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SUP Response to Request for Information
Duly Made Process
Application reference EPR/LP3131SW/V003

SIMEC Uskmouth Power
Uskmouth Power Station
West Nash Road
Newport
NP18 2BZ
~~02~~13/03/2020

Dear David

Please find below the SUP response to the Request for Information:

NRW ref: LP3131 SW/PAN008534/NDM 1, Date: 7th February 2020
Application reference: PAN008534 (EPR/LP3131SW)
Operator: Simec Uskmouth Power Limited Facility: Uskmouth Power Station

SUP submitted the Permit Variation application on 20/12/2019, NRW has requested the following information.

1. Describe how the heat created during the process is recovered as far as possible. Specifically, you need to assess the potential for cogeneration through combined heat and power, district heating or similar, as required under the Energy Efficiency Directive. (Form C3 Appendix 6 Q5, the Energy Efficiency Directive 2012/27/EU, and point 5 of Regulation 61 Notice dated 9th May 2018 pertaining to LCP BRef BAT 12). It may be useful to refer to the guidance available at https://www.gov.uk/guidance/energy-efficiency-standards-forindustrial-plants-to-get-environmental-permits#additional-requirements-for-new-andsubstantially-refurbished-combustion-plants in preparing your response which should be in the form of a CHP-ready report and cost-benefit analysis.

   SUP RESPONSE: SUP has undertaken the first six stages of a CHP-Readiness assessment as directed by NRW. The assessment has identified that there are three theoretical large heat loads within a 10 kilometre radius. SUP have reasoned in the assessment that none of these options is likely to be practicable – the heat rejected from the turbine~~boilerhouse~~ is low grade and would be subject to further transmission and distribution losses, and there are several practical difficulties in establishing pipelines which are discussed.

   SUP RESPONSE CHPr Assessment is provided in attachment Q1_CHPr_Assessment

In a purpose-designed CHP system, heat can be extracted either by~~by~~ means of increased steam turbine exhaust temperature /pressure steam, via steam bleed from the turbine part way through its expansion and/or from heat recovery from flue gases. At SUP, in the absence of heat consumers the turbine has been designed to minimise both exhaust steam pressure and

Commented [CD1]: **Action CD 1.3** — illustrate land usage immediate area complete in appendix COMPLETE
Diagrams provided in CHPr
Land registry map
Wider area Google map SUP

Commented [CD2]: Action GB - characterise low grade waste heat
PJ review

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temperature to maximise the extraction of energy from steam and increase the efficiency of electricity generation, the turbine is equipped with a number of steam bleeds at varying pressure/temperature, however bled steam is utilised for efficiencies in necessary process heating of boiler feedwater, any further abstraction of steam would reduce the electrical generation potential of the plant and its overall efficiency. ~~there is no steam bleed and all available steam is used to drive the turbines and generate electricity, ~~. Electricity generation~~as~~ is the primary purpose of the installation.

It is not proposed to recover heat from the flue gases as this would adversely affect the buoyancy of the emissions plume and give rise to potentially adverse air quality impacts. It should be noted that the combined flue gas temperature in the chimney stack is already very low for a thermal plant at around 70-80C.

The only feasibly useful residual heat at SUP is in the form of low pressure, low temperature steam at around 60C, delivered at a rate of around 130kg/s per Unit. This would be only realistically be suitable to supplement space heating or a hot water system (via heat exchangers) for a suitable heat load either on or very close to the SUP site boundary. The steam turbine exhaust steam is also under condenser vacuum which further complicates its utilisation due to piping and condensation of steam.

SUP are committed to reviewing the feasibility of finding suitable heat loads every two years, and should any potential nearby heat loads emerge the CHP-R assessment process will be reiterated."

2. Provide a BAT assessment and (where appropriate) cost-benefit analysis, describing the selection of appropriate technology/techniques where these are capable of being altered by the proposed variation (Form C2 Q6, C3 Q3a, and your permit variation supporting information Section 6):

2a For primary and secondary NO_X control measures (EPR 5.01 P68 point 31 etc).

SUP RESPONSE: SUP intend to apply primary NOx control measures to the fullest practicable extent to reduce by design the duty required of the secondary system. Primary NOx reduction will be achieved through both new burners and the use of modern air staging systems. Secondary NOx control will be through the use of a Selective Non-Catalytic Reduction system (SNCR), the justification for which technique follows.

SNCR was previously installed on Unit 13 on a trial basis under previous ownership , hence SUP can be reasonably certain that there is sufficient physical space for two (one per Unit) new SNCR systems to be installed. There is no constraint on the use of SNCR upstream of the acid gas / particulate abatement as it relies on an uncatalyzed reaction between the urea reagent and nitric oxide which will readily take place in an untreated flue gas stream.

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The common alternative, Selective Catalytic Reduction (SCR) involves the introduction of a relatively large reaction vessel in the flue gas stream within which layers of oxidising catalyst are housed. This system can be installed at a point either upstream (high dust) or downstream (low dust) of other abatement measures to remove acid gas and particulates. In the context of the SUP conversion, the nature of fuel (ash, alkali/alkaline earth metal and chlorine content) and the unavailability of space within the flue gas path design means that the installation and continued efficient functioning of a high dust SCR system would be unfeasible and compromisation of the catalyst, almost certain. Post acid gas abatement, the flue gases are relatively cool (<100 °C) so reheating would be required to achieve an operational temperature at which the SCR catalyst would operate with worthwhile efficiency (>300 °C). This would require considerable installation of additional infrastructure and inevitably increase parasitic load (directly or indirectly) and reduce overall plant efficiency.

A low dust SCR reaction vessel would have to be located to receive flue gas downstream of the acid gas / particulate abatement and upstream of the main stack. The SCR would require a footprint of high tens to low hundreds of square metres, and considerable re-routing of the main flues as well as utilities. The proposed site layout in Appendix B of the Variation Application supporting documentation illustrates the lack of available space in this part of the site; it is constrained by process system layouts, road and rail infrastructure and existing site buildings.

Figure 3.46 of the LCP BREF illustrates the considerable capital cost of an SCR. The Figure suggests that costs for a system designed for ~250 MWe (the approximate generating capacity under two Unit operation) will approach €50m (equivalent to £42m using 20th February 2020 spot rate conversion). The cost curves in the BREF are believed to cover new installations rather than retrofit, the latter would logically be far higher. The USEPA Cost Manual chapter on SCR (7th Edition, 2016) in Table 2.1a gives retrofitting cost ranges in addition to new-build , the very lowest 21st-century derived costs for a plant of the scale of SUP are in the order of $100m (£78m).

There is no business case to be made for the redevelopment of SUP with such front-loaded costs; SCR would render the entire project unviable. SUP believes therefore that a cost-benefit analysis of the relative performances of SCR and SNCR would be an artificial exercise. In any case, the primary and secondary (SNCR) systems outlined will meet the necessary Emission Limit Values.

2b For acid gas control measures so far as these are within the scope of the proposed plant modification and permit variation (EPR 5.01 P71 point 48 etc).

SUP RESPONSE: The primary abatement of acid gas formation will be through the adoption and enforcement of the agreed sulphur and chloride assay agreed with the pellet fuel supplier. Levels of these two species are reduced via control of the pellet feedstock and the fuel pellet production process. Acid gases in the flue gas stream are proposed to be controlled by the existing NID (Novel Integrated Desulphurisation) system, a proprietary technology used for flue gas desulphurisation and deacidification.

Dry calcium oxide (lime) and a portion of recirculated Air Pollution Control Residue (APCR) are humidified and mixed with the boiler flue gas stream via a dispersion plate which

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encourages uniform distribution of the neutralising reagents across the flue gas stream. The evaporation of the humidifying water droplets supresses the temperature and creates optimal local conditions for absorption and reaction of sulphur dioxide and hydrogen chloride.

The NID is a semi-dry abatement system which affords close control of the dosing rate when linked to telemetry from an upstream sulphur dioxide analyser; this was previous practice on-site which will be continued. Lime is conveyed from a main silo to a smaller intermediate silo prior to mixing in the NID.

The existing NID system is known to operate to a high abatement efficiency and by design removes both of the major acid gas components expected from combustion of the proposed pellet fuel feedstock; moreover, with a degree of modification the NID system will meet the Emission Limit Values proposed in the Variation Application and as such it can be considered BAT. No further abatement technology options have been considered since the current abatement equipment and its ancillary controls can be substantially re-used to the desired effect. As mentioned, the NID is a proprietary system designed for use specifically with humidified lime powder, so alternative reagents are not considered practicable.

2c To show that the furnace type (with any proposed modifications), is BAT for the combustion/incineration of the fuel type proposed (EPR 5.01 P44, section 2.3).

Commented [CD3]: Action PJ - 1 page key issues of conversion technical challenges

SUP RESPONSE: The furnace type is fixed by the existing design and as much of the existing furnace infrastructure as possible will be re-used, in keeping with the project philosophy of re-using as much of the original Uskmouth B Power Station as is practicably possible. No comparison between the selected and other options has been made as this would be an artificial exercise – the project can only go ahead with the current furnace type.

Substantial works have been completed by SUP and their partners to ensure that the fuel pellets have been developed to be entirely suited to use pulverised fuel fired plant. This is demonstrable through the outputs of multi-million GBP Front End Engineering Design activities.

SUP is an existing pulverised fuel fired coal plant which has in the past utilised predominantly internationally traded coal and biomass fuel to generate electricity. The station consists of three 330 MWth front wall fired Babcock & Wilcox natural circulation boilers which will now be converted to fire on waste derived fuel pellets.

Waste provenance is summarised as follows, present day recycling techniques cannot recycle all waste materials and as a result there remains a significant quantity of materials sent for disposal. These non-recyclable materials are presently sent to landfill or diverted from landfill to purpose-built Energy from Waste facilities. It is this currently non-recyclable waste stream that is used as feedstock to produce the waste derived fuel pellets for the SUP conversion.

The conversion of SUP using existing furnace and boiler infrastructure will require the fuel pellet fuel to be utilisable in this context – i.e. it must be handled, pulverised and combusted in a manner similar to that of coal and result in primary emission species generation levels that allow compliance with permitted emissions limit values. Given the nature of waste constituents, this has required significant efforts to be made to control and alter the physical and chemical characteristics of the input fuel to ensure its applicability to a pulverised fuel furnace.

The nature of pulverised fuel firing means that any fuel utilised by the station must be first ground to an appropriate size to be pneumatically conveyed to the furnace and combusted in suspension. In order to achieve this, the alteration of the fuel pellets during their manufacture has been developed to ensure that they can be pulverised to an appropriate particle size. These efforts have been extensive and involved the completion of two phases of Front End Engineering Design (FEED) studies.

During this work the methods employed to convert non recyclable waste to a homogeneous pelletised fuel have been developed with the aid of comprehensive fuel analysis and large scale milling tests. These tests have been completed to confirm the ability of vertical spindle roller and hammer mills to grind the fuel to the appropriate size.

The reduced particle size of the ground fuel ensures that it is able to heat, devolatilise and ignite quickly upon introduction to the furnace which, in radially air stage low NOx burner designs as utilised at SUP, ensures that fuel nitrogen is evolved into the gas phase in an oxygen deficient environment and thus generates less NOx. The early ignition of the fuel also aids in ensuring complete combustion of fuel particles within the furnace and minimised unburnt emission in the form of-; carbon in ash, carbon monoxide and total organic carbon.

The low moisture content of the fuel -pellets further aids the establishment of early, stable combustion by minimising the drying requirement for the fuel. This has a positive impact on NOx emission and combustion efficiency.

The high volatile matter content of the fuel -pellets again enables establishment of stable combustion in the existing furnace design by providing an adequate ignition source in the form of volatilised gaseous fuel which is able to ignite and combust extremely quickly. The evolution of fuel nitrogen into the gas phase is also encouraged by the high fuel volatility, this ensures that fuel nitrogen is evolved early in the combustion process where oxygen availability is limited by the design of burners and combustion air staging equipment which significantly increases the effectiveness of primary NOx control measures.

All of the above ensures that the fuel pellets intended for use post station conversion are well suited to the existing design of the SUP combustion and furnace systems with minimised NOx emission and high combustion efficiency (thus minimised unburnt emission in the form of carbon in ash, carbon monoxide and total organic carbon).

Pulverised fuel firing generates extremely high combustion temperatures, well in excess of those experience by traditional waste utilising power generation plant. This high temperature ensures complete combustion and avoids formation of polycyclic aromatic hydrocarbons

The chemical constituents of the fuel which have a determining influence on other permitted gaseous emission species, namely chlorine, fluorine, sulphur, nitrogen and heavy metals, are first controlled by the application of stringent limits on their concentration within the fuel pellet. Fuel that is higher in concentration than the acceptable limits will be rejected by SUP and returned to the fuel manufacturer and thus will not influence emissions generated. Furthermore, the plant will utilise the existing lime based acid gas abatement system (Novel Integrated Desulphurisation (NID)) with addition of pulverised activated carbon addition for control of acid gas species (SO_2, HCl and HF) and heavy metal species within the flue gas within permitted limits. This system is consistent with Best Available Techniques utilised extensively throughout the waste utilising power generation sector.

3. Your H1 assessment does not model $PM_{2.5}$. Although this omission is non-critical as it is covered in your Air Quality Assessment (AQA), it should be corrected. TVOC is listed in the H1, but as per our guidance, TVOC should be modelled as Benzene [or 1,3-butadiene] (https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmentalHYPERLINK "https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit"permit). TVOC/benzene is not considered in AQA and needs to be added to the assessment. (Form C2 Q6).

SUP RESPONSE: PM2.5 and benzene, as a robust-case proxy for total volatile organic compounds (VOCs) were added to the list of pollutants examined in the H1 assessment. Concentrations in the flue gas were taken to be 7.5 mg/Nm3 and 10 mg/Nm3 respectively, corresponding to 100% of the values assumed for “dust” and “TVOC” in Table 4.1 of the supporting information document.

PM 2.5 The long-term EAL for PM2.5 is 25 µg/m3; there is no short-term EAL. The maximum Process Contribution (PC) using H1 dispersion factors was 0.178 µg/m3. This is less than 1% of the EAL, and as such is screened out at Air Impact Screening Stage One. No further assessment of PM2.5 is required or proposed.

Benzene The long and short-term EALs for benzene are 5 and 195 µg/m3 respectively. The maximum long-term PC was 0.237 µg/m3, which is more than 1% of the long-term EAL. The maximum short-term PC was 18.9 µg/m3, which is less than 10% of the short-term EAL. The screening hence proceeded to Stage Two to examine long-term impacts in more detail.

Background data from the Defra LAQM Mapping grid square covering SUP were reviewed. Maps for benzene are still extrapolated from 2001 data, which are intended to be adjusted by yearly factors. Background concentrations for benzene are expected to become uniformly lower after 2001, so the 2001 value of 0.343 µg/m3 was used as a robust case.

The sum of the stated background and PC gave a Predicted Environmental Concentration (PEC) of 0.580 µg/m3; this is 11.6% of the EAL. The PEC is well under 70% of the EAL and hence no detailed modelling is required or proposed.

SUP RESPONSE Revised H1 Assessment is provided in Q3_H1_Assessment_V2

4. The supporting modelling files are required for the abnormal operation modelling and for the human health risk assessment (Form C2 Q6 and our guidance https://www.gov.uk/guidance/environmental-permitting-air-dispersion-modelling-reports).

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SUP RESPONSE: SUP can confirm that the supporting modelling files for assessment of abnormal emissions are the same files as those provided for the air quality assessment under normal conditions. Emissions during abnormal operations are discussed in Appendix E of the Air quality Assessment at Appendix H of the Supporting Information Document accompanying the permit application.

SUP RESPONSE Human Health Risk Assessment is provided in attachment Q4_HHRA

5. Your application has identified European Designated Habitats sites (SACs, SPAs and RAMSAR) and SSSI within screening distance of the proposed facility. Impacts of air emissions are discussed in Appendix C of the air quality assessment (appendix H). For European designated sites only, further impact assessment is described in Appendix L. However, sites protected under other legislation (Local Wildlife Sites, Ancient Woodland) have not been identified. These other protected sites are identified in further appendices of your application (e.g. fire prevention and mitigation plan, site condition report), but are omitted from the key AQA and habitats impact assessment (Form C2 Q6, your application main supporting information document, Appendices H & L and guidance referenced below). Please review the protected sites within screening distance of the facility, and assessment of impact according to our guidance (https://www.gov.uk/guidance/air-emissions-riskassessment-for-your-environmental-permit#screening-for-protected-conservation-areas), and resubmit associated information/assessments as necessary.

a. European sites within 15km appear to be fully considered
b. SSSIs within 15km have been identified and air impacts assessed. You need to screen/assess potential impacts other than air emissions as you have done for European sites.
c. All other protected sites (ancient woodland, local wildlife sites and national/local nature reserves) within 2km need to be identified, and impacts assessed according to the relevant criteria.

It is noted that the AQA habitats assessment uses a 15km screening distance, whereas section 5.4 of the main permit variation supporting information refers to a 10km screening distance. This appears to be a minor error in the narrative, as the standard screening distance for installations is 10km, but 15km is correctly used for facilities >50MW.

SUP RESPONSE: **AQA addendum is provided in attachment Q5_AQA**

Further to feedback from the NRW regarding the Uskmouth Power Plant Environmental Permit variation application, RPS has considered the impacts from the site on the surrounding local designated sites, excluding those which have already been assessed in the Environmental Permit variation application, Appendix L (i.e. the River Usk and the Severn Estuary) and the Air Quality Assessment Addendum – Impact of Conversion of Uskmouth Power Station on Ecological Sensitive Areas.

There are nine Non-European designated sites within 2 km of the Uskmouth Power Station installation boundary – see SUP response below.

SUP RESPONSE: 200313 M JER1649 LH Memo V2 R1 clean Q5 NonEuropean sites

Commented [CD4]: Q5. NRW feedback - AQA and Habs assessment are exclusively for European sites and do not consider non-European sites including; SSSI and local sites. Action SUP provide a formal assessment for non AQ impacts upon non - European sites including disturbance and noise. In order to screen out any other impacts (apart from AQ) that may need further assessment. SUP to consider if there are any other non AQ impacts apart from disturbance and noise .

SUP response – SUP consultants are working on this query and we will be able to provide a response by Friday 13th March

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6. Appendix N is marked as "Highly confidential" (waste fuel spec) but have not made a declaration of confidentiality in the application (form F Q5). You need to clarify whether confidentiality is sought in respect of any of this information. If so, please resubmit form F and supporting information, as indicated on the form. If not, please remove the "confidential" header, along with any non-critical but confidential information that you do not wish to be on the public register. In the interim we have removed this information from public register until the position is clarified.

   SUP RESPONSE: SUP has made a declaration of confidentiality related to Revised Appendix N (Fuel specification) is provided without declarationof confidentiality Q6 . Appendix_N_FuelPelletSpecification

Commented [CD5]: Add fuel pellet spec COMPLETE

7. In appendix N and M, certain key fuel characteristics are missing. Please review. As a minimum, you will need to confirm the carbon, hydrogen, oxygen composition of waste pellets, and biomass (Form C3 Appendix 1 Q1 and EPR 5.01 Page 9-10 point 12 e iv, and LCP BRef BAT9).

   SUP RESPONSE: The option to co-fire up to 1% is under investigation. In the event co firing was implemented, SUP would intend to utilise the biomass already permitted in the existing permit. As co-firing option is still under investigation SUP will provide further detail over the coming weeks. Please note appendix M is Noise assessment

SUP has made a declaration of confidentiality related to Appendix O (Biomass specification).

8. The OPRA sheet and fee appear incorrect in respect of "location" tab. There are footpaths and other public access land (RSPB Newport wetlands, Uskmouth Newport sailing club) within 50m of boundary. Note that the human "presence" definition for OPRA not same as sensitive receptors e.g. for Air Quality modelling. Please review the spreadsheet, confirm the correct fee, and send extra payment if required. See our charging guidance at https://naturalresources.wales/about-us/what-we-do/how-we-regulate-you/our HYPERLINK "https://naturalresources.wales/about-us/what-we-do/how-we-regulate-you/our-charges/?lang=en"charges/?lang=en and linked EA / .gov.uk documents, noting that while some are marked as withdrawn, they are still in use by NRW.

   SUP RESPONSE: The OPRA profile for the SUP Conversion is attached. It has been amended in relation to the proximity of human occupation. The new OPRA score is 518.

   The 2016 version of the OPRA profile contained the previously agreed OPRA profile and score. The version of this we have we will not allow us to save changes made to it. However, if the location is amended in relation to the proximity of human occupation this increases the OPRA score from 363 to 383. If 383 is multiplied by the appropriate 2019 multiplier (116) the fee to be paid is £44,428.

   SUP has reviewed the appropriate parts of the OPRA spreadsheet, and determined the additional fee, payment was made in full by BACS on 27/02/2019.

Revised OPRA is provided in attachment Q8_Revised_OPRA sheet

9. Please confirm your intention to validate combustion temperature residence time and Oxygen experimentally under the most unfavourable conditions, once constructed (Your application main supporting information document section 2.5 and EPR 5.01 P49 section 2.4 point 6 etc).

SUP RESPONSE: The combustion system time temperature history (or combustion temperature residence time) and oxygen concentration will be validated experimentally under most unfavourable conditions. This validation will utilise suction pyrometry and standard flue gas species determinations at several elevations within the boiler and apply these to~~using~~ calculated flue gas velocity profiles determined from flue gas volume and boiler dimensions to obtain a quantification of furnace gas time temperature history.

10. Provide a summary of the fire detection, suppression and firefighting plans and fire water containment within the designated quarantine area. Describe the capacity of the area, the number of load(s) which may be accommodated, and the action to be taken in the event that the quarantine is at full capacity. (Form C2 Q6 and your application Appendix J Fire prevention and mitigation plan).

SUP RESPONSE: The Fire Prevention Management Plan (FPMP) is provided within the permit application as to waste derived fuel pellets will be stored and combusted at SUP.

The quarantine area is defined within the FPMP and is designated for the placement of burning wastes to extinguish them. The quarantine area could also be used to move unburnt wastes into to isolate and prevent them catching fire.

Fuel pellet delivery by road waste derived fuel pellets are to be transported to SUP via rail, However SUP wish to retain the option of delivering fuel pellets to SUP in the unlikely event that the rail transport failed. The quarantine area would be used in the event that a hot load (fuel pellets) is delivered to the SUP site by road. In these circumstances the truck would unload the burning/smouldering material into the quarantine area and the appropriate fire extinguishing products and activities would be applied to deal with the material that was burning. Once the fire was extinguished mobile plant would be used to collect the burnt material and placed into a covered HGV to be transported by road (at the earliest opportunity) to a suitable disposal site.

Other products and materials that are delivered to SUP site by road include: Biomass fuel pellets. Gas oil, Lime and Flue Gas Treatment reagents.

It is anticipated that the quarantine area would be bunded for fire water containment which would be pumped into the station main drains (via drainage connector) which then flows into the storm water sump for safe disposal. In this event the storm water sump would be isolated in order to avoid any discharge to surface water.

The indicative quarantine area capacity is 300 cubic metres (assumed based on 600m2 area with 0.5m high bund. HGV deliveries to site are up to 20 Tonnes. The quarantine area would be capable of accommodating 7 number of HGV load(s) (based on fuel pellet density of 550 kg/m3)

Fuel pellet delivery by rail – any hot loads arriving by rail will be directed to the coal stock yard by conveyors and then mobile plant will be used to move it to the quarantine area.

Fuel conveyors will be equipped with "spark" detection and suppression systems at all conveyor transfer and silo discharge points. High risk fuel conveyors will be equipped with infra red camera systems designed to identify hot product on a conveyor and immediately trip or stop the conveyor to enable removal of the hot product by Plant Operators in accordance with a safe system of work.

The storage silos will have built in fire detection and fire suppression systems which will be installed and maintained in accordance with industry good practice and regulatory requirements. All conveyors will be equipped with a water deluge system that can be manually initiated by Plant Operators.

11. Can SUP confirm if burnt pellets originating from silos, conveyors or rail unloading would be transferred to the quarantine area by mobile plant before being loading on lorries for disposal ??

SUP RESPONSE: SUP would wish to retain the following options for transferring burnt pellets originating from silos, conveyors or rail unloading:

(a) Into the quarantine area using mobile plant before loading into covered HGV s for safe disposal off site

(b) Into the quarantine area using mobile plant before loading into rail cars for safe disposal off site

(c) Directly into empty rail cars for safe disposal off site

The final design of the SUP fire system including the design of quarantine area will be confirmed during the EPC design, this final design will be shared with NRW when it is available. The FPMP will be amended to include the final EPC fire design

12. You have described in your application that the odour potential of your proposed changes is low, and therefore justified not addressing the requirements of EPR 5.01 Section 3.3, P78 or WI BAT 21 relating to odour. While this appears proportionate, please describe whether there are any reasonably foreseeable abnormal / contingency events which could give rise to odour (possibly, but not limited to temporary storage of waste pellets in the quarantine area or release of odour from milling processes) (Form C2 Q6 and your application section 4.6).

SUP RESPONSE: Fuel pellets are formed by relatively high-temperature (>100 °C) extrusion of the processed biomass / plastic feedstock into the homogenised fuel. There are unlikely to be any residual volatile compounds which would give rise to odour following this process either through handling, transportation or storage. The highest risk of evolution of further volatiles would be from the heat generated from the forces applied to the pellets during the milling process, but the milled pellets and any associated volatiles would at this stage be pneumatically conveyed into the boiler for combustion.

Any hot load dumped in the quarantine area would be rapidly quenched, which would again reduce the risk of the evolution of volatiles.

13. Please provide simple clarification / confirmation of various minor technical points of the application, as listed below. In many cases simple yes/no answers only should be required, although if a potential issue is identified, please provide further detail):

    a. Confirm that the capacity of the two units (13 and 14) have the identical capacity, meaning that the nominal capacity of each unit is 437500 tonnes of waste per annum, and the maximum unit capacity is 546500 tonnes of waste per annum. Or describe the capacity difference between lines (form C3, table C3).

SUP RESPONSE Both units 13 and 14 are of near identical design and have identical thermal and thus fuel utilisation capacities. This ~~my~~ will differ somewhat during operation depending upon the condition of the units and their efficiency which will alter over time.

    b. Confirm whether the biomass capacity is additional (i.e. up to 1% more total annual unit capacity), or whether the total fuel load is described within the figures above, if exempt biomass is utilised as described in the application (form C3, table C3).

SUP RESPONSE: the biomass utilised is not an additional 1% of fuel consumption rather, the fuel consumption figure has been calculated based on the achievement of plant thermal rating using energy pellets only and their lowest calorific value of 19 MJ/kg. If we assume the use of 1% biomass pellets with a lower calorific value of 17 MJ/kg, this would result in an increase in fuel use of 0.1%. This would result in an increase in total fuel utilisation to a maximum of 547,050 T/annum.

    c. Confirm whether the plant may operate with zero biomass, i.e. entirely waste fuel, in some circumstances (form C3, table C3).

SUP RESPONSE: SUP is investigating co-firing with biomass fuel pellets, there are circumstances in which the plant will operate without co-firing with biomass fuel pellets. There are circumstances where SUP would operate with zero biomass fuel pellets. Please note that SUP intends to operate on waste derived fuel pellets composed of approximately 50% plastic and 50% biogenic waste. The biogenic component is not necessarily qualifying biomass under the IED definition but will be plant-derived and meet the requirements for biomass under, for instance, the EU ETS.

    d. Please clarify whether it will be possible to operate one of the two units independently of the other, and if so, indicate whether single line operation is anticipated either (a) during commissioning or (b) longer term. If single line operation is a possibility, please summarise any additional operational and environmental implications of such single unit operation. If single line operation would be considered an abnormal operating condition, please clarify this (form C2 Q6).

SUP RESPONSE: It is entirely possible to operate one of the two units independently of the other. Single unit operation is envisaged during the commissioning of the station and for a period until completion of the second unit construction is complete. Following this, single unit operation is envisaged during both planned and unplanned maintenance periods that require unit shutdown. An Air Quality Assessment was conducted for single unit modelling that demonstrated both that there is no significant adverse environmental impacts relation to operation on a single unit and that the magnitude and significance of the impacts is the same under one or two Unit operation. Single unit operation is not considered abnormal operation.

e. Please clarify whether bag filter bypass is to be technically possible. If so, describe under what conditions bag filter bypass may occur, the point where the emissions occur, and for how long this may continue. (EPR 5.01 P58 2.8 and your application 3.2.9).

SUP RESPONSE: The original installation of the NID and bag filter was ~~originally~~ equipped with a bypass. This bypass has been entirely sealed following its installation and is inoperable.

f. Please confirm that the plant will use ambient air only for combustion oxygen, and there is no plan for oxygen enrichment (EPR 5.01 Page 8 point 7).

SUP RESPONSE: Only ambient air will be utilised for combustion oxygen requirements, no oxygen enrichment will be used.

14. Finally, we note that modelled pollutant mass release concentrations in your Air Quality Assessment are in some cases lower than IED/BAT-AEL limits (e.g. for SO_2, HCl). Please be aware that should a permit be granted, any emissions limits would be based on these modelled emissions, not IED/BAT-AELS. You therefore need to be confident that you can meet these lower limits in all circumstances, or consider resubmitting modelling at higher (IED) limits.

SUP RESPONSE: SUP acknowledge this advice.

----END----