Title: Medium Combustion Plant Directive tranposition Impact Assessment. **IA No:** BEIS011(F)-17-OPRED **RPC Reference No: RPC17-BEIS-4072(1)** **Lead department or agency:** Department for Business, Energy and Industrial Strategy **Other departments or agencies:**	**Impact Assessment (IA)** **Date: 05/05/2017** **Stage:** Consultation **Source of intervention:** EU **Type of measure:** Secondary legislation **Contact for enquiries:** Paul Batty (E: paul.batty@beis.gov.uk; T: 01224 254 043

Summary: Intervention and Options

RPC Opinion: GREEN

Cost of Preferred (or more likely) Option				
Total Net Present Value	**Business Net Present Value**	**Net cost to business per year** (EANDCB in 2014 prices)	**One-In, Three-Out**	**Business Impact Target Status**
-£16.9m	-£16.91m	£1.2m	Not in scope	Non qualifying provision

What is the problem under consideration? Why is government intervention necessary?

Medium combustion plants (MCPs) are classed as combustion equipment with a maximum thermal rating greater than or equal to 1 MWth and < 50 MWth. Equipment of this size currently fall outside EU regulation for large combustion plants (at or > 50 MWth), covered under the Industrial Emissions Directive (IED) and smaller appliances covered by the Ecodesign Directive. MCPs are therefore largely unregulated at present but are a source of air pollutants which can cause harm to human health and the environment. Government is committed to improving air quality and meeting its legal air quality standard obligations and must transpose the MCP Directive (MCPD) by 19 December 2017.

What are the policy objectives and the intended effects?

This IA addresses implementation of the MCPD for offshore oil and gas platforms only. Implementation onshore is managed by Defra and the devolved administrations via separate regulations. The objectives of the measures proposed are to close the regulatory gap for MCPs and improve air quality and environmental protection. We intend to use the existing regulatory framework to implement the MCPD requirements in a way which ensures compliance with air quality limits, thus achieving environmental and health benefits, whilst at the same time keeping operator costs and burdens to a minimum.

What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base)

Option 1 - Do nothing: A scenario in which there is no implementation of the MCPD. This is not considered a viable option, as it would breach EU law but is used as a baseline to assess the impacts.
Option 2 - Transspose the MCPD into domestic legislation, making use of available flexibilities and exemptions where possible, and adopt a risk based approach to permitting, compliance and enforcement.
Option 3 - see Table 4 below due to space constraints here.

Option 2 is preferred as it avoids infraction and associated fines for not meeting the legal air quality standard obligations whilst recognising that MCPs are not used extensively offshore and therefore measures beyond those in the MCPD are not viewed as necessary for the offshore oil and gas industry. The draft IA is therefore based on our proposed approach and is subject to the outcome of the consultation.

Will the policy be reviewed? It will be reviewed. **If applicable, set review date:** 12/2022

Does implementation go beyond minimum EU requirements?		No		
Are any of these organisations in scope?	**Micro** Yes	**Small** Yes	**Medium** Yes	**Large** Yes
What is the CO_2 equivalent change in greenhouse gas emissions? (Million tonnes CO_2 equivalent)		**Traded:** NA	**Non-traded:** NA	

I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.

Signed by the responsible SELECT SIGNATORY: ..... ***Date:*** .....

Summary: Analysis & Evidence

Policy Option 1

Description:

FULL ECONOMIC ASSESSMENT

Price Base Year 2017	PV Base Year 2018	Time Period Years 15	Net Benefit (Present Value (PV)) (£m)		
			Low: -26.9	**High:** -9.1	**Best Estimate:** -16.9

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	0.0	N/A	0.8	**9.1**
High	0.0		2.5	**26.9**
Best Estimate	0.0		1.6	**16.9**

Description and scale of key monetised costs by 'main affected groups'

All monetised costs in this assessment are treated as direct costs to business. While some enforcement cost and administration costs will fall to BEIS / OPRED, costs will be recovered from operators through fees. Monetised costs consist of abatement costs to meet emission limits, emissions monitoring and administrative costs. The present value (PV) abatement cost over the assessment period (2018-2032) is £13.3m, monitoring cost is £3.5m and administration cost is £0.25m.

Other key non-monetised costs by 'main affected groups'

For some impacts evidence is not available or collecting it would be disproportionately costly. These include transitional costs (such as communications, guidance, training of regulators and creating tools for permitting and monitoring) and the environmental and human health benefits associated with reductions in emissions offshore due to the introduction of the MCPD.

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	0.0	N/A	0.0	**0.0**
High	0.0		0.0	**0.0**
Best Estimate	0.0		0.0	**0.0**

Description and scale of key monetised benefits by 'main affected groups'

N/A

Other key non-monetised benefits by 'main affected groups'

The environmental and human health benefits due to a reduction in emission of pollutants has not been quantified. The metrics used to quantify damage costs from air pollution are not suited to application in the remote geographical conditions of the offshore oil and gas industry both from a human health and environment perspective.

Key assumptions/sensitivities/risks **Discount rate (%)** 3.5

As the largest cost in the assessment, the cost and numbers of abatement equipment required are a key area of uncertainty due to the niche technical aspects of the offshore oil and gas sector.

BUSINESS ASSESSMENT (Option 1)

Direct impact on business (Equivalent Annual) £m:			Score for Business Impact Target (qualifying provisions only) £m:
Costs: 1.2	**Benefits:** 0	**Net:** -1.2	

Introduction

Air pollution harms human health and the environment. Air quality is a transboundary issue which needs to be addressed at an international level, by reducing emissions from all sources. Some of the health effects caused by exposure to elevated levels of key pollutants include:

- Nitrogen oxides (NO_x) - Collated research by the Committee on the Medical Effects of Air Pollutants into the health impacts of NO_x (specifically NO_2, which is the most prevalent form of NO_x in the atmosphere generated by anthropogenic activities) has shown that it is reasonable to associate NO_x in outdoor air with adverse effects on health, including reduced life expectancy. As part of this report, it was established that there were likely to be short term and long term effects as short-term exposure to NO_x has been linked to some direct effects on respiratory morbidity, while studies of long-term exposure to NO_x report associated respiratory complications.
- Sulphur Dioxide (SO_2) - This gas irritates the airways of the lungs, increasing the symptoms of those suffering from lung diseases and contributes to acid rain.
- Dust or particulates (PM) - Fine particles can be carried deep into the lungs where they can cause inflammation and a worsening of heart and lung diseases.

Whilst these impacts are predominantly onshore, there are offshore impacts although at a significantly reduced level due to the remote location of offshore platforms and the rapid dispersion of pollutants which are typically emitted at a height above working.

The Medium Combustion Plant Directive's (MCPD's) objective is to reduce emissions from combustion plants with a maximum thermal rated input greater than or equal to 1 MWth and less than 50 MWth, which are largely unregulated across Europe as they fall between the scope of these existing Directives: Industrial Emissions Directive 2010/75/EU (including Large Combustion Plant i.e. ≥ 50 MWth); and Smaller appliances (< 1 MWth) covered by the Ecodesign Directive 2009/125/EC (establishing a framework for the setting of Eco design requirements for energy-related products).

Under the MCPD, qualifying MCP's on offshore platforms are limited to boilers, direct fired heaters and dual fuelled engines. Gas turbines and single fuelled gas and diesel engines used on offshore platforms are not in scope of the MCPD and are therefore not included within the IA.

Air pollution is measured in two different ways - by total emissions and concentrations. Emissions are the discharge of a pollutant from a specific source, in this case combustion plants. Total emissions are regulated by the Gothenburg Protocol, under which States agreed to cap their annual emissions of certain pollutants. The EU National Emissions Ceilings Directive (NECD) is the European legislation that implements the limits agreed under The Gothenburg Protocol. The NECD sets annual limits for each pollutant, including NOx, which Member States had to achieve by 2010 and each year thereafter. In 2015 the European Commission brought forward revised proposals to build on the Directive by setting 2020 ceilings (in accordance with the revision to the Protocol) and additional 2030 emissions ceilings.

The MCPD was supported by the UK as it will introduce reductions in pollutant emissions which will contribute to meeting the 2030 national emission ceilings. The MCPD also provides important flexibilities and exemptions where costs are deemed to be disproportionate, overly burdensome or pose a risk to energy security. Exemptions may be granted to operators that normally use low sulphur fuel but due to a shortage of that fuel supply, they are subsequently unable to meet prescriptive emission limits. A similar exemption could be granted to operators that only use gaseous fuel which is suddenly interrupted and operators then need to use alternative fuels.

The MCPD extends regulation of air pollutants which are harmful to health and the environment to include a wide variety of combustion plant and generators in the range ≥ 1 but < 50 MWth. It sets emission limits for NO_x, SO_2 and dust and mandatory periodic monitoring of emissions of these pollutants (plus CO) by operators.

The MCPD also allows an exemption from emission limits for plants which do not operate more than 500 hours; given that abatement costs may outweigh the benefits provided by a small emission reduction.

The Directive requires such plant to be registered / permitted with limits on the level of pollutant emissions set according to a range of criteria and progressively introduced over a period of time to incorporate all qualifying MCP.

The Directive entered into force on 18 December 2015 and the UK must transpose its requirements into national law by 19 December 2017. The MCPD has phased implementation dates for operators which is based upon the size of plant. Any plant put into operation from 20 December 2018 will be classed as new and will require a permit / registration to operate. Existing plant over 5 MWth will require a permit or must be registered from 1 January 2024 and from 1 January 2029 existing plants ≥ 1 and ≤ 5 MWth must be permitted or registered.

Exit from the European Union

On 23rd June 2016, the EU referendum took place and the people of the United Kingdom voted to leave the European Union. Until negotiations to exit the EU are concluded, the UK remains a full member of the European Union and all the rights and obligations of EU membership remain in force. During this period the Government will continue to negotiate, implement and apply EU legislation. The outcome of these negotiations will determine what arrangements apply in relation to EU legislation in future once the UK has left the EU.

Non-monetised benefits to the environment

The main benefit of the implementation of the MCPD will arise from the reduction in air pollutant emissions. By reducing the number of plant operating without abatement and ensuring that these plant are monitored for their emission levels, this will improve air quality and have a positive impact on the environment (including by contributing to the reduction of greenhouse gases).

The benefit expected due to the introduction of the MCPD has not been quantified for the following reasons:

- The benefit is proportional to the number of combustion plant falling under the scope of the MCPD. As shown in Tables 1 and 2, there are relatively few MCP which will be subject to ELVs and therefore the reduction in emissions is limited for the offshore oil and gas sector.
- The metrics used to quantify damage costs from air pollution are not suited to application in the geographically remote conditions of the offshore oil and gas industry both from a human health and environment perspective. This is further compounded by the prevalence of meteorological conditions that lead to rapid dispersion of emissions and relatively low ground level concentrations in comparison to onshore sites with larger human health impacts.
- Quantifying emissions for the qualifying MCPs is problematic as these have not been required to undertake monitoring previously and emissions have only been estimated with no actual verification or support sampling of that data. It is therefore not reasonably accurate to use this information in order to determine future reductions as it would be a large area of uncertainty.

Proposed Legislative Approach

The Department for Business, Energy and Industrial Strategy's (BEIS's) Offshore Petroleum Regulator for Environment & Decommissioning (OPRED) plans to transpose the Directive through a Statutory Instrument which will amend OPRED's extant Offshore Combustion Installations (Pollution Prevention and Control) Regulation 2013 to effect transposition of the MCPD's obligations in respect to offshore oil and gas operations:

- The proposal is to amend the Offshore Combustion Installations (Pollution Prevention and Control) Regulations 2013 which transposed Directive 2010/75/EU (the Industrial Emissions Directive / IED) to cover MCP within the scope of the MCPD which are located on offshore oil and gas platforms.
- It should be noted that gas turbines and gas and diesel engines on offshore platforms are exempt from the requirements of the MCPD.
- To avoid a regulatory gap, the MCPD also applies to a combination formed by new medium combustion plants where the total rated thermal input is equal to or more than 50 MWth, unless Chapter III of the IED applies.
- The amending Regulations will seek to cover the requirements of the MCPD which will be phased in progressively and will cover plant equal to or greater than 1 MWth and less than 50 MWth.

The new provisions will extend to specific offshore combustion plant. It will progressively introduce limits to pollutants for new and existing MCP and include monitoring requirements. We believe most of the requirements for the regulation of pollutant emissions arising from the new Directive can be largely met through the extant regulatory framework. This includes OPRED's permitting systems for offshore combustion plants and its processes for monitoring compliance and enforcement. Figure 1 summarises the regulatory landscape for combustion plants.

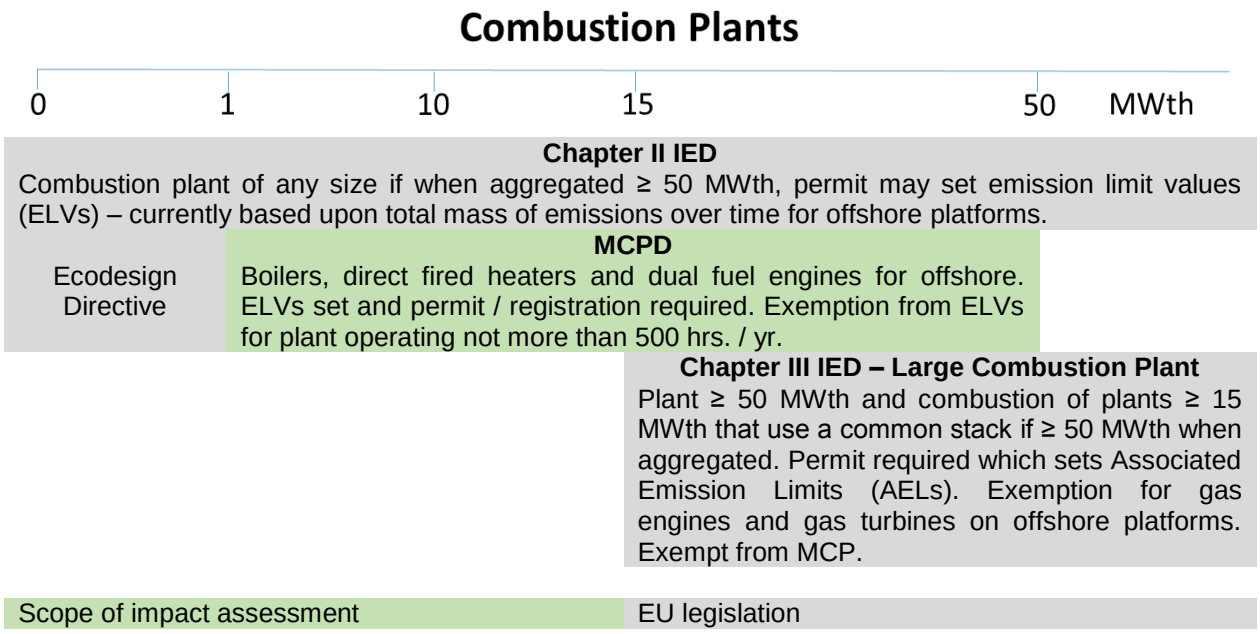

Figure 1: Regulatory landscape for Combustion Activities

The Department for Environment, Food and Rural Affairs (Defra) are working with the Welsh Government to transpose the MCPD for onshore plant by amendments to the Environmental Permitting (England and Wales) Regulations 2010 (as amended) which transposed the IED in relation to combustion plant equal to or above 50 MWth and contains domestic provisions for plant between 20-50 MWth. Scotland proposes to transpose the MCPD as part of the Integrated Authorisation Framework (IAF) and Northern Ireland are laying their own legislation to transpose the MCPD.

The requirements of the MCPD apply to all businesses - therefore small and micro firms, as well as large companies, operating on the UKCS will need to comply with the new MCPD implementing legislation. In the light of the Deepwater Horizon disaster (Gulf of Mexico 2010) and the subsequent close scrutiny of the UK offshore industry, it is crucial that all businesses operating offshore, regardless of size, are subject to the same controls under BEIS / OPRED's comprehensive environmental regime to ensure that they continue to provide a high level of environmental protection.

However, whilst there are offshore Operators which meet the `small firms' or `micro-business' definition, these particular companies would invariably be one of several co-venturers (including, in a number of cases, large multinationals) on licensed fields. Where there are several such co-venturers, they make an agreement among themselves governing existing and future operations. This is known as the Joint Operating Agreement (JOA). Creating or amending a JOA entails the apportionment of operational costs between the parties – usually based on the equity / percentage of a licensed field held by each party and their available resources. Consequently, in the vast majority of cases, none of them would be solely responsible for meeting the full costs of complying with the MCPD's requirements. In view of this, the MCPD transposing Regulations would not have a disproportionate impact on those companies that fall within the `small firms' or `micro-business' definitions.

Definitions

Described below are the definitions of key terms used throughout this document.

New and existing plant: Definitions for new and existing plants are provided in Article 3 of the MCPD. These are important as the emission limit values (ELVs) that apply to each, and the date of application, differ between the two.

- An existing combustion plant is defined as one that is put into operation before 20 December 2018 or for which a permit was granted before 19 December 2017 pursuant to national legislation provided that the plant is put into operation no later than 20 December 2018.
- A new combustion plant is defined as any plant other than an existing combustion plant.

Plant type: Articles 6(3) and 6(8) allow for different treatment of plant that operates no more than 500 hours per annum ('stand-by plant'):

- Working plant: those operating on average more than 500 hours per year which are subject to compliance with emission limits.
- Stand-by plant: plant installed alongside working plant to provide for additional demand at peak times or in case of shut-down of the main working plant, and operating no more than 500 hours per year.

Abatement technology: refers to techniques and technologies used to reduce pollutant emissions. Primary abatement prevents formation of pollutants at the pre-combustion stage. Secondary abatement removes pollutants from the exhaust gases, i.e. post combustion.

MW; Megawatts: in this Impact Assessment unless otherwise stated this refers to Mega Watts of thermal input.

MCPD Key Dates

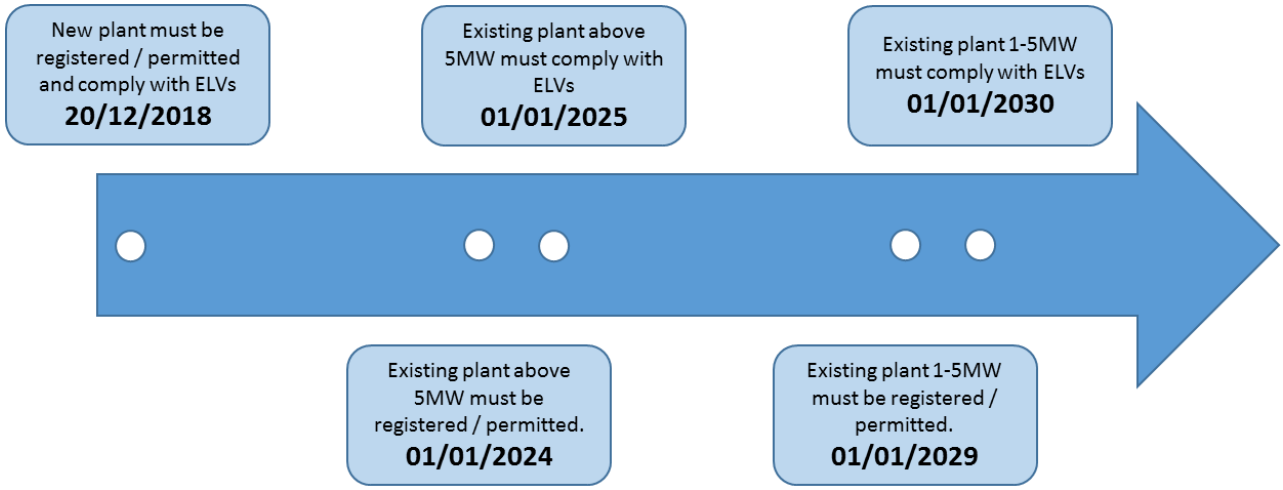

Figure 2: Timescale for implementation of the MCPD

Problem under consideration

Existing domestic legislation already places emission limits on combustion plant largely those ≥ 50 MWth, while EU Ecodesign legislation applies emissions standards for smaller (< 1 MWth) combustion plant. However, this leaves a regulatory gap for plant falling between these two thermal ratings.

Transposition of the MCPD will help to improve air quality and meet emission ceilings by applying emission limits to combustion plants which are currently unregulated. The MCPD should be transposed in a way which maximises benefits to air quality by ensuring high levels of compliance, while avoiding unnecessary costs to operators and regulators by making best use of available flexibilities. In transposing the MCPD, Member States are required to:

a) Decide whether to implement the exemptions provided – the intention is to apply them for offshore MCP.
b) Implement national systems or approaches in terms of permitting, enforcement and compliance.

Our proposed approach to transposition is presented under the Description of Options Considered Section, including application of the allowed exemptions and flexibilities.

Plant Numbers

In comparison to the estimated 30,000 onshore MCPs, only a very small number of plants are expected to qualify under the MCPD for the offshore oil and gas industry. Based on consultation with the offshore oil and gas industry, approximately 22 existing MCP on offshore oil and gas platforms will fall under the MCPD and will require permitting / registration. Table 1 shows the number of qualifying MCP anticipated to be operating when permitting for existing plant is required, this has taken in to account the forecasted Cessation of Production (CoP) dates.

Table 1: Numbers of existing offshore oil and gas MCP anticipated being operational at qualifying MCPD dates.

Thermal rating (MWth)	Number of qualifying MCP	Number of platforms	Date permitting / registration required
≥1 but ≤ 5	6	4	2029
> 5 and < 50	16*	7	2024

*refers to 16 MCP qualifying in 2024 to be permitted / registered, but one MCP is due to drop out of scope as the platform will enter CoP and therefore is removed from further calculations leaving 15 qualifying MCP.

Any new MCP will require a permit / registration under the MCPD from the first day of operation. To allow for future developments an assumption of Low, Medium and High scenario numbers of new plants is based on one new plant every four years, one new plant every three years and one new plant every two years respectively. This is considered a conservative approach and actual numbers are expected to be lower.

Table 2: Forecast offshore oil and gas platforms and MCP requiring a permit / registration under the MCPD.

		2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Platforms	Low	1	1	1	1	2	2	2	8	8	8	7	7	11	9	7
	Medium	1	1	1	2	2	2	3	9	8	9	8	8	12	10	8
	High	1	1	2	2	3	3	4	10	10	10	10	10	14	12	11
MCPs	Low	2	2	2	2	4	4	4	19	19	19	16	16	22	20	16
	Medium	3	3	3	6	6	6	9	24	22	25	22	22	29	27	23
	High	4	4	8	8	12	12	16	31	33	33	34	34	42	40	40

Rationale for intervention

Combustion plants emit air pollutants (NO_x, SO_2, and dust) that can have a harmful impact on human health and the environment. Some combustion plants are already subject to emission controls in the UK but as discussed there is a regulatory gap for offshore equipment equal to or more than 1 and less than 50 MWth. Regulation is therefore required to implement the MCPD and apply emission controls for this important source of air pollution in order to incentivise the development and uptake of cleaner technology.

The approach to transposition of the Directive into extant UK legislation for the offshore oil and gas sector will reflect the relatively minor contribution of the sector in comparison to overall MCP numbers throughout the UK. It is proposed that the legislation will contain powers for criminal prosecution regarding MCP which replicate existing provisions under the Offshore Combustion Installations (Pollution Prevention and Control) Regulations 2013 that cover larger combustion plants. However, it is anticipated that these will act as a deterrent and be used only in very rare instances where operators persistently fail to achieve compliance with the Directive and implementing Regulations.

Policy objective

The policy objective is to improve air quality across the UK, which will assist in meeting the requirements of the revised National Emissions Ceilings Directive in 2030 as well as transboundary reductions.

Effective transposition of the MCPD will help to avoid the risk of infraction and, due to transboundary impacts, implementation by the rest of the EU will further improve air quality in the UK. The MCPD provides for a number of flexibilities, which Member States may choose to apply. It also allows Member States to determine the appropriate approach to enforcement, monitoring and permitting.

We intend to apply a number of exemptions and flexibilities to keep costs to businesses to a minimum and ensure that they are not at a competitive disadvantage with businesses in other Member States. We will adopt a risk based approach to enforcement and permitting to keep costs and burdens to a minimum whist still protecting and improving air quality.

Description of options considered (including status-quo)

The IA has a 15-year assessment period which begins in 2018, when the first costs arising from implementation of the MCPD will be incurred by plant operators, and involves a calculation of the total net present value for the period and covers the full implementation of the MCPD (complete in 2030).

Option 1: Baseline

A baseline scenario in which there is no implementation of the MCPD is estimated. The impacts of implementing the MCPD are assessed relative to this baseline. It can be seen from Table 2 that a decrease in MCP is expected without implementation of the MCPD due to the number of offshore platforms ceasing production and being decommissioned over the period from 2018 to 2030 and a small increase in MCP due to new developments.

Option 2: Implementation of the MCPD for the offshore oil and gas sector

For the offshore oil and gas sector, combustion plant that is deemed to be within scope of the MCPD comprise boilers, direct fired heaters and dual fuelled engines. Other combustion equipment such as gas turbines and single fuelled gas and diesel engines are exempt from the MCPD. OPRED is proposing to transpose the MCPD via amendments to the Offshore Combustion Installations (Pollution Prevention and Control) Regulations 2013 (the 'PPC Regulations'). The requirements of the MCPD are set out in Table 3.

Option 3: Full early implementation from 20 December 2018

Full implementation of the MCPD from 20 December 2018, and includes new and existing qualifying MCP irrespective of plant size. The ELV controls and monitoring to be in force from this date, and implemented by amending the PPC Regulations.

Table 3: MCPD operator requirements and timescale of application.

<table>
<tr><th>Average Annual Operating Hours</th><th>Plant Age</th><th>Plant Size (MWth)</th><th>Permit needed for operation</th><th colspan="2">ELVs (Annex II of the Directive contains exceptions)</th><th>Monitoring after granting of permit</th></tr>
<tr><td rowspan="6">Up to 500 hours</td><td rowspan="3">New</td><td>1 - 5</td><td rowspan="3">From 20/12/18</td><td rowspan="5">None unless firing solid fuel</td><td rowspan="3">From 20/12/18</td><td>Every 1,500h of operation, or at least every 5 years</td></tr>
<tr><td>5 - 20</td><td rowspan="2">Every 500h of operation, and at least every 5 years</td></tr>
<tr><td>20 - 50</td></tr>
<tr><td rowspan="3">Existing</td><td>1 - 5</td><td>From 01/01/29</td><td>From 01/01/30</td><td rowspan="2">Every 1,500h of operation, or at least every 5 years</td></tr>
<tr><td>5 - 20</td><td rowspan="2">From 01/01/24</td><td rowspan="2">From 01/01/25</td></tr>
<tr><td>20 - 50</td><td>Every 500h of operation, and at least every 5 years</td></tr>
</table>

More than 500 hours	New	1 - 5	From 20/12/18	See Annex II of the Directive	From 20/12/18	Every 3 years
		5 - 20				
		20 - 50				Annually
	Existing	1 - 5	From 01/01/29		From 01/01/30	Every 3 years
		5 - 20	From 01/01/24		From 01/01/25	
		20 - 50				Annually

Alternative options for transposing the MCPD could involve applying controls earlier than required by the Directive for new and / or existing plants; and setting stricter emissions limits than the Directive. These options are assessed in Table 4.

Table 4: Alternative options considered but not taken forward to the IA

Option	Discussion
Option 3 (carried from page 1 due to space restriction)	A third option considered was to transpose the MCPD into domestic legislation so that it applies the MCPD requirements in full from 20 December 2018 irrespective of plant size. This would mean ELVs, controls and monitoring come into effect from this date. It was considered that this was not feasible, as industry require sufficient time to review and implement any changes to meet the ELVs and establish a monitoring regime that would comply with MCPD. It was also determined that this would be gold plating the MCPD which is not aligned with Government policy.
Apply earlier emission controls for new plant	The MCPD requires new plant to be permitted / registered and in compliance with ELVs from 20 December 2018, one year after the deadline for transposition. This timescale is justified to allow sufficient time for transposition, to develop the processes and guidance required for implementing the Directive, and to raise awareness of the requirements for plant operators. It was therefore considered that earlier application of emission controls for plant coming into operation after December 2017 would not be appropriate and it was also determined that this would be gold plating the Directive which is not aligned with Government policy.
Apply earlier emission controls for existing plant	Application of earlier emission controls to existing plant could deliver earlier improvement to air quality. However, with the requirement for permitting / registration, retrofitting to achieve compliance with ELVs and possibly modifications to the flue to allow monitoring of emissions, a long timescale for implementation is helpful. Applying earlier controls was not determined to be effective based upon the number of qualifying MCP operating in the offshore sector, and it was also determined that this would be gold plating the Directive which is not aligned with Government policy.
Application of stricter ELVs	The MCPD ELVs were selected to provide a minimum emission standard which can be applied to the wide variety of combustion plant in scope of the Directive. Application of stricter ELVs would deliver greater emission reductions but given the low number of MCP in the offshore oil and gas industry, this was considered to be disproportionate to the environmental benefit it would achieve. This is especially relevant given the remote geographic location of offshore oil and gas platforms and the variability in the gas supply that could be used as fuel.

Option 2 is therefore considered to be the only appropriate option for transposing the MCPD given the low numbers of MCP in the offshore oil and gas sector and the desired outcomes of the transposition on air quality.

Monetised and non-monetised costs of each option (including administrative burden)

In presenting the preferred approach we have grouped the requirements into three key themes:

1) ELV Compliance costs – these reflect the cost of additional abatement measures required in order to meet the ELVs for MCP already in operation on offshore platforms and include both capital and operational costs.
2) Emissions monitoring – the introduction of emission limits also requires emissions monitoring to demonstrate compliance.

3) Administrative costs – costs incurred by regulators and operators for plant permits, data reporting, maintaining and updating data records.

An IA questionnaire was issued to industry in March 2017, and responses have informed the cost estimates of the key themes. Low, Medium and High scenario numbers of new plants are based on one new plant every four years, one new plant every three years and one new plant every two years respectively.

ELV Compliance costs

The abatement costs for operators are determined according to the ELVs that apply and when these come into force. The Directive presents a number of options where Member States can implement ELVs that are less stringent, or only apply at a later date for specific sub-categories of MCP.
Our proposal is to transpose the ELV flexibilities for new and existing plant operating not more than 500 hours per year.

The exact number of MCPs which qualify for this exclusion is not known for the offshore oil and gas sector. However, based on responses by industry to the IA questionnaire, there are relatively few MCP which will operate not more than 500 hours per year. As such, no MCPs have been excluded from the costs assessment on the basis of operating not more than 500 hours per year.

Information on CAPEX and OPEX costs associated with retrofitting abatement technology to ensure compliance with the relevant ELVs has been gathered from a number of sources. Costs have been calculated for existing MCP on the assumption that NO_x emissions are by far the most likely to have an ELV for the offshore oil and gas sector, (as this sector predominantly uses gas oil and / or gas) for which each MCP would require abatement to meet the ELV. Selective Catalytic Reduction (SCR) has been used as an example technology for the basis of the costs as it can be retrofitted to existing combustion equipment and it is one of the most established and well-studied NO_x abatement technologies available. It is acknowledged that SCR may not necessarily be applicable to all installations that will fall under the MCPD and that other suitable technologies are available but costs have not been quantified for these other technologies as part of this IA.

SCR CAPEX is dependent on the electrical rating of the equipment to be abated. SCR uses a catalyst and consumes urea as part of the abatement process. OPEX costs are largely driven by the cost of urea but also include replacement catalyst costs and labour costs, and this has been considered in Table 5 for low medium and high CAPEX.

It is assumed than any new platforms and MCP would be designed with equipment capable of meeting the MCPD ELVs where relevant. Hence no CAPEX or OPEX costs have been taken into account for new MCP.

Table 5: CAPEX costs for retrofitting abatement technology to comply with ELVs

CAPEX cost per MCP (£ / kW)		
Low	**Medium**	**High**
21.3	42.5	82.5

Table 6 presents the CAPEX costs for retrofitting of abatement technology in 2025 when existing MCP greater than 5 MWth must comply with ELVs and in 2030 when existing plant ≥ 1 MWth but ≤ 5 MWth must comply with ELVs. CAPEX costs have been split over three years for each MCP when calculating the annualised costs and costs for abatement have been calculated for all qualifying MCP regardless of anticipated cessation of production date.

Table 6: CAPEX costs for retrofitting abatement technology to comply with ELVs

Year	MCPD Thermal rating category (MWth)	Number of MCP requiring abatement	Average electrical rating of MCP (kW)	CAPEX cost per MCP (£)		
				Low	Medium	High
2025	> 5 but < 50	15	18,563	118,341	236,683	459,164
2030	≥1 but ≤ 5	6	3,214	20,488	40,975	79,492

The operating expenditure (OPEX) for abatement technology can include items such as purchasing and disposal of raw materials (i.e. reagents or filters), maintenance of equipment and additional staff costs. The OPEX cost has been calculated using a value of approximately £5 / MWh for each MCP. The annual OPEX cost is calculated using an average value of vendor quoted SCR running cost (£ / MWh). The annual MWh have been calculated for two categories of medium combustion plant (≤ 5 MWth and > 5 MWth but < 50 MWth). This has been done by calculating the average rating of qualifying combustion equipment and average run hours of qualifying combustion equipment within the two categories and combining these to determine MWh. The annual OPEX cost has been calculated by multiplying running costs in £ / MWh by the MWh. This was combined with the average thermal rating of the MCP and the average running hours to determine the MWh and generate the Medium annual OPEX cost. Low and High values are generated by applying a factor of 0.5 and 1.5 respectively to the Medium value (Table 7).

Table 7: OPEX costs for abatement technology to comply with ELVs

Year	MCPD Thermal rating category (MWth)	Number of MCP requiring abatement	Average running hours of MCP	Annual OPEX per MCP (£)		
				Low	Medium	High
2025	> 5 but < 50	15	4,605	68,115	136,231	204,346
2030	≥1 but ≤ 5	6	1,413	3,619	7,237	10,856

Administrative costs

The Directive allows for a registration or permitting system to be adopted. We propose that MCP will be subject to permitting and that the Regulations will also provide for cost recovery by OPRED regarding its regulatory functions. This is proposed to be achieved by providing powers to charge for functions exercised by OPRED in relation to the Regulations, in accordance with HMT policy on Managing Public Money. The suggested approach is to amend the Offshore Combustion Installations (Pollution Prevention and Control) Regulations 2013, which transposed the IED for offshore platforms, to cover offshore MCP within the scope of the MCPD so that a single integrated permit would cover plant within scope of the IED and plant within scope of the MCPD. As such, the MCPD will be implemented for the offshore oil and gas sector through a mature permitting process.

We propose to recover costs from operators where possible through the charging of an hourly rate based on work undertaken for each operator, in accordance with our current practice for other regulatory regimes. Costs have been estimated for this Assessment. The set up costs for the MCPD (e.g. staff training, managing compliance checks and publication of the 'public on-line register of plant' as required by Article 5(5) of the Directive) have been excluded.

The following have not been included in the IA:

a) Dealing with non-compliance – Member states are required to specify when non-compliance with ELVs must be reported by operators to the regulator, and how. This provision is required to enable regulators to order a plant to cease operation if it is causing significant degradation to air quality. The proposals are designed to maximise compliance and so the costs associated with non-compliance are not quantified.

b) Compliance check costs - Member States must set up a system of environmental inspections or other measures to ensure compliance with the Directive. This requirement will be met by the existing process for offshore site visits by the Offshore Inspectorate and therefore will not incur any significant additional time or cost burden. Non-compliance reporting and

investigation will incur similar costs for operator and regulator as those under the extant PPC Regulations.

Activities associated with administrative burden imposed on operators and regulators by the MCPD including estimated time required to carry out the tasks has been accounted in administrative costs. Familiarisation costs of the new requirements of the MCPD have not been directly accounted for, as the requirements are largely similar to the existing requirements under the PPC Regulations. However, the costs associated with monitoring are conservative as this is based upon a high standard approach to monitoring with MCERTs, with the actual monitoring costs anticipated to be lower.

The Directive requires three reports to be submitted to the European Commission over the course of 10 years. Associated costs were assumed to be spread equally over the reporting period. No explicit cost estimates were developed for notifications of malfunctions and planned changes, as the potential number of MCP affected is highly uncertain. However, in both instances the additional administrative burden / costs are likely to be very small and will fall to OPRED (and passed on to industry through charges), with key assumptions used to calculate tariff per hour are summarised in Table 8.

Table 8: Hourly rate for calculation of administration costs

Elements of total tariff	OPRED Cost (£ / hr.)	Operator Cost (£ / hr.)			Source
		Low	Medium	High	
Hourly rate	168.0	100	144	187	OPRED and industry response to IA Questionnaire. OPRED cost accounts for technical and administrative work based upon time.

The annualised administrative costs are dependent on both one-off and annual costs and therefore vary from year to year. We propose charging operators appropriate fees to recover regulatory costs, which is consistent with the current PPC Permitting approach, thus avoiding additional burdens on public finances. We also propose to review the fees provisions under the Offshore Combustion Installations (Pollution Prevention and Control) Regulations 2013, in order to ensure that there are the necessary powers to charge regarding all current functions under these Regulations, but any additional charges made as a result of any changes would be relatively insignificant.

For the estimation in this impact assessment, all costs to OPRED are considered direct costs to business as per OPRED guidance on fees. All permitting / registration costs and all other costs quantified in this impact assessment are not considered transitional and are all estimated as non-transitional. Therefore, transition costs will be within costs not quantified in this impact assessment. These include communications, guidance, and training of OPRED personnel and the setting-up of tools for permitting and to carry out compliance checks to fulfil regulatory requirements.

Emissions Monitoring Costs

Operators are required to monitor emissions every three years for ≥ 1 but ≤ 20 MWth MCP and every year for plants > 20 MWth but < 50 MWth. The Directive also allows Member States to lower the frequency of monitoring for plants operating no more than 500 hours per annum, and we intend to apply this flexibility as these plants will be operating as stand-by only and therefore their impact on air quality will be low as discussed above.

Member States are required to determine the monitoring standards and we are working with industry to establish a suitable approach. For the purpose of this impact assessment, the cost of emissions monitoring is estimated based on monitoring standards currently applied to larger combustion plants on offshore platforms, i.e. the UK Monitoring Certification Scheme (MCERTs). However, for the majority of the offshore oil and gas sector's MCP (those using natural gas and gas oil) operators are only required to monitor NO_x and CO emissions and the MCERTs standard is considered disproportionate due to its high costs (this also aligns with onshore monitoring proposals). Therefore, cheaper and less stringent methods are being investigated. For the purpose of this impact assessment we have assumed that MCERTs is required for all plant (in the absence of another European Standard (EN) being identified at this stage) and therefore monitoring costs are likely to be overestimated.

The type of pollutants to be monitored by MCP operators depends on whether an ELV is set down in Annex II for the plant concerned. Overall:

- Natural gas fired plant are required to monitor NO_x emissions.
- Plant fired by gaseous fuels other than natural gas are required to monitor NO_X and SO_2 emissions.
- Plant using gas oil are required to monitor NO_X emissions.
- Plant using other liquid fuels are required to monitor NO_X, SO_2 and dust.
- CO monitoring is also required for all plant, although there is no set ELV for this pollutant.
- Offshore installations do not use solid fuels, so monitoring requirements for these have not been considered.

Information on the number of MCP estimated to be affected per capacity band and frequency of monitoring required is summarised in Table 9.

Table 9: Number of existing platforms per phased time period to undertake monitoring.

MCP Rating (MWth)	Number of platforms	Frequency*
≥ 1 but ≤ 5	4	Every 3 years
> 5 but ≤ 20	3	Every 3 years
> 20 but < 50	3	Annually

*The first measurements must be carried out within four months of the grant of a permit to, or registration of, the plant, or of the date of the start of the operation, whichever is the latest (Annex III, point 4)

Information on the costs of monitoring was provided by operators based on previous experience and is deemed reasonable and representative. A Medium scenario cost of £10,000 per MCP to fit sample ports has been used based on information provided by operators but it is acknowledged that this number is likely to be highly site specific due to specific technical configuration for that platform. It has been assumed that each existing platform will require one piece of MCP to have sampling ports fitted and that all new plants will be built with the required sampling ports in place. All new platforms are assumed to have at least one MCP > 20 MWth and therefore require annual monitoring.

The monitoring costs cover the emissions sampling by an accredited UK monitoring company and provision of an emissions monitoring report to the operator. These monitoring costs and the cost of fitting sampling ports are detailed in Table 10.

Table 10: Monitoring cost data and assumptions (£)

Cost Source	Low	Medium	High
Monitoring per platform	50,000	65,000	80,000
Fitting Sample Ports per MCP	5,000	10,000	20,000

Results

This section details the estimated costs and wider administrative requirements for MCP for the offshore oil and gas sector following implementation of the MCPD. The results present the outcome over a 15 year assessment period. The assessment begins in 2018, when the first costs will be incurred, and ends in 2032, where it would be anticipated that the MCPD will have been implemented by industry in full, as the latest MCPD requirements apply from 2030.

Year-by-year results (i.e. annualised costs for individual years) are presented throughout this section, to show the phased MCPD requirements on different types of plant. However, from 2030 onwards, the impacts will be similar for future years given that there are no further changes to MCPD requirements from that year. The only changes will be as a result of the closure of existing plants on reaching the end of their operating life and opening of new plants, and changes in the projected use of different fuel types.

All prices are in 2014, and a 3.5% discount rate has been used in present value figures as per Green Book guidance. The base year for the NPV is 2018.

ELV Compliance costs

The abatement costs to plant consist of the cost of abatement technology needed to meet the ELV's within the MCPD. For working plants that are already compliant with MCP ELVs under business as usual, the abatement costs are set to zero – i.e. only the relevant costs compared to the baseline are included.

The medium year-on-year breakdown is shown in Table 11 where the annual total cost of abatement increases over the appraisal period as each stage of the MCPD is introduced. The table below also demonstrates those years where a greater number of plant are impacted (2025, 2030), as this is when ELVs come into effect, (dependent upon plant size) as shown by the higher cost. The final column presents the total cost over the appraisal period in discounted, present value terms.

Table 11: Annualised ELV compliance costs (£m).

Year	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	Total NPV
Medium cost																
£m	0.0	0.0	0.0	0.0	0.0	1.0	1.0	2.5	1.3	1.3	1.0	1.0	1.4	1.3	1.3	13.13
Low cost																
£m	0.0	0.0	0.0	0.0	0.0	0.5	0.5	1.3	0.7	0.6	0.5	0.5	0.7	0.7	0.6	6.56
High cost																
£m	0.0	0.0	0.0	0.0	0.0	1.9	1.9	4.2	2.0	1.9	1.5	1.5	2.1	2.0	1.9	21.01

Administrative costs

The administration costs faced by plant are for operator and OPRED time and effort for processing an environmental registration / permit, inspection, and reporting has been accounted for in Table 12. This will result in a range of one-off and recurring costs to regulators and MCP operators. Recurring costs are lower for standby plant, as the number of affected plant are anticipated to be very few.

The medium year-on-year breakdown is shown in Table 12, where the annual total administrative cost increases over the appraisal period as each stage of the MCPD is introduced. The final column presents the total cost over the appraisal period in discounted, present value terms.

Table 12: Annualised administrative costs (£k)

Year	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	NPV
Medium cost																
£k	7.29	3.31	3.2	15.3	5.97	5.76	11.5	29.6	25.6	25.4	19.4	18.8	32.8	25.9	16.9	246.8
Low cost																
£k	5.46	2.55	2.46	8.06	7.06	4.45	4.3	20.4	23	15.5	13.1	12.7	23.2	19.2	11.4	172.8
High cost																
£k	9.11	4.06	12.4	13.3	15.3	10.6	17.7	40.1	40.5	30.9	33.3	28.8	46.2	36.3	31.6	370.1

Monitoring costs

The monitoring costs are the costs faced by operators in order to meet the Directive's monitoring requirements. Compliance with the monitoring requirements set out in the Directive would result in costs of £3.5m (NPV, in 2014 prices shown in Table 13). The estimated costs include the fees for an accredited consultant to conduct the monitoring surveys and prepare a monitoring survey report to the operator. Depending on the size and type of MCP and fuel used, monitoring surveys differ in terms of their frequency and pollutants monitored. The final column presents the total cost over the appraisal period in discounted, present value terms.

Table 13: Annualised monitoring costs (£m)

Year	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	Total NPV
Medium cost																
£m	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.5	0.3	0.3	0.4	0.3	0.5	0.3	0.2	3.53
Low cost																
£m	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.2	2.37
High cost																
£m	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.7	0.5	0.5	0.6	0.4	0.7	0.5	0.4	5.50

Total costs

Sum of annualised costs for the three key cost themes (ELV compliance, administrative and emissions monitoring) are shown in Table 14. Transposition of the MCPD is calculated to cost £16.9m (NPV, in 2014).

Table 14: Annualised total costs (£m)

Year	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	Total NPV
Medium cost																
£m	0.1	0.1	0.1	0.1	0.1	1.1	1.1	3.1	1.7	1.7	1.4	1.3	1.9	1.7	1.5	16.9
Low cost																
£m	0.1	0.1	0.0	0.1	0.1	0.6	0.6	1.6	0.9	0.9	0.8	0.7	1.1	0.9	0.8	9.1
High cost																
£m	0.1	0.1	0.2	0.2	0.2	2.1	2.1	5.0	2.5	2.4	2.1	1.9	2.9	2.5	2.4	26.9

Risks and assumptions

Monitoring approach and abatement costs

The monitoring requirements in terms of certification of staff and equipment is not currently defined. As such, costs have been based on the use of MCERTs qualified third parties carrying out emissions monitoring on behalf of operators. This will ensure that maximum costs are captured, as MCERTs would be a high cost approach to monitoring. As the largest cost in the assessment, the cost and numbers of abatement equipment required are a key area of uncertainty.

Wider impacts

Overall, implementation of the MCPD may have positive secondary impacts on the level of employment in abatement technology suppliers, while potentially having adverse primary impacts in sectors that will incur additional compliance and administrative costs. Secondary impacts (costs and benefits) have not been explicitly monetised in this assessment but primary costs have.

Implementation of the MCPD ELVs, which will require fitting of abatement technology will lead to costs for the firms affected whilst also representing income for firms that manufacture and install these technologies. When considering supply of abatement technologies, the UK and EU as a whole has a well-established abatement technology supply chain as the majority of the technologies currently being applied by Large Combustion Plants could also be relevant for MCP.

Summary and preferred option with description of implementation plan

Air pollution is harmful to human health and the environment. Combustion plant equal to or more than 1 and less than 50 MWth (Medium Combustion Plant, MCP) are a largely unregulated source of emissions of NO_x, Dust and SO_2 which impact on air quality. An important tool for controlling emissions from this source is the MCPD which came into force in December 2015 and must be transposed within 2 years. This impact assessment has assessed a single option (option 2) for applying emission controls to MCPs. The results of the analysis are presented in Table 15.

Table 15: Central NPV of the MCPD transposition (2018 – 2032).

2018-2032	Present Value (£m)
ELV Compliance costs	13.13
Administration costs	0.25
Monitoring costs	3.53
Total / NPV	16.91

The impacts assessed within the document are based on the best available knowledge of the current MCP within the offshore oil and gas sector. However, it is recognised that there are uncertainties around the modelling and the final figures presented.

Appendix A

Responses received from industry to the impact assessment questionnaire.