month period, the operator shall submit a report with conclusions and timescales for any further work.	For 12 months from permit issue

Table S1.3 Improvement programme requirements		
Ref.	**Requirement**	**Date**
IC3	The operator will attain full accreditation for the ISO14001 Environmental Management System that is in place at Radnor Hills. A certificate will be submitted to Natural Resources Wales showing that full accreditation has been achieved.	31/05/18
IC4	The operator will carry out monthly samples of the effluent to see whether there is any nonylphenol present in the effluent above the Environmental Quality Standard. Results of the monitoring will be submitted to Natural Resources Wales for assessment.	For 6 months from permit issue
IC5	The operator will carry out an assessment of the adequacy and condition of the current bund arrangement on-site. The outcome of this assessment and proposals for further improvements will be in-line with CIRIA 736 and submitted to Natural Resources Wales for approval prior to the commencement of any work. The report will include conclusions and timescales for improvements.	31/05/18

ANNEX 2A: Consultation Responses

Response received from:
Environment Agency Area Team & Permitting Team
Summary of issues raised
Full summary of issues has been included in the main part of this document under the title *'Emissions to Surface Water.'*
Summary of actions taken or show how this has been covered
All issues made have been considered and many incorporated into our final decision, (full details included in Section – Emissions to Surface Water), several of the concerns raised informed Schedule 5 notices to be issued and further information was provided by the applicant based on these issues raised.

Response received from:
Natural England
Summary of issues raised
Full summary of issues has been included in the main part of this document under the title *'Emissions to Surface Water.'*
Summary of actions taken or show how this has been covered
All issues made have been considered and many incorporated into our final decision (full details included in Section – Emissions to Surface Water), several of the concerns raised informed Schedule 5 notices to be issued and further information was provided by the applicant based on these issues raised.

Response received from:
Dwr Cymru Welsh Water
Summary of issues raised
Welsh Water raised several concerns regarding the applicants' proposal to discharge process effluent to groundwater and whether there would be any effect on the groundwater
Summary of actions taken or show how this has been covered
The applicant withdrew the proposals to discharge to groundwater and instead discharge the treated process effluent to surface water via a drainage swale. As such Welsh Water had no concerns with this option.

Response received from:
Public Health Wales
Summary of issues raised
No specific public health issues raised, the only comment was for the applicant and NRW to agree a timetable to achieving external accreditation of their EMS.
Summary of actions taken or show how this has been covered
There is an improvement condition in place that sets the time for the applicant to achieve external accreditation of their EMS.

ANNEX 2B: Consultation Responses (minded to consultation responses).

Response received from:
Natural England
Summary of issues raised
Many of the issues raised during this round of consultation were highlighted to us previously. The main points of concern are; 1. Phosphate levels in the discharge causing the river to deteriorate against the CSMG target 2. Temperature change and temperature monitoring of the effluent 3. Permit conditions that would enable us to revoke a permit have not been specified 4. NRW are not upholding their duty to further the conservation of the SSSI
Summary of actions taken or show how this has been covered
1. Following further advice and for the reasons set out in detail above, the Water Framework Directive targets have been used in this case, therefore, the river is currently in the moderate category with 101.5µg/l of phosphate. With the discharge added this increases to 102.25µg/l. The limit in the moderate category is 132µg/l. Therefore, the discharge does not cause the background to increase beyond this level and the river remains in the moderate class, not dropping down to poor. Under WFD, this shows that the effluent discharge will cause 'no deterioration'. In addition to this EA OI 17_13 states that if a river exceeds an EQS then deterioration is limited to 3%, this is due to sampling margin and error. In this case the effluent discharge causes the background to increase by only 2.6%, this figure is in line with the EA OI as this figure represents sampling margin and error and isn't a meaningful increase. 2. The temperature issues have been addressed previously and are detailed in the 'emissions to surface water' section in this document. 3. This is fully explained in the section 'emissions to surface water' in this decision document 4. We have upheld our Duty under Section 28G of the Wildlife and Countryside Act 1981, full details are included in the 'emissions to surface water' section of this decision document.