

Permitting decisions

Variation

We have decided to grant the variation for HMNB Portsmouth operated by BAE Systems Surface Ships Limited.

The variation number is [EPR/MP3035FF/V002](#).

We consider in reaching that decision we have taken into account 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 provides a record of the decision making process. It:

- highlights [key issues](#) in the determination;
- summarises the decision making process in the [decision checklist](#) to show how all relevant factors have been taken into account; and
- shows how we have considered the [consultation responses](#).

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

Read the permitting decisions in conjunction with the environmental permit and the variation notice. The introductory note summarises what the variation covers.

Key issues of the decision

BAT assessment

Combustion technology

Once fully commissioned, the combustion activities at the installation will comprise two 21MWth boilers, two 7MWth boilers and three 9.8MWth combined heat and power (CHP) engines, with an aggregated thermal input of 85.4MWth. These activities will provide electricity and heat to the naval base.

The Applicant (now the Operator) carried out a review of the following candidate combustion technologies and made an assessment of the technology in order to determine which technology can be considered the best available technique (BAT).

- Waste-to-power facility;
- Biomass boilers;
- Natural gas fired generators; and
- Diesel generators.

Based on the result of this assessment, the Operator chose Gas Engines and Natural gas boiler for the following reasons:

- Waste-to-power was ruled out due to concerns around security in respect of importing external waste to a secure military facility;
- Natural gas is a more efficient fuel than the others options considered. For example, diesel generators are typically 80% efficient, whereas the gas fired CHP engines employed at the installation are specified as being 88% efficient.
- Natural gas engines can readily meet a lower NO_x Emission Limit Value (ELV) as specified by the Medium Combustion Plant Directive (2015). The natural gas CHP will be able to meet an ELV of 95 mg/Nm³ NO_x, whereas the ELV for a diesel generator is 190 mg/Nm³. This would also likely only be achieved by a diesel engine via the use of secondary abatement. SO₂ and particulate emissions are generally far higher in both biomass and diesel fired combustion units.
- The use of natural gas will prevent storing large volumes of diesel on site with the associated potential for significant environmental impact in the event of spillage or loss.

Emissions abatement

The Operator has demonstrated that they have sufficient primary emission controls in place. These include the combustion units being fitted with an Advanced Control System to ensure optimal combustion, as well as the tuning of engines to achieve Enhanced Lean Burn to maximise combustion efficiency and minimise the production of NO_x. The existing combustion units are also fitted with low NO_x burners. As the Applicant's modelling demonstrated that process contributions (PCs) screened out as insignificant, we are satisfied that secondary abatement is not required.

Based on the findings in the Operator's BAT assessment, we are satisfied that the proposed combustion activities are BAT.

Emissions and operating techniques assessment

Emissions of noise

We have undertaken an assessment of the noise risk associated with the combustion plant and have used a qualitative noise screening approach to determine whether noise can be considered a significant risk and whether there is justification for further noise modelling and noise management plans.

We have taken into account the activity containment, activity type, operational time, operation size, distance from receptors, location and receptor proximity to other major noise source and we are satisfied that the noise risk posed is low and therefore noise modelling and noise management plans are not required.

Air quality

In line with the Environment Agency's guidance, we require applicants to submit detailed air dispersion modelling and impact assessment to assess the predicted impacts on both human receptors (for example dwellings, work places and parks) and ecological sites. A methodology for risk assessment of point source emissions to air is set out in our guidance *Air emissions risk assessment for your environmental permit* and has the following steps:

- Describe emissions and receptors;
- Calculate process contributions;
- Screen out insignificant emissions that do not warrant further investigation using the Environment Agency's screening tool (specific to assessing impacts from Specified Generators (SG));
- Decide if detailed air modelling is needed;
- Assess emissions against relevant standards; and
- Summarise the effects of emissions.

We use this methodology to assess the impacts on air quality in the determination of applications.

The methodology uses a concept of "process contribution (PC)", which is the estimated concentration of emitted substances after dispersion into the receiving environmental media at the point where the magnitude of the concentration is greatest. The methodology provides a simple method of calculating PC, primarily for screening purposes, and for estimating process contributions where environmental consequences are relatively low. It is based on using dispersion factors. These factors assume worst case dispersion conditions with no allowance made for thermal or momentum plume rise and so the process contributions calculated are likely to be an overestimate of the actual maximum concentrations. More accurate calculation of process contributions can be achieved by mathematical dispersion models, which take into account relevant parameters of the release and surrounding conditions, including local meteorology.

Air dispersion modelling enables the PC to be predicted at any environmental receptor that might be impacted by the emissions from a plant. Once short-term and long-term PCs have been calculated in this way, they are compared with Environmental Standards (ES).

PCs are considered insignificant if:

- the long-term process contribution is less than 1% of the relevant ES; and
- the short-term process contribution is less than 10% of the relevant ES.

The long term 1% process contribution insignificance threshold is based on the judgements that:

- It is unlikely that an emission at this level will make a significant contribution to air quality; and
- the threshold provides a substantial safety margin to protect health and the environment.

The short term 10% process contribution insignificance threshold is based on the judgements that:

- spatial and temporal conditions mean that short term process contributions are transient and limited in comparison with long term process contributions; and
- the threshold provides a substantial safety margin to protect health and the environment.

Where an emission is screened out in this way, we would normally consider that the applicant's proposals for the prevention and control of the emission to be acceptable. However, where an emission cannot be screened out as insignificant, it does not mean it will necessarily be significant.

For those pollutants which do not screen out as insignificant, we determine whether exceedances of the relevant ES are likely. This is done through detailed audit and review of the applicant's air dispersion modelling, taking background concentrations and modelling uncertainties into account.

Where the PC is greater than these thresholds, the assessment must continue to determine the impact by considering the predicted environmental concentration (PEC). The PEC is the combination of the PC substance to air and the background concentration of the substance which is already present in the environment.

The PECs can be considered 'not significant' if the assessment has shown that both the following apply:

- proposed emissions comply with associated emission levels (AELs) or the equivalent requirements where there is no AEL; and
- the resulting PECs won't exceed 100% of the environmental standards.

The applicant's air dispersion model used the recognised modelling software ADMS version 5.2. The modelling was developed and supplied by REC Limited. The report is titled, *Air Quality Assessment Portsmouth Naval Base Combined Heat and Power Plant Installation*. The model assumes a maximum of 8,760 annual operating hours for all plant at the installation, as well as 500 hours of standby fuel use. The key pollutants within the combustion gas that have been modelled by the operator are oxides of nitrogen (represented as nitrogen dioxide) and carbon monoxide. We have assessed the applicant's dispersion model and we agree with the applicant's conclusion that impacts from the site are unlikely to cause any exceedance of the relevant environmental standards.

Predicted impacts at human receptors

The applicant's modelling looks at the impact on a range of sensitive human locations within the proximity of the site. The model assesses the impact at 23 locations at representative locations. We have presented the predicted concentrations at the most sensitive human receptor locations. The applicant's predictions are summarised in the table below:

Table 1 – Predicted impacts at most sensitive human receptor						
Pollutant	Environmental standard	Background	Process Contribution (PC)		Predicted Environmental Concentration (PEC)	
Unit	µg/m³	µg/m³	µg/m³	% of Environmental standard	µg/m³	PEC % of Environmental standard
NO _x annual mean (long term)	40	23.11	1.69	4	24.80	62
NO _x hourly mean (short term)	200	46.22	19.05	10	65.27	12
CO 8 hour running average across a 24 hour period (short term)	10,000	872	115.69	1.16	987.69	1.27

As indicated in Table 1 short term NO_x, long term NO_x and CO cannot be screened out as insignificant as the PC for each is >10% of the environmental standard and >1% of the environmental standard respectively.

Short term NO_x, long term NO_x and CO can however be screened out as not significant as the PEC is <100% of the environmental standard. Therefore, emissions from the installation with respect to human health receptors can be screened out as not significant. We have audited the Operator's modelling report, and agree with their conclusions.

Impacts on ecological receptors

The installation is within the relevant screening distance of Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Sites of Special Scientific Interest (SSSIs), Local Wildlife Site (LWS) and a potential SPA (pSPA). These include:

- Solent & Isle of White Lagoons (SAC);
- Solent Maritime (SAC);
- Portsmouth Harbour (SPA, Ramsar site, SSSI);
- Chichester and Langstone Harbour (SPA, Ramsar site);
- Solent & Southampton Water (SPA, Ramsar site);
- Solent & Dorset Coast (pSPA);
- Kings Bastion Moat (LWS);
- St. George's Barracks Playing Field (LWS); and
- Priddy's Hard (LWS).

The applicant's modelling looks at the impact on a range of sensitive ecological locations within the proximity of the installation. The model assesses the impact at all relevant designated habitats. All ecological receptors, other than Portsmouth Harbour and Solent and Dorset Coast, screened out from requiring further assessment. We have presented the highest predicted concentrations at a sensitive ecological receptor location, which was predicted at Portsmouth Harbour (SPA, Ramsar site, SSSI). The applicant's predictions are summarised in the table below:

Table 2 – Predicted impacts at most sensitive ecological receptor (Portsmouth Harbour SPA, Ramsar site, SSSI)						
Pollutant	Environmental standard	Background	Process Contribution (PC)		Predicted Environmental Concentration (PEC)	
Unit	µg/m³	µg/m³	µg/m³	% of Environmental standard	µg/m³	PEC % of Environmental standard
NO _x annual mean	30	28.2	0.4	1	28.6	95
NO _x hourly mean	75	---	7.62	10	---	---

Table 3 – Predicted acid deposition impacts at most sensitive ecological receptor (Portsmouth Harbour SPA, Ramsar site, SSSI)				
Pollutant	Critical level	Background	Process Contribution (PC)	Predicted Environmental Concentration (PEC)

Unit	kgN/ha-year	kgN/ha-year	kgN/ha-year	% of critical level	kgN/ha-year	PEC % of Environmental standard
Acid deposition	4.856	0.005	0.005	0.1	---	---

Table 4 – Predicted nitrogen deposition impacts at most sensitive ecological receptor (Portsmouth Harbour SPA, Ramsar site, SSSI)						
Pollutant	Critical level	Background	Process Contribution (PC)		Predicted Environmental Concentration (PEC)	
Unit	kgN/ha-year	kgN/ha-year	kgN/ha-year	% of critical level	kgN/ha-year	PEC % of Environmental standard
Nitrogen deposition	8	28.2	0.06	1	---	---

Tables 2, 3 and 4 present the results from the Operator’s modelling assessment as they are presented in their modelling report. The operator has concluded that PCs from the installation relating to annual NOx, hourly NOx, acid deposition and nitrogen deposition screen out as insignificant. We have conducted our own air quality modelling audit which included sensitivity checks. Our checks suggest that the PCs may be slightly higher than those presented in the Applicant’s modelling report. For both Portsmouth Harbour (Ramsar, SPA and SSSI) and Solent and Dorset Coast (pSpa) NOx and nitrogen deposition process contributions from the site may be >1% of the environmental standard and critical level. Therefore, emissions are considered not insignificant and, with the background already exceeding the Environment Standard, the Predicted Environment Contributions do not screen out from further assessment. We are satisfied that process contributions are insignificant at all other ecological receptors and for other pollutants. As our conclusions suggest the process contributions have the potential to be higher than predicted we reviewed the potential for the site’s emissions to impact on Portsmouth Harbour and Solent and Dorset Coast. It is important to note that our sensitivity checks do not necessarily mean we disagree with the conclusions from the Applicant’s modelling report, they are merely a worst case scenario using different data to that used in the Applicant’s modelling report.

While the process contributions from the installation could potentially exceed the Environment Standards for NOx and the critical level deposition thresholds, due to the conservative approach taken by the Applicant, the small PC in relation to the background and the type and distribution of sensitive features, we are satisfied the emissions from this site are unlikely to result in a significant impact on the features of the protected site.

This is based on:

- Where process contribution exceed 1% of the environmental standard, this is in urbanised port locations with frequent access to navy vessels. These areas are therefore likely to be permanently submerged. Therefore, aerial emissions are unlikely to impact permanently submerged vegetation;
- The Operator’s modelling shows that where process contributions exceed 1% of the environmental standard, only a small proportion of each protected site is predicted to be affected;
- The process contribution is a small percentage of the existing background;
- The air quality report is based on the worst case scenario and therefore it is highly conservative;
- The areas of impact are a tidal habitat therefore the area is likely to be inundated twice a day by the

tide. Port areas are potentially entirely aquatic areas;

- Species highlighted for potential impact are seasonal wintering and passage birds and are distributed through the entire Portsmouth Harbour site and are not always present in the area of impact;
- Permanently aquatic areas of the tidal basin and associated species e.g. eelgrass are not considered sensitive to aerial nitrogen;

In summary as the PCs are only slightly greater than 1% of the environmental standard and do not contribute significantly to the existing background, we are satisfied that the proposals will not impact significantly on the features of the site. We consulted Natural England on the proposed variation and our conclusions highlighted above. Natural England agree with our conclusion of no likely significant effect.

Emission limit values

The permit sets an emission limit value (ELV) for oxides of nitrogen (expressed as NO₂) for the new CHP engines. The ELV for new medium combustion plant is derived from Schedule 25A of the Environmental Permitting (Amendment) Regulations 2018. We are satisfied that the applicant is capable of complying with this relevant limit of 95 mg/m³ for oxides of nitrogen (NO and NO₂, expressed as NO₂).

Decision checklist

Aspect considered	Decision
Receipt of application	
Confidential information	A claim for commercial or industrial confidentiality has not been made.
Identifying confidential information	We have not identified information provided as part of the application that we consider to be confidential. The decision was taken in accordance with our guidance on confidentiality.
Consultation	
Consultation	The consultation requirements were identified in accordance with the Environmental Permitting Regulations and our public participation statement. The application was publicised on the GOV.UK website. We consulted the following organisations: <ul style="list-style-type: none"> • Portsmouth City Council – Environmental Health; • Portsmouth City Council – Planning; • National Grid; • The Health & Safety Executive; • Public Health England; • The Department of Public Health • The sewerage undertaker; and • Natural England. The comments and our responses are summarised in the consultation section .
The facility	
The regulated facility	We considered the extent and nature of the facility at the site in accordance with RGN2 ‘Understanding the meaning of regulated facility’. The extent of the facility is defined in the site plan and in the permit. The activities are defined in table S1.1 of the permit.
The site	
Extent of the site of the facility	The operator has provided plan which we consider are satisfactory, showing the extent of the site of the facility. The plan is included in the permit.
Biodiversity, heritage, landscape and nature conservation	The application is within the relevant distance criteria of a site of heritage, landscape or nature conservation, and/or protected species or habitat. We have assessed the application and its potential to affect all known sites of nature conservation, landscape and heritage and/or protected species or habitats identified in the nature conservation screening report as part of the permitting process.

Aspect considered	Decision
	<p>We consider that the application will have no likely significant affect any sites of nature conservation, landscape and heritage, and/or protected species or habitats identified. Please see key issues section above.</p> <p>We have consulted Natural England on our Habitats Regulations and SSSI assessments, and taken their comments into account in the permitting decision.</p>
Environmental risk assessment	
Environmental risk	<p>We have reviewed the operator's assessment of the environmental risk from the facility.</p> <p>The operator's risk assessment is satisfactory, however sensitivity checks of the Operator's modelling suggested process contributions may be higher than presented in the Operator's results. Please see key issues section above.</p>
Operating techniques	
General operating techniques	<p>We have reviewed the techniques used by the operator and compared these with the relevant guidance notes and we consider them to represent appropriate techniques for the facility.</p> <p>The operating techniques that the applicant must use are specified in table S1.2 in the environmental permit.</p>
Permit conditions	
Updating permit conditions during consolidation	<p>We have updated permit conditions to those in the current generic permit template as part of permit consolidation. The conditions will provide the same level of protection as those in the previous permit(s).</p>
Improvement programme	<p>Based on the information on the application, we consider that we need to impose an improvement programme.</p> <p>We have imposed an improvement programme to ensure that the Operator identifies potential uses for their waste heat during the summer months. This has been included as the Operator has not yet submitted proposals for a use for their waste heat during the summer months.</p>
Emission limits	<p>ELVs have been added for the following substances for the new CHP engines.</p> <p>Oxides of nitrogen (NO and NO₂, expressed as NO₂). ELV's have been set at 95 mg/m³ at an oxygen reference condition of 15%, which are in line with the Schedule 25A (Medium Combustion Plant) of the Environmental Permitting (England and Wales) (Amendment) Regulations 2018.</p>
Monitoring	<p>We have decided that monitoring should be carried out for the parameters listed in the permit, using the methods detailed and to the frequencies specified.</p> <p>These monitoring requirements have been imposed in order for the operator to demonstrate compliance with the emission limits specified in the permit.</p>

Aspect considered	Decision
	<p>The operator will carry out monitoring in accordance with the relevant MCERTS methods.</p> <p>Medium Combustion Plant guidance: https://www.gov.uk/guidance/medium-combustion-plant-and-specified-generator-permits-how-to-comply</p>
Reporting	<p>We have added reporting in the permit for the following parameters:</p> <ul style="list-style-type: none"> • Oxides of nitrogen (NOx); and • Carbon monoxide. <p>We made these decisions in accordance with the Medium Combustion Plant technical guidance; Medium Combustion Plan Guidance: https://www.gov.uk/guidance/medium-combustion-plant-and-specified-generator-permits-how-to-comply</p>
Operator competence	
Management system	There is no known reason to consider that the operator will not have the management system to enable it to comply with the permit conditions.
Growth Duty	
Section 108 Deregulation Act 2015 – Growth duty	<p>We have considered our duty to have regard to the desirability of promoting economic growth set out in section 108(1) of the Deregulation Act 2015 and the guidance issued under section 110 of that Act in deciding whether to grant this permit.</p> <p>Paragraph 1.3 of the guidance says:</p> <p>“The primary role of regulators, in delivering regulation, is to achieve the regulatory outcomes for which they are responsible. For a number of regulators, these regulatory outcomes include an explicit reference to development or growth. The growth duty establishes economic growth as a factor that all specified regulators should have regard to, alongside the delivery of the protections set out in the relevant legislation.”</p> <p>We have addressed the legislative requirements and environmental standards to be set for this operation in the body of the decision document above. The guidance is clear at paragraph 1.5 that the growth duty does not legitimise non-compliance and its purpose is not to achieve or pursue economic growth at the expense of necessary protections.</p> <p>We consider the requirements and standards we have set in this permit are reasonable and necessary to avoid a risk of an unacceptable level of pollution. This also promotes growth amongst legitimate operators because the standards applied to the operator are consistent across businesses in this sector and have been set to achieve the required legislative standards.</p>

Consultation

The following summarises the responses to consultation with other organisations, and the way in which we have considered these in the determination process.

Responses from organisations listed in the consultation section

Response received from
Public Health England
Brief summary of issues raised
No significant issues raised, provided that the applicant takes all appropriate measures to prevent or control pollution.
Summary of actions taken or show how this has been covered
We have set an ELV which will control impacts on human receptors. The operator has demonstrated that they are able to comply with the ELV. We have also reviewed the proposed operating techniques against the most relevant BAT conclusions document for the installation, and agree that the operators operating techniques are BAT.

Response received from
Natural England
Brief summary of issues raised
No issues raised – Natural England were consulted as part of our duty to assess the operator’s air quality assessment (see key issues section above).
Summary of actions taken or show how this has been covered
We reviewed the Operator’s modelling report, their conservative assessment, as well as the ecological receptors, their sensitivity and the locations of the ecological receptors that have the potential to be effected by the installation. We determined that there will be no likely significant effect. Natural England responded agreeing with our conclusions.