Department
for Environment,
Food & Rural Affairs

Consultation on modernising environmental permitting for industry

August 2025

We are responsible for improving and protecting the environment. We aim to grow a green economy and sustain thriving rural communities. We also support our world-leading food, farming and fishing industries.

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Contents

Consultation details

Why are we consulting?

This is a consultation on reforms to the environmental permitting framework for industrial emissions. The consultation sets out a wide variety of regulatory reforms and feedback will be used to shape detailed proposals which will be subject to further consultation.

Scope

This public consultation is for England only, however, please note that the devolved governments have been engaged during the preparation of the consultation and we intend to continue working closely with them in further developing the policy options outlined in this document. We will do so in line with the approach agreed through the Integrated Pollution Prevention and Control: The Developing and Setting of Best Available Techniques (BAT) Common Framework, developing UK-wide approaches to industrial emissions policy where possible. More detail is provided in the introduction and against specific policy proposals.

Responses to this consultation from parts of the UK outside England will be shared with the relevant devolved government department for information.

This consultation covers the permitting of 'industrial' activities under the Environmental Permitting (England and Wales) Regulations 2016 (EPRs), which are taken to include installations, medium combustion plant and specified generators, small waste incineration plant, solvent emission activities, Part B mobile plant and mobile medium combustion plant. The consultation does not directly cover waste operations, mining waste operations, radioactive substances activities, water discharge activities, groundwater activities or flood risk activities - however cross-reference to permitting of other activities will be made where relevant.

Audience

This consultation is open to the public. It is important for us to hear from those who will be directly impacted by the proposals. This includes, but is not limited to, members of the public, industry operators, representatives and trade associations who will be affected by the proposals, as well as environmental and health groups.

Responding to the consultation

This consultation runs for 8 weeks. It opens on 26 August 2025 and closes on 21 October 2025.

We encourage responses via an online survey on Citizen Space, an online consultation tool. Consultations receive a high level of interest across many sectors and using the

online tool assists our analysis of responses, enabling more efficient and effective consideration of issues. The consultation can be completed online via Citizen Space.

However, you may also download the form and send your responses by email or post using the contact details below. If you send your responses by email or post, please include the following information:

- your name
- your email address
- your organisation (if applicable)
- whether you would like your response to be confidential (if yes, please state your reasons)

Enquiries and responses should be directed:

- by email to Control.Pollution@defra.gov.uk including whether you need a hard copy of the consultation
- in writing to Industrial Emissions Team, Defra, Seacole Building, 2 Marsham Street, London, SW1P 4DF

Please note, any responses sent by post must have arrived at the above address by the closing date of the consultation (21 October 2025) to be counted. Any responses received after this date will not be analysed. To ensure your response is included in the analysis, please consider responding online via Citizen Space.

Defra's consultations and call for evidence exercises: privacy notice

Using and sharing your information

How we use your personal data is set out in the consultation and call for evidence exercise privacy notice which can be found here: Defra's consultations and call for evidence exercises: privacy notice - GOV.UK

Other Information

This consultation is being conducted in line with the Cabinet Office "Consultation Principles" and be found at: Microsoft Word - Consultation Principles (1).docx

At the end of the consultation

When this consultation ends, we will keep copies of responses securely. Members of the public may ask for a copy of responses under freedom of information legislation. If you do not want your response - including your name, contact details and any other personal information – to be publicly available, please indicate this when completing the online survey on Citizens Space or say so clearly in writing when you send your response to the consultation. Please note, if your computer automatically includes a confidentiality disclaimer, that won't count as a confidentiality request. Please explain why you need to keep details confidential. We will take your reasons into account if someone asks for this information under freedom of information legislation. But, because of the law, we cannot

promise that we will always be able to keep those details confidential. We will summarise all responses and place this summary on our website at www.gov.uk/defra. This summary will include a list of names of organisations that responded but not people's personal names, addresses or other contact details. Please give us 24 hours' notice if you wish to see consultation responses and summaries. There is a charge for photocopying and postage.

If you have any comments or complaints about the consultation process, please address them to: consultation.coordinator@defra.gov.uk.

Questions about you

Question 1: Would you like your response to be confidential? (Yes/No) If you answered 'Yes', please explain your reason(s)

Question 2: What is your name?

Question 3: What is your email address?

Question 4: In which part of the United Kingdom are you based?

- England
- Wales
- Scotland
- Northern Ireland

Question 5: Which part of the UK are you primarily interested in?

- England
- Wales
- Scotland
- Northern Ireland
- All of the UK

Question 6: Who are you responding as (select one option only)?

- industry
- member of the public
- public body or local authority
- trade body
- academic body
- non-governmental organisation
- other (please state)

Question 7: If you are responding on behalf of an organisation, what is its name? (Open text)

Ministerial foreword

The UK's industrial and energy sectors are the backbone of our economy, with advanced manufacturing and clean energy industries identified as key growth-driving sectors in the UK's Modern Industrial Strategy.

Environmental permitting underpins public support for these sectors through a world-leading approach to pollution control that protects local communities and the environment. Industrial emissions have fallen significantly in the last 30 years, delivering over £52 billion in benefits to human health, ecosystems and labour productivity. The UK Best Available Techniques (UK BAT) system, developed jointly with the devolved governments, provides a predictable and stable approach to co-designing improved standards with industry which is driven by consensus and evidence and helps to channel investment in clean technologies.

However, as set out in Dan Corry's Review of Defra's regulatory landscape, current environmental regulation can be risk-averse, inefficient and difficult to navigate; holding back innovation and growth. The Corry Review therefore recommended a rolling programme of reform to regulation, including the environmental permitting regulations, to ensure they are effectively delivering environmental outcomes while enabling growth.

Defra has already taken action in response to this review, however delivering the Plan for Change requires us to go further in removing barriers to growth for our key industries, while maintaining essential environmental and health protections.

This consultation sets out a package of reforms to support innovation in emerging technologies, streamline permitting and provide the regulatory certainty our businesses need to succeed, grow and invest. This is not about deregulation – but about regulation that delivers outcomes in a more efficient, effective and targeted way. Modernising, simplifying and accelerating the permitting framework will help get Britian building, deliver clean power, improve air quality and clean up our polluted rivers, lakes and seas.

We are proposing a once in a generation set of reforms to give us industrial regulation that helps our industry meet the challenges of the next decade and beyond. This consultation sets out principles and directions of travel, as well as some specific improvements. We want to hear from the industries and communities which are directly impacted by industrial pollution control, and from experts who have fresh ideas for more responsive, flexible and effective regulation of industrial pollution.

Emma Hardy MP

Parliamentary Under-Secretary of State for Water and Flooding

Department for Environment, Food and Rural Affairs

Executive summary

The regulatory framework for industrial emissions has been effective in reducing pollution and is broadly supported by industry, however our analysis shows it is now outdated and requires reform to keep pace with and enable industrial transformation. It can be difficult to navigate, slow and inflexible, delaying critical infrastructure. This is why we are consulting on a package of reforms to modernise permitting for industry and energy sectors.

We have assessed the regulatory framework against the government's missions and priorities and key principles which underpin policy, including environmental and better regulation principles. We have then identified priority areas where the framework could work better and translated these into reform goals for a modernised framework. Each chapter in this consultation covers one of these goals, discussing how well the existing framework achieves the goal and sets out initial proposals for feedback.

The consultation spans a broad range of policies and, once completed, will inform workstreams progressing each policy through detailed analysis and stakeholder engagement. The chapters and key policies within the consultation are outlined below:

Chapter 1: Enabling innovation and encouraging new technologies and techniques

Permitting can in some instances act as a barrier to innovation and growth, in particular for research and development (R&D) activity. This chapter explores new approaches to R&D trials and regulation of emerging technologies to accelerate the commercialisation of innovation by industry, while protecting the environment and local communities. Key policies include:

- exploring regulatory sandboxes, aligned with the Corry Review recommendation, through a new process for approving time-limited R&D trials for novel technologies at industrial sites
- seeking feedback on new models for preserving commercial confidentiality to enable innovation, while protecting the environment and public access to information on emissions
- reconsidering technical aspects of existing R&D exemptions to ensure they are comprehensive and effective
- creating a more forward-looking approach to guidance on emerging techniques for new sectors

Chapter 2: Agile standards – rapid, predictable and integrated standard setting

We urgently need to reform regulation to support quicker roll-out of established net zero and circular economy technologies – as gaps in standards create uncertainty, delays and additional cost for business. More agile standards mean more efficient permitting and a

better regulatory experience for industry. These reforms would uphold and build on existing standards for industrial pollution control. They aim to enable rapid and comprehensive updates to existing standards and the setting of new standards where there are gaps, therefore strengthening public health and environmental protections. Key policies include:

- creating a more dynamic approach to setting Best Available Techniques (BAT) by transferring responsibility for setting standards in England to the Environment Agency (EA), working in partnership across the UK, within a clear framework set out in legislation. The framework would set out the government's priorities and include continued appropriate ministerial oversight.
- exploring greater use of horizontal BAT to set detailed mandatory technical standards for processes or technologies that are used in similar ways across all or many industries and set more generic or narrative requirements that apply across sectors
- using permitting to drive forward the government's priorities on net zero and circular economy, including exploring the use of cross-sector 'horizontal' BAT and mandatory associated environmental performance limits (AEPLs).
- introducing integrated pollution control for all sizes of industry to consolidate and streamline regulation and better control emissions to water and land to ease pressure on the water system

Chapter 3: Proportionate regulation and coherence in the framework

The permitting framework should deliver proportionate coverage of emerging clean technologies, provide clarity on the regulatory position for these technologies and support industry planning and investment. Whilst polluting activities need to be regulated carefully and environmental standards maintained, the framework should better reflect where industries, such as data centres or green hydrogen production, present a lower pollution risk. Key policies include:

- flexible regulatory tiers for low-risk activities would enable regulators to make use of exemptions or simple registration-based approaches for low-risk industrial activities, reducing regulatory burdens upon industry and helping to speed up the deployment of innovative technologies and processes
- setting out potential sector-specific legislative reforms, including streamlining regulation for low-risk sectors (such as backup generators at data centres, small-scale green hydrogen production, and thousands of smaller combustion plant) and adding new regulated activities to provide certainty for developers (including battery energy storage systems, battery manufacturing, non-waste anaerobic digestion and mining of metals and minerals)
- our commitment to simplify and modernise the Environmental Permitting Regulations and related guidance will clarify, streamline and remove duplication from regulation to speed up permitting

Chapter 4: Regulator effectiveness and efficiency

Regulators should deliver standards and permits, recover costs and take sensible, risk-based decisions as smoothly as possible. Key policies include:

- exploring options for staged approaches to permitting, including initial outline permitting approval for complex projects to provide sufficient certainty for investors
- exploring the option of flexible permits for complex sites, such as allowing flexibility below a cap on a site's overall emissions
- highlighting the environmental capacity issues at industrial clusters and whether permitting can help address these, noting a more strategic approach to clusters may be needed
- exploring interactions of industrial permitting with other regimes and policies, focusing on reducing duplication of data requirements for planning and permitting
- reviewing the system for setting local authority permit fees and charges to better deliver cost recovery, increasing the speed of permitting and creating a more automatic and predictable system
- updating emission limit value guidance to give regulators the flexibility to set ELVs within permits anywhere within ranges set out in sectoral BAT legislation based on site-specific factors

Chapter 5: A transparent framework

A transparent framework to meet international obligations, set clear requirements on regulators and industry and enable local people to understand pollution control in their area. Key policies include:

- modernising the UK Pollutant Release and Transfer Register (PRTR) with new pollutants and streamlining reporting

Overall, these reforms could have a positive impact upon economic growth, through stimulating environmental innovation. Detailed assessments of impacts on growth will be made as part of post-consultation policy development.

This consultation covers England however we will continue to engage with devolved governments on the content of the consultation and explore areas for collaboration.

Introduction

Our industrial and energy sectors are key drivers of growth. Environmental permitting plays a vital role in ensuring industrial installations are operated to high standards which safeguard people and the environment. Whilst the framework has been effective in reducing pollution and is broadly supported by industry, it is now outdated and requires urgent modernisation to ensure that important environmental safeguards keep pace with and enable industrial transformation and growth. Now is the right time to review this framework to ensure that it effectively delivers our Plan for Change and environmental priorities.

The central mission of this government is **economic growth**. The government's Industrial Strategy sets out a credible, 10-year plan to deliver investment into high growth sectors including advanced manufacturing and clean energy industries. A well-functioning permitting framework is an important enabler to growth by setting a clear, responsive and proportionate regulatory framework, which supports investment into clean technologies and innovation and underpins public acceptance of industry. However as set out in Dan Corry's review on Defra's regulatory landscape and HM Treasury's 'Regulation for Growth' action plan, businesses and investors tell us that regulation can be too complex and duplicative, stifling progress and innovation; businesses endure slow processes and a lack of predictability from regulators and regulation; and our regulatory approach can be too risk averse. The government has committed to cut administrative costs for business by 25% by the end of the Parliament.

The government is committed to delivering clean power by 2030 and **net zero** by 2050. Permitting has an important role to play in providing a stable regulatory framework for key technologies such as hydrogen, carbon capture and batteries, which ensures they are safe for local communities while enabling continued innovation and the required rapid rollout.

Effective industrial pollution control protects local communities and contributes to the government's **Health Mission** and **environmental targets**. Rapid development of standards that reflect new technologies, risks and evidence supporting continued reductions in industrial pollution will deliver cleaner air and cleaner water sooner. This will in turn reduce burden on the NHS, increase economic productivity and contribute to nature recovery.

We have already made real improvements to permitting in support of these missions and environmental priorities, including:

- the EA's Accelerated Permitting Transformation Programme, which is designed to modernise the permitting service and aims to implement digital, regulatory and business reforms to improve how the EA provides permissions (see Chapter 4 for further detail)

- Defra and Welsh Government's consultation (published on 8 April) to improve flexibility so regulators can make sensible, risk-based decisions on which activities should be exempt from environmental permits in the water and waste sectors - similar proposals for industry sectors are explored in Chapter 3 of this consultation
- the government's 'Regulation for Growth' announcement included a commitment to ease environmental permit and licence requirements for low-risk and temporary construction-phase activities within the planning process

By making environmental regulation more responsive and efficient, these changes would help deliver the government's missions on growth, public health and safer streets, while maintaining strong environmental protections.

However, the Plan for Change requires us to go further so that permitting of industry and energy sectors enables growth and innovation, cuts bureaucracy and ensures regulators take a risk-based and outcome-focussed approach to crucial new infrastructure. Additional action would also enable clearer, more up to date standards for industry, providing businesses with certainty to invest. Reforms should aim to streamline processes, improve the overall regulatory experience and ensure the framework is more agile for the future. The reforms explored in this consultation are not deregulatory. High standards on industrial emissions will remain in place, with the reforms going further to deliver enhanced protection for public health and the environment.

This consultation sets out the case for reform, our approach to reviewing the framework, the key reform goals we have identified and initial reform proposals for feedback. The consultation includes both specific proposals to address current issues with the framework and wider reforms where the consultation outlines a broad approach for which feedback will be used to shape detailed proposals in the future. The consultation also aims to gather innovative reform ideas from experts in business and civil society on how permitting can better deliver our national missions.

While this consultation has been issued by the UK government to set a direction of travel and gather feedback on industrial pollution control in England, we are working closely with the devolved governments and will jointly consider next steps with the aim of maintaining UK-wide standards for industrial pollution control where possible. Any proposals which affect the joint UK BAT system will be agreed on a UK-wide basis through the UK BAT Standards Council, as set out in the Integrated Pollution Prevention and Control: The Developing and Setting of Best Available Techniques (BAT) Common Framework (the 'BAT Common Framework'). Future joint work with the devolved governments will take into account Northern Ireland's position with regards to the Windsor Framework.

We will also ensure that any future changes to industrial emissions regulation in the UK are consistent with our relationship with the European Union (EU) (including with regards to the Windsor Framework) and that our framework continues to deliver environmental standards that are as good as, if not better than, the equivalent standards in the EU. We are keen to build a closer relationship with our European counterparts as there are mutual

benefits from increased co-operation and co-ordination on technical pollution control matters.

The scope of the consultation is set out in the next chapter and covers the permitting of ‘industrial’ activities under the EPRs such as installations, rather than permitting of waste operations, water activities or radioactive substances – however cross-reference to permitting of other activities will be made where relevant.

The case for change

A proud history of UK industrial pollution control

Britain is the birthplace of the industrial revolution. Alongside the enormous benefits to economic growth and quality of life, this revolution created challenges in dealing with new sources of pollution.

In the late 19th century, legislative frameworks to control pollution began to be developed, starting with the 1863 Alkali Act which was the first piece of industrial pollution control legislation in the world. As industry expanded over the 19th and 20th centuries, regulations were developed in parallel to mitigate the worst impacts of industrial pollution. For example, in 1952 widespread coal burning and other industrial emissions led to the Great Smog in London which is estimated to have caused over four thousand deaths. In response, the government passed the Clean Air Act in 1956 which introduced powers for local authorities to control emissions of smoke, grit, dust and fumes from industrial sites and furnaces and set up smoke control areas to reduce the burning of coal near people.

Throughout the 20th Century, the UK remained a world-leader in pollution control and the 1990 Environmental Protection Act required industries to apply for permits to operate if their activities could result in significant pollution. It also introduced the concept of Integrated Pollution Control (IPC: consideration of emissions to air, water, and land and other environment impacts as a whole rather than in isolation) and the use of BAT to control emissions (the available techniques and technologies which are best for preventing or minimising emissions and impacts on the environment).

The IPC and BAT concepts were later adopted by the European Union through the Integrated Pollution Prevention and Control (IPPC) Directive (1996). The IPPC Directive was followed by the Industrial Emissions Directive (IED) in 2010, which consolidated the IPPC Directive and other EU directives related to industrial emissions.

The IED was originally transposed in England and Wales in 2013 through the Environmental Permitting (England and Wales) (Amendment) Regulations 2013 which were replaced by the 2016 EPRs, which have also been amended over time to consolidate all environmental permitting regimes (for example, industry, water, waste). The unified permitting framework provided by the EPRs is broadly welcomed by business as creating a coherent framework to navigate.

Following EU Exit, responsibility for industrial pollution control in the UK now rests with the UK and devolved governments, who have agreed arrangements for setting standards for the largest industry through the BAT Common Framework.

Since 1994, as shown by the UK's National Atmospheric Emissions Inventory, industrial emissions of key pollutants have fallen dramatically, with sulphur dioxide (SO_2) emissions from industry falling by 97% and both fine particulate matter ($PM_{2.5}$) and nitrogen oxides

(NO_x) emissions falling by 79%. The reductions of industrial emissions of just 5 key air pollutants ($PM_{2.5}$, NO_x, SO_2, ammonia and non-methane volatile organic compounds) have delivered over £52 billion in benefits to human health, ecosystems and labour productivity.

However, industry remains a significant proportion of UK emissions of these pollutants, accounting for approximately 30% of overall UK emissions of $PM_{2.5}$, 74% of SO_2 and 34% of NO_x in 2023.

Summary of the current framework

The core of the UK industrial emissions permitting framework is simple – certain industrial and industrial-scale agricultural activities require permits, which set out conditions on pollution emissions and other environmental impacts. Permit conditions are based on the BAT (the available techniques, or other sectoral pollution standards, which are set out in legislation and Defra guidance). Ongoing monitoring must be carried out to assess compliance with permit conditions, and regulators have wide-ranging enforcement powers in cases of non-compliance.

However, in reality, the gradual development of the framework has left us with a complex and fragmented regulatory landscape underpinned by a patchwork of EU and domestic legislation. Industrial installations covered by the industrial permitting regulatory framework range from steel works to dry cleaners. The size and type of installation determines the kind of permit granted and the standards that operators must comply with in their permit as well as which organisation they are regulated by, with EA generally regulating the largest and most complex sites (with some exceptions). The types of installation are as follows:

- **Part A1 installations** – includes refineries, steelworks and large combustion plant – regulated by EA with approximately 3,847 sites in England
- **Part A2 installations** – includes glass manufacturing and foundries – regulated by local authorities with approximately 330 sites in England
- **Part B installations** – includes animal processing sectors and various mineral processing activities – regulated by local authorities with approximately 10,698 sites in England
- **Medium combustion plant (MCP) and specified generators** – regulated by EA with estimates suggesting ~23,400 will fall within regulation in England by 2030
- **Solvent emission activities (SEAs)** – generally regulated by local authorities (although some are also listed as Part A or Part B installations) with approximately 2,236 sites in England
- **Small waste incineration plant (SWIPs)** – regulated by local authorities with approximately 35 sites in England

Part A installations, as set out in the IED, are required to apply integrated pollution control, covering BAT for emissions to air, water (including discharges to sewer) and land, plus a range of other environmental effects (for example, waste, heat, noise, vibrations, energy and resource efficiency).

Regulation of Part B installations is of domestic origin and they are only required to apply BAT on pollution to air. SWIPs and SEAs have emission limits set out in the EPRs via the IED and MCP have emission limits set out in the EPRs via the EU Medium Combustion Plant Directive.

After EU Exit, for Part A1 and A2 installations the UK and devolved governments established a joint system for setting standards for pollution to air, water and land, called the UK BAT system. The UK BAT system provides a transparent and predictable process for governments, regulators, industry and environmental and civil society non-governmental organisations (NGOs) to work together to identify the most effective technologies and processes used by the best operators, which are then implemented through sector-specific pollution standards. There are currently two 'tranches' of UK BAT sector reviews underway, which would not be impacted by the proposals set out in this consultation.

The BAT approach is an engine for investment into clean technology, as periodic tightening of pollution standards leads to investment in modern, more productive and more efficient technologies. BAT is tailored to each sector and gives operators flexibility by requiring compliance with emission limits rather than mandating the use of specific technologies. The evidence-based co-creation of standards, as well as long lead times for implementation of new BAT, supports industry innovation and investment. Each round of new BAT (over a 10+ year cycle) has helped reduce emissions by an estimated 25-60%, depending on the industry and pollutant.

For the smallest 'Part B' industries which fall outside the UK BAT system, BAT for pollution to air, but not other forms of pollution, are set out in Process Guidance Notes (PGNs) issued by Defra. Part B standards have lagged considerably behind BAT for large industries. There are in the region of 70 sectors covered by separate PGNs, with the majority last updated between 2011 to 2013, many not updated since the early 2000s or mid-1990s and some containing references to standards from the 1960s.

On the whole, the industrial emissions permitting framework provides a coherent and predictable approach to controlling industrial pollution which has led to significant reductions. The post implementation review of the EPRs carried out in 2023 found the regulations to be broadly functioning effectively.

However, the framework can and should work better in delivering the Plan for Change, net zero and environmental and health improvements. The Corry Review and 'Regulation for Growth' action plan have set out how environmental regulation can be too complex and duplicative, stifling progress and innovation; how businesses endure slow processes and a lack of predictability from regulators and regulation; and how our regulatory approach can be too risk averse.

The Corry Review also specifically recommended reviewing the EPRs. This consultation fulfils that commitment for the industrial emissions aspects of the EPRs. This review is

urgently needed as the current framework is more than a decade old, and the speed of the industrial transformation currently taking place with the shift from fossil fuel-based energy systems to low-carbon alternatives and the ongoing transition to a circular economy means that new approaches are required to enable this transformation.

Now is the perfect time for a review as, once the two current tranches of UK BAT sector reviews have completed, there will have been a full cycle of BAT reviews covering all existing Part A sectors since the IED was introduced in 2010. Any reforms can therefore be implemented ahead of a new cycle of BAT reviews.

Reviewing the framework

We have assessed the regulatory framework for industrial permitting against the government's missions and priorities and key principles which underpin policy and better regulation. These include:

- Kickstarting Economic Growth mission
- the mission to Make Britain a Clean Energy Superpower and delivery of net zero
- the mission to Build an NHS Fit for the Future
- Environmental Principles
- Better Regulation principles of Proportionality, Accountability, Consistency, Transparency and Targeting
- Defra's circular economy ambition
- the overall aim of the permitting regime to prevent significant pollution and protect public health and the environment

We have also considered Dan Corry's review on Defra's regulatory landscape, the HM Treasury's 'New approach to ensure regulators and regulation support growth' action plan, the Department for Business and Trade's 'The UK's Modern Industrial Strategy' and the Department for Energy Security and Net Zero's Clean Power Action Plan.

In assessing the permitting framework, including through a programme of engagement with industry, devolved governments, regulators, NGOs and international counterparts, we have identified priority areas where the framework could work better and translated these into reform goals for a modernised framework. These are not intended to be an exhaustive set of the goals for the environmental permitting framework, but rather the key areas we have identified where the framework could work better. Each chapter in this consultation covers one of these goals, discussing how well the existing framework achieves the goal and sets out initial proposals on how to better achieve each goal for feedback.

Our reform goals for a modernised framework are:

- *Goal 1: Enabling innovation and encouraging new technologies and techniques* – developing new approaches to R&D trials and regulation of emerging technologies to accelerate the commercialisation of innovation by industry

- *Goal 2: Agile standards - rapid, predictable and integrated standard setting* – standards are rapidly and transparently updated, delivering clear, simple and adaptable requirements that minimise pollution to protect public health and the environment and support industry investment, productivity and growth
- *Goal 3: Proportionate regulation and coherence in the framework* – delivering proportionate coverage of emerging clean technologies through a logical and coherent permitting framework, providing clarity on the regulatory position for these technologies and supporting industry planning and investment
- *Goal 4: Regulator effectiveness and efficiency* – regulators collaborate with industry to set standards and deliver permits, monitoring and enforcement efficiently, costs are recovered in line with the polluter pays principle and interactions with other regimes are understood and improved where needed
- *Goal 5: A transparent framework* – a transparent and trusted framework that meets international obligations and sets clear requirements on regulators and industry and enables local people to understand the pollution in their area, including through an accurate and comprehensive UK Pollutant Release and Transfer Register (PRTR)

There are questions on specific measures, but also a call for new ideas to achieve the goals. Some measures will sit across multiple areas but are listed with the most relevant goal for the purposes of the consultation paper.

Q. Are there other reform goals that we should aim to deliver as part of the modernised framework?

Chapter 1: Enabling innovation and encouraging new technologies and techniques

Our goal is to ensure that environmental permitting effectively enables the development and commercialisation by industry of technologies and processes that will deliver decarbonisation, a more circular economy and pollution reduction.

Under the EPRs, the approach to R&D trials and the regulation of new technologies is relatively well established. Installations that would otherwise require permitting (as they are carrying out an activity covered by the EPRs), but which are solely used for research, development (R&D) or testing of new products and processes (rather than ongoing commercial operation), are specifically exempted from the EPRs and do not require a permit. For example, this exemption would cover a pilot plant being used to test a new hydrogen production process. There is some complexity here as where R&D or testing activity is carried out at an installation that is not *solely* used for R&D or testing, for example, trialling a new waste-derived fuel at a commercial power plant, a full permit variation setting out detailed controls on the activity will generally be required to allow it to proceed. The EA has, however, recently introduced a more streamlined approach to authorising time-limited R&D activity at permitted installations where the activity will not result in any significant emissions through new R&D 'standard rules'.

Once a new technology is developed into, or used as part of, an ongoing commercial operation and is therefore not covered by the above R&D and testing exemption, it will require a full permit of the relevant kind which will set out detailed controls to prevent significant pollution. It is and should remain the responsibility of the operator to provide evidence on potential environmental and health impacts in order to demonstrate the safety of their process, which for novel processes can involve further basic scientific research. For this reason, permitting first-of-a-kind technologies can be time-consuming and labour-intensive as permit conditions have to be developed on a case-by-case basis using the available data and information on environmental impacts and pollution control techniques.

However, as a technology becomes more established and data and information becomes more available, the EA can work with industry to develop Guidance on Emerging Techniques (GET) which set out the standards to which it will permit new technologies (see recent GET on post-combustion carbon capture and hydrogen production by electrolysis of water). GET provides permit writers with guidance on sectoral pollution standards, based on available evidence and data, and can significantly expedite the permitting process for emerging industries and provide greater regulatory certainty to operators. Installations that are testing or using emerging techniques can apply for a derogation from meeting emission limit values (ELVs) and BAT for a period of 9 months, provided that after that period they either stop the activity or meet relevant ELVs.

Once a technology has been fully established and extensive information on emissions and pollution control techniques is available, BAT can be developed setting out detailed emission limits and operating techniques.

This staged approach provides a relatively clear progression for new technologies and the process of developing GET has been welcomed by industry as providing clarity for some key sectors. However, the Corry Review highlighted that permitting legislation and processes are not sufficiently agile in responding to innovative new technologies. Industry and other stakeholders have also set out areas where they believe permitting of new technologies is disproportionate and slows down the commercialisation of innovation, for example, that:

- the requirement for full permit variations for R&D activity at commercial installations can disincentivise innovation as the timescales for approvals is at odds with the required pace of scaling-up innovative approaches (this issue is becoming more important as we are increasingly seeing testing of impacts on operation of new decarbonisation or circular economy technologies or fuels, rather than totally new processes unlinked to commercial operation)
- it is not always clear where R&D and testing activity ends and commercial operation begins
- the R&D and testing exemption is not available to all sectors
- standards for emerging sectors should be developed as early as possible to provide clarity to emerging sectors, and requirements should be flexible to avoid overly restrictive requirements inhibiting development of new technologies
- the existing 9-month derogation from meeting BAT and ELVs for emerging techniques is underutilised

Below we explore some proposals in response to these issues and request further policy ideas to achieve this goal.

Consultation proposals

Regulatory sandboxing

As set out above, there are existing exemptions in the EPRs which facilitate experimentation and innovation at stand-alone R&D installations. The EA's new standard rules also introduce a streamlined approach for approving R&D trials at installations which will not result in any significant emissions. However, R&D activity at installations which will result in any significant emissions will generally be subject to the full suite of permitting requirements.

We are keen to consider alternative and more agile approaches which would ensure that R&D trials that involve some emissions (and therefore generally fall outside of EA's

standard rules), but which would lead to significant national environmental and health benefits if commercialised, can be more quickly approved while maintaining essential environmental and health protections and appropriate regulatory oversight. We are exploring this from the perspective of 'industrial' activities under the EPRs (see scope section on p.4), however we would ultimately seek to develop an approach which is consistent across different permitting regimes.

The Corry Review recommended setting up a programme of regulatory sandboxes, which allow for experiments with regulatory change to help explore ways in which regulatory approaches could be modified without jeopardising environmental protections. The Review highlights successful sandboxes demonstrated by the Office for Nuclear Regulation and the Financial Conduct Authority. We would like to consider a sandbox-like approach for R&D and testing activity at permitted industrial installations.

In the context of industrial emissions permitting, this could involve an agreement between the regulator and an operator that a time-limited R&D trial could take place with a significantly streamlined process for approving the trial and the waiving of certain permitting requirements, but subject to baseline conditions around safety, emissions control and monitoring being met (which would represent an agreed operating envelope for the trial).

During the trial period there could be ongoing monitoring by the operator which would be shared with the regulator and the agreement to the trial would be paused immediately if emissions exceeded the agreed operating envelope. Data on environmental performance and emissions would be gathered throughout the trial which would be used, if the trial was successful and the operator wished to use the new product or process on a permanent basis, to inform the permit variation process. This data could also be used by the regulator to set wider sectoral standards, which would expedite permit approval for similar technologies.

The permit variation process could begin during the trial period to ensure that long-term permission is in place by the end of the trial, where the results of the trial support this, and the regulator could have flexibility to extend the trial if required to ensure that the new product or process doesn't have to be halted while permit approval is pending.

In terms of a bespoke approval process, this could include:

- agreement on required operating process and performance (an "operating envelope") which would ensure that the main impacts would be managed, with an agreement that further information and monitoring data will be gathered during the trial period to ensure continued consideration of health and environmental impacts
- a simplified approval process, with the expectation that the operator would provide the regulator with a proposal on the operating envelope set out above and how this would manage health and environmental impacts

- a derogation from meeting specific emission limit ranges or other requirements set out in BAT conclusions or GET for the period of the trial (assuming that the product or process being trialled would lead to either a higher general level of protection of the environment and health than BAT, or at least the same level of protection and higher cost savings). At present, under the EPRs, regulators may grant temporary derogations from meeting BAT for emerging techniques for up to 9 months, however the EU recently extended this period to 30 months through its revised Industrial and Livestock Rearing Emissions Directive (IED 2.0)
- ongoing supervision from regulators, with level of oversight determined by the level of risk from the trial and funded by fees paid by the operator based on the polluter pays principle

Industry has also highlighted existing legal requirements on public disclosure of information on emissions as a concern for R&D in some sectors, as it can result in proprietary information being made public, which could undermine the economic case for conducting trials. The next section ('Commercial confidentiality') explores the issue of commercial confidentiality in the context of R&D trials in more detail.

Regulators could be given constrained discretion to tailor these requirements according to the level of risk posed by a particular trial. For example, trialling or testing of hydrogen as a fuel could be subject to a lighter-touch process as there is sufficient existing evidence on likely impacts on NO_x. By contrast, trials involving potential for emissions of more novel pollutants where evidence of harm is more limited would involve greater up-front assessment and ongoing supervision.

While R&D sandboxes would necessarily carry some level of risk, as they are most applicable for fairly novel products or processes where evidence on emissions is more limited, certain safeguards would need to be in place, for example:

- it must be a research and development trial which is demonstrably aimed at securing overall environmental improvement from the installation
- pilot scale-based testing already carried out which demonstrates a baseline level of safety
- the trial approval would be time-limited, with the potential to vary the length depending on the exact R&D activity proposed
- some assessment should be made of the impact of the trial on relevant environmental quality standards and health-related limits such as environmental assessment levels
- the regulator would have the ability to end trials if there is non-compliance with the agreed operating envelope

It should be noted that our intention would be for any 'sandbox' process to cover both EA and local authority regulated industries.

We plan to further develop the sandbox concept before consulting on a detailed proposal. We would appreciate feedback on this concept as a whole and on the design of a bespoke R&D sandbox approval process, including what conditions could be put in place to manage risks.

Q. What key factors should be considered when further developing a regulatory sandbox approach for industrial R&D activities under the EPRs, ensuring it fosters innovation while maintaining robust environmental and health safeguards?

Commercial confidentiality

Transparency is a key underpinning of public confidence in the safety of industry and supports public acceptance of industrial activity and particularly novel technologies. There are several relevant pieces of legislation covering disclosure that regulators need to comply with when issuing permits, most notably the EPRs and Environmental Information Regulations (EIR), and also international obligations through the Aarhus Convention Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters ('Aarhus Convention').

As part of permit applications under the EPRs, operators are required to provide the regulator with information on any potential emissions into the environment that are likely to result from their site. Regulation 46 of the EPRs requires that this information should then be included on the public register.

Under the EPRs, operators can claim commercial industrial confidentiality to avoid the publication of information if the public interest favours withholding this information. However, "*to the extent that information relates to emissions, the regulator must determine to include it on the public register*" – which operates as an override to commercial industrial confidentiality in this context. The EIRs include a similar override to commercial industrial confidentiality in relation to information on emissions.

Operators from industries, including the carbon capture and chemicals industries, have argued that these requirements are stifling innovation and the deployment of new products in England. This is because information on emissions can be used to derive the compositions of proprietary products, and developers of these products may therefore refuse to let them be used at permitted installations.

The EA is already using available flexibilities, for example, by setting out that it will likely accept commercial industrial confidentiality claims if the operator can demonstrate that emissions have not been released into the environment. However, existing legislation is clear that information on emissions that is held by regulators must be included on the public register.

We do not propose reconsidering the core of the existing approach, as public access to information on harmful emissions is a fundamental principle which is crucial to public trust in emerging industries. However, we would like to explore the arguments for and ways of creating flexibilities, especially for R&D trials. In this context, we are seeking feedback on whether there are alternative models which ensure that regulators receive the information they need to provide assurance that significant pollution will not be caused and that the public can access sufficient information on emissions – but that commercially sensitive information can remain confidential. We understand that different approaches have been taken to commercial confidentiality in certain cases in Norway, Germany and Denmark and would appreciate feedback on these models.

Potential alternative approaches could involve limiting the information that operators are required to provide to the regulator for R&D trials to only the information required to ensure significant pollution is not caused. Alternatively, information could be required or disclosed in a form that will not compromise commercial confidentiality.

A more limited alternative approach would be amending legislation to allow commercial industrial confidentiality claims for information on emissions where those emissions are proven not to be harmful to health or the environment. Current legislation requires disclosure on any emissions, even if they are proven to be harmless, which arguably does not strike the right balance between transparency and commercial confidentiality. An amendment of this kind could be designed to be compliant with requirements under the Aarhus Convention, which are that "*information on emissions which is relevant for the protection of the environment shall be disclosed*". It should be noted that an amendment of this kind would not facilitate non-disclosure of commercially confidential information where evidence on harm is unclear or incomplete.

Options in this space will need to be developed further and assessed against existing legal requirements on public transparency (for example through the Aarhus Convention) to determine their acceptability. Options should reflect the fact that the level of potential harm is related to the amount of a substance released. Temporary trials at permitted installations, while not always free from harm, are likely to generate less pollution than continuous operation of the same process. A decision about harm should therefore take into account the duration of an emission as well as other factors.

Q. Do you have comments on the alternative approaches to commercial confidentiality outlined above, or other suggested approaches that would balance environmental protection, public access to information and innovation?

R&D Exemptions

Commercial activity at R&D installations

At present, the R&D and testing exemption only applies to installations which are solely used for research, development or testing of new products and processes. We understand from industry that this approach has created perverse outcomes in some instances. For example, genuine R&D sites which have had to dispose of the valuable products of their pilot process, for example, hydrogen, as to sell these would have brought them into the scope of permitting.

We would therefore like to explore changes to the definition of the R&D and testing exemption to clarify that genuine R&D sites can make commercial use of any products created without requiring an industrial emissions permit. Use of this exemption could benefit from light-touch monitoring to ensure that it does not provide a loophole through which commercial operations could avoid permitting. This could, for example, be achieved by requiring registration with the relevant regulator where an operator wishes to make commercial use of products created at an exempt R&D installation (see wider proposal on R&D registrations below).

Q. What key factors should be considered when further developing proposals on commercial activity at R&D and testing sites?

Notification of R&D and testing exemptions with the regulator

Currently, there is no requirement for operators of installations that are solely used for research, development or testing of new products and processes to register or notify their installation with the relevant regulator. While this has the benefit of removing the burden of any kind of regulatory process for these activities, it also removes an opportunity for the regulator to become aware of and start to prepare standards for new technologies which will eventually require permitting when they are developed at a commercial scale.

We would like feedback on the option of requiring operators of sites that fall under the R&D and testing exemption to notify the relevant regulator and provide basic information about the activity. While this notification would be required for the activity to proceed, the regulator would not be required to respond to approve the activity and would not set any conditions – so we would not anticipate a notification requirement having an impact on timelines for trials. The information required as part of a notification could also specifically exclude any commercially confidential information to ensure proprietary information is not compromised.

Q. What would the benefits and costs be of requiring operators of sites, which fall under the EPRs R&D and testing exemption, to notify the relevant regulator?

R&D and testing exemption for generators

At present, the EPRs exemption for R&D and testing activity applies to installations, medium combustion plant and solvent emission activities, but not to 'specified generators', although the EA has issued a Regulatory Position Statement (RPS) that it will not generally enforce permitting requirements on R&D testing for specified generators assuming certain conditions are met.

The lack of an exemption risks placing a disproportionate regulatory burden on small sources of emissions, and there is not a clear reason to treat generators differently from other types of industrial facilities under the EPRs. The current approach of using an RPS reduces certainty for operators, as it is not a permanent feature of the regulatory framework.

We are therefore minded to consult on the option of exempting specified generators which are used for research, development or testing, and would appreciate feedback on this option.

Q. What key factors should be considered when further developing the proposal to exempt R&D and testing of generators from the EPRs?

Guidance on Emerging Techniques (GET)

The development of GET by UK regulators has been successful in providing regulatory clarity and robust environmental standards for emerging technologies, such as carbon capture and green hydrogen production. GET is developed by the EA (alongside other UK regulators) using powers under the EPRs (which originate from provisions of Article 14(6) of the IED) to set permit conditions on the basis of their determination of BAT where specific sectoral BAT conclusions have not been published, or where BAT conclusions do not address all the potential environmental effects.

While the process for developing GET is not explicitly set out in legislation, wider public sector requirements on consultation apply and the EA work closely with industry and experts on the development of GET and consult publicly on the final GET document. EA also works with devolved government regulators in developing GET and use the UK Regulators Group to agree UK-wide approaches where possible.

While GET is an effective tool, it has primarily been used reactively and on a sector-by-sector basis in areas where permits are urgently required, rather than looking forward to identify sectors (or cross-sector technologies and techniques) where early development of standards could provide necessary clarity to industry as these sectors develop. It also does not apply to local authority regulated sectors, where many of the decarbonisation

options (for example, hydrogen and carbon capture) are the same. Defra will work with DESNZ, EA and the devolved governments and regulators to identify where GET is likely to be required across industry in line with government net zero and circular economy ambitions.

The EU's recent revision of the IED also included measures to create a more central role for emerging techniques in the BAT system, for example, by emphasising the consideration of emerging techniques in sector BAT reviews and setting emission limit values associated with emerging techniques. There are also new measures to give existing operators 6 years to meet these emissions limits for emerging techniques rather than the standard 4 years through the BAT process. We believe that the existing GET process provides a more agile, timely and proportionate means of putting in place initial standards for emerging technologies than the UK BAT system. However, we would also like to gather views on the above EU changes in considering how emerging techniques could be better integrated into BAT processes to provide a more comprehensive and forward-looking system.

Q. Do you have comments or suggestions on whether and how regulation of emerging techniques could be improved?

Q. Do you agree or disagree that the proposals in this chapter will achieve the goal - 'Enabling innovation and encouraging new technologies and techniques'? If you disagree then please provide alternative suggestions along with supporting evidence where available

Chapter 2: Agile standards - rapid, predictable and integrated standard setting

Once a technology or sector has become sufficiently developed, detailed sectoral pollution standards for all relevant industry (also referred to as BAT) need to be set and periodically updated. Having up to date standards is essential not only in minimising pollution and damage to the environment and public health, but in supporting industry investment, productivity and growth. Our current framework has strong foundations of transparency, proportionality and co-design and has significantly reduced pollution over the last 30 years. However, there are substantial issues that need to be addressed to improve the speed of standards-setting and deliver more effective and integrated pollution control.

Firstly, necessary technical updates to pollution standards are slow to address through central government and legislative systems and, where reviews take place, they generally take too long to develop, update and bring into effect. As set out in the 'Case for Change' chapter above, BAT for Part B sectors are often decades old, leaving industry with ill-fitting standards. In addition, the first tranche of UK BAT reviews (for Part A installations under the EPRs) has taken several years to develop and bring into effect. This is partly because the inherently technical and detailed nature of industrial standards means they are best determined by industrial and regulatory experts within a transparent framework and are arguably ill-suited to broader political and governmental processes. This means they are less likely to be prioritised or handled quickly enough to reflect the pace of change in industry.

Gaps in standards create uncertainty, delays and additional cost for business. Reform is therefore required to the standards-setting process to better enable growth by rapidly delivering clear, simple, adaptable requirements that minimise pollution. A more dynamic BAT system would enable prompt setting and updating of standards to reflect developments in technology and practice. This would speed up permitting and investment into innovation and decarbonisation, supporting the roll-out of established net zero and circular economy technologies. It would also ensure a better regulatory experience for industry and other stakeholders and deliver enhanced protections for public health and the environment sooner.

Secondly, the concept of integrated pollution control is central to the framework, meaning that emissions to air, land and water and wider environmental factors such as energy efficiency and resource efficiency, should all be considered at the same time to ensure that BAT standards represent the overall best environmental outcome. In practice, BAT has particularly focussed on the impacts of regulated sites on local communities and the local environment, however, there is an opportunity for greater consideration of environmental factors relevant to net zero and a circular economy to create a more fully integrated approach. In addition, there are types of activity under the EPRs, most notably Part B installations, which only have standards for emissions to air rather than integrated

pollution control, which adds complexity to regulation and leaves some pollution unchecked.

Policy proposals relating to more fully integrated pollution control are set out below, however we are already taking action using powers under the current framework. For example, when setting BAT there are often trade-offs at the level of particular techniques and technologies between reducing pollution and other important environmental factors, for example, water use, waste generation, resource efficiency, energy efficiency, noise and odour. Industry has raised concerns that this can lead to perverse impacts, for example by BAT reducing pollutants such as volatile organic compounds (VOCs) as low as possible at the expense of creating other pollutants such as carbon dioxide (CO_2) if flue gases are heat treated. While in practice individual sites can seek derogations to avoid such unintended consequences, this situation doesn't reflect properly integrated pollution control, lacks clarity and places unnecessary burdens on industry. The commissioning letter for UK BAT Tranche 2 by the Standards Council set out that greenhouse gases (GHG) and circular economy impacts should be thoroughly considered throughout the process. However, there are currently limited tools for making accurate judgements of impacts and benefits between different methods for controlling different pollutants and for comparing the impact of pollution to air versus pollution to land or water. We will work with regulators and the devolved governments to improve methodologies for analysing and quantifying the impacts of different pollutants, which can be used in the BAT process and for decisions on derogations in permits.

The industrial emissions permitting regime can already control emissions of low-volume, high-concern pollutants such as per- and polyfluoroalkyl substances (PFAS), regardless of whether they are subject to restrictions under chemicals regulatory regimes. Defra is working with the EA to ensure these pollutants are adequately addressed in industrial permitting. Through UK BAT Tranche 2, Defra and the devolved governments have ensured that low-volume, high-concern pollutants within each sector, such as PFAS, are considered in detail. Alongside this, the EA is carrying out an ongoing risk screening project to identify priority sites and pollutants of concern. Once priority sites and pollutants have been identified, the EA may require increased evidence gathering, monitoring, or emissions limits at this site. Finally, Defra will work with the EA and devolved governments to explore the development of GET-style guidance on the management of PFAS across relevant industries. This could include information on upcoming requirements, for example, the requirement to use specific PFAS abatement techniques, guidance on disposal routes, and other relevant information.

Consultation proposals

A more dynamic approach to setting BAT

In contrast to the EA-led development of GET outlined in Chapter 1, which has quickly developed standards for key emerging sectors, standards which fall within departmental

and parliamentary purview generally take much longer to update and have therefore been neglected. This is because government and legislative structures are not as well placed to determine complex technical process guidance as experts sitting within regulators and industry. For example, standards for many Part B sectors have not been updated since the 1990s, with the most recent sector review completed in 2013. For Part A sectors, while the first two tranches of reviews through the new UK BAT process are progressing well, they will likely take 3 to 4 years in total to develop and undergo departmental and legislative processes. The main cause of delay is that the current system requires scrutiny and approval of highly detailed and technical requirements on the design of industrial processes from many different parts of government as well as parliament. The delay in publication of the standards undermines regulatory and investment certainty for industry. It also delays improvement to environmental and health outcomes, with a significant lag in improvements between Part A and Part B sectors.

The UK BAT process for developing BAT for Part A sectors involves the UK and devolved governments initiating the review of BAT for a specific sector and commissioning the UK BAT team (which is part of the EA, but support the engagement of all UK regulators and industry in UK BAT processes) to set up a Technical Working Group (TWG) involving industry and other experts from NGOs and civil society. This TWG will undertake a detailed co-design process involving technical data collection and analysis to establish BAT for the sector in line with requirements set out in the EPRs and IED. Once this process is complete, the TWG will send the draft BAT conclusions to the Standards Council which will scrutinise them before recommending them to UK and devolved government ministers who, if in agreement, will then consult on them under the consultation on the statutory instrument that puts them into effect. This requirement to bring in a statutory instrument was set out in the Environment and Wildlife (Legislative Functions) (EU Exit) Regulations 2019 at EU Exit.

The UK BAT process works as an independent, evidence-based, consensus-driven process and it is well established and understood by industry leading to high compliance. The process supports industry investment with thorough reviews of standards and sufficient lead times to enable the proper planning of upgrades. The UK BAT process has delivered draft BAT standards quicky – the standards for some BAT sector reviews under Tranche 1 were delivered in 6 to 8 months. The adoption of those standards is not maintaining that pace.

BAT for Part B installations is defined in Schedule 8, Section 2 of the EPRs. While there is not an established process for updating Part B BAT as there is for Part A installations under UK BAT, the most recent review for crematoria followed a more streamlined version of the same process. This was led by the Local Authority Unit (LAU) hosted by the EA. The main difference is that the BAT is ultimately published via statutory government guidance to regulators rather than a statutory instrument.

We would like to work with the devolved governments to consider an alternative approach, whereby the EPRs and accompanying guidance would set out in greater detail how BAT

should be developed and how it should align with government policies. Regulators would then be required to develop, consult on and adopt BAT in line with a process set out in the EPRs (and equivalent devolved government legislation) in much quicker time. This would not involve asking regulators to take policy decisions, as key policy criteria on the scope and aims of BAT would be set out in the EPRs. Instead, it would give responsibility for the technical 'micro-design' of BAT to the regulators and industries which will have to implement these standards once they are developed.

This change could be delivered through a duty on regulators to set and update BAT, within a clear legislative framework that aligns with UK and devolved government priorities and includes protections to ensure transparency, openness and accountability. This framework could cover:

- requirements for regulators to co-produce standards with local authorities, industry, experts and civil society, through an open, consensus and evidence driven process, which considers international standards alongside UK data
- alignment with governmental priorities and environmental targets
- mechanisms to support alignment of BAT across the UK
- mechanisms for proper technical oversight and scrutiny
- requirements for detailed consideration of impacts on industry through cost-benefit analysis and impacts on economic growth
- public consultation requirements on the proposed BAT
- mechanisms for ministers to intervene to direct regulators on BAT if there is a wider public interest
- mechanisms for independent appeal

In England, the EA would likely be well placed to update standards for both EA and local authority regulated activities as EA experts already in practice lead on both UK BAT (Part A) and Part B BAT reviews. Defra could work with the EA to develop bespoke arrangements to ensure proper oversight and close engagement and consultation with local authorities, and to ensure that EA is appropriately funded and resourced to carry out this role.

Though regulators already set detailed technical standards in practice, this would be a substantial change in principle. By embedding in statute the existing process of co-design of technical standards, we would be able to provide appropriate transparency and challenge safeguards and so strengthen regulatory processes while speeding them up. Placing the current working arrangements on a sound statutory footing would improve transparency, openness, and accountability in the, necessarily, complex and detailed process of setting industrial standards.

We would work with the devolved governments to agree a UK-wide approach for larger industries covered by the joint UK BAT system and consider how Part B sectors have standards set across the UK. Based on responses to this consultation, we will consult in more detail on this proposal and the design of a new standards-setting process in due

course. Industrial sectors already undergoing UK BAT standards reviews (‘Tranche 1’ and ‘Tranche 2’ sectors) will not be impacted by this proposal. However, any issues identified in early use of the UK BAT process can be used to inform new UK BAT tools and an improved approach for future UK BAT reviews. Any significant changes to the approach would require a revision of the BAT Common Framework.

Q. What key factors should be considered when further developing the proposal to create a more dynamic approach to setting BAT?

Horizontal BAT

BAT has, historically, been developed on a sector-specific basis given the differences in techniques and processes between sectors. However, there is another established mechanism stemming from the EU system for setting standards called ‘horizontal’ BAT. Horizontal BAT reference documents cover cross-cutting issues and apply across all of industry where relevant, for example existing horizontal BAT reference documents include energy efficiency and emissions monitoring, although they only have the weight of guidance.

We are considering the right balance between vertical and horizontal BAT moving forwards and would like to engage with the devolved governments on potential improvements. Some stakeholders have argued that greater use could be made of horizontal BAT to set out cross-sector environmental impacts and requirements. This would allow vertical BAT to be more streamlined and focus solely on sector-specific matters.

Greater use could be made of horizontal BAT in:

- setting detailed mandatory technical standards for processes or technologies that are used in similar ways across all or many industries (for example, steam generation, industrial cooling, certain abatement technologies and management of low-volume high-concern pollutants such as PFAS)
- setting more generic or narrative requirements that apply across sectors (for example, on the use of environmental management systems, emissions monitoring, safe site management, energy efficiency or resource efficiency)

The benefit would be that sectoral BAT could become more streamlined and specific, and horizontal BAT could be used to change generic requirements or requirements relating to widely--used technologies more rapidly and coherently for all sectors. It would also make the system more adaptable given the slow-moving nature of the BAT system, where some sectors (for example, ceramics manufacturing) have previously had almost two decades between reviews.

A risk of this approach could be to weaken the certainty that business has that all standards for a sector remain stable until that sector-specific BAT is reviewed which usually provides at least a decade of regulatory stability and so underpins confidence in investment.

It should be noted that the BAT system has high compliance because of the predictable requirements for industry – enforcing new rules for all existing industrial installations at once would be impracticable and could undermine confidence in regulatory stability. Therefore, the technical requirements of any relevant horizontal BAT would only be written into an installation's permit when a new permit is issued or when an existing permit is substantially revised or reviewed – for example, when its sector-specific BAT has been updated. Where horizontal BAT is more generic or simply requires a plan of some kind, it could instead be covered as an operational matter through requirements relating to environmental management systems, rather than through a permit revision.

We would like to gather early ideas through this consultation and will work with the devolved governments to agree an approach in the future through the UK BAT system.

Q. Do you have comments on the role of horizontal BAT in creating a more dynamic system for setting industry standards?

Fully integrated pollution control

Decarbonisation and circular economy standards

This section covers how environmental permitting for industry and energy sectors could better contribute to the delivery of the government's climate and circular economy objectives, without duplicating existing policy mechanisms. Chapter 3 seeks to ensure the sectoral scope of the industrial permitting framework is consistent with climate and circular economy policy, whereas this section focusses on the standards that apply to sectors that are within scope.

Schedule 7 of the EPRs (via Article 9 of the IED) specifically prevents emission limit values being set for GHG emissions from Part A installations where those emissions are covered by the UK Emission Trading Scheme (ETS), except where ELVs are necessary to control local pollution impacts. Energy efficiency and resource efficiency are however considered through sectoral BAT reviews for Part A sectors, and in some BAT conclusions there are quantitative resource and energy efficiency levels set (known as associated environmental performance levels or AEPLs), although these are currently non-binding in England.

We do not intend to reconsider the current position on setting ELVs for GHGs covered by the ETS which is the right mechanism to bring down overall GHG emissions for a site. However, GHGs are pollutants under the EPRs and process-level integrated pollution

standards need to take them into account alongside the more locally damaging pollutants. This is already in place and will support decarbonisation.

Through this consultation we are seeking early feedback on other ways in which permitting could contribute to decarbonisation and a circular economy.

Alongside the devolved governments, we are considering whether to update existing horizontal BAT on energy efficiency. We could also develop more horizontal BAT covering generic activities in areas relevant to net zero and a circular economy such as climate change mitigation, climate change adaptation, resource efficiency and waste generation. Some of these themes are currently considered through sectoral BAT, so horizontal BAT would supplement specific sectoral requirements in these areas and would replace generic requirements in sectoral BAT.

In addition to this horizontal approach to addressing issues such as climate change mitigation and adaptation, the EU has recently introduced mandatory associated environmental performance levels (AEPLs), which will be set through its sector BAT reviews. They will set specific numerical levels or limits on consumption levels, reuse of materials, reuse of water, waste generation and resource efficiency covering materials, water and energy resources. Mandatory AEPLs do not currently apply in the UK.

We would also like to consider the case for mandatory AEPLs and horizontal BAT but would like to avoid duplicating existing regimes and requirements, for example, Energy Saving Opportunity Schemes (ESOS) for energy efficiency or Climate Change Agreements for climate change mitigation. Horizontal BAT or AEPLs in these areas could therefore involve setting mandatory requirements or could instead continue to operate as best practice. We would therefore appreciate early views on the balance between sectoral and horizontal approaches, and on mandatory versus non-mandatory requirements in these areas.

Q. What key factors should be considered when further developing policy on decarbonisation and circular economy standards?

Integrated Pollution Control and BAT for all industry

As set out in the ‘Case for Change’ chapter, in the EPRs industrial activities are split into different categories based on the origin of the legal requirements and the regulator and regulatory approach for the activity. This creates significant complexity for industry, introduces thresholds which distort markets and leaves loopholes that allow pollution.

Part A installations must apply BAT and have an integrated framework of pollution control, whereby measures are in place to control the full range of pollution and environmental impacts produced by an installation. This includes emissions to air, land and water as well as noise, handling of waste, accident prevention, energy efficiency and the return of the

site to a satisfactory state upon closure. Where there are no published BAT conclusions, or where these do not fully address environmental or health impacts from a sector, under Article 14(6) of the IED (implemented through the EPRs) regulators can set permit conditions on the basis of their determination of BAT for that particular circumstance.

Outside of Part A installations, the other regulatory categories (Part B installations, small waste incineration plant, solvent emission activities and medium combustion plant and specified generators) include a variety of approaches to BAT and integrated pollution control which have developed piecemeal over time. There is an opportunity to simplify the categorisation within the EPRs while also improving environmental outcomes through more integrated regulation. The direction of travel we would like to test is amending the EPRs to apply the principles of BAT and integrated pollution control to all regulatory categories outlined above. Future reviews of standards for each sector would therefore consider the full range of pollutants and environmental impacts from each sector and set standards in line with BAT where required. Where a particular sector does not involve a particular type of emission (for example emissions to water) or wider environmental impact (for example handling of waste) then BAT would not need to be set, in line with the existing approach for Part A installations. Permitting would become more flexible and responsive to environmental and health risks on the principle of proportionate, risk-based regulation.

We have set out considerations specific to different existing regulatory categories below. We would like feedback on this direction of travel, in particular the question of whether the ‘Part A’ approach to BAT and integrated pollution control would be appropriate for these other categories of activities, and whether there are any aspects of the ‘Part A’ approach that would be disproportionate to apply.

Part B installations

For Part B installations local authority permits must apply BAT for emissions to air (including odour), but not for other areas such as emissions to land and water or wider environmental impacts. While control of emissions to air should remain a key aim for Part B regulation, there is extensive anecdotal evidence of other environmental risks for example noise complaints and ground and water contamination.

Each of these areas already has some degree of existing regulation outside of Part B installation permitting. For example, there is water discharge and groundwater permitting for emissions to water, waste permitting, the contaminated land regime for emissions to land, and statutory nuisance regulations for noise. However, control of some of these environmental impacts is patchy in existing regulation. The contaminated land and statutory nuisance regimes under the Environmental Protection Act 1990 are generally reactive and do not put in place detailed design requirements on industrial installations to reduce emissions to land or noise. While the water discharge and groundwater regimes are effective, they focus primarily on direct discharges to water via a point source and do not require use of BAT or take a fully integrated approach to setting standards. This could

represent a missed opportunity for emissions reduction of direct emissions to water and indirect emissions through leaks, runoff and the sewage system, including for low-volume, high concern pollutants such as PFAS.

An integrated approach to pollution control for Part B installations would remove loopholes that allow pollution and would simplify and consolidate regulation into a single framework to enable regulatory consistency, reduce regulatory complexity and ensure that integrated standards could be developed. There is an existing clear precedent through Part A2 installations, where local authorities take an integrated approach to permitting of those sectors and water permits are consolidated to reduce burden on industry.

Q. Do you have any comments on the proposal to consider integrated pollution control for Part B installations? Please outline your views on any potential costs or benefits the proposal may bring to you and/or your organisation, as well as any positive or negative impacts it could have on human health or the environment.

Small waste incineration plant

Schedule 13 small waste incineration plant (SWIPs) in England must meet mandatory minimum requirements on emissions to air and water set out in Schedule 13 of the EPRs (via Chapter IV and Annex VI of the IED), but do not have to apply BAT (except where they are directly associated to a separate Part A or Part B activity). SWIP emission limits have therefore not been updated since 2010. This differs from the position in Wales, where SWIPs also fall under Schedule 8 of the EPRs and must apply BAT for emissions to air.

Switching from mandatory minimum requirements to applying BAT and integrated pollution control would allow currently outdated emission standards to be updated, simplifying regulation, reducing pollution and removing the disparity between regulation of SWIPs and larger waste incinerators which have tighter standards in place.

Q. Do you have any comments on the proposal to consider applying BAT and integrated pollution control to small waste incineration plant? Please outline your views on any potential costs or benefits the proposal may bring to you and/or your organisation, as well as any positive or negative impacts it could have on human health or the environment.

Solvent emission activities

Solvent emission activities (SEAs) must meet emission limits to air set out in the IED through Schedule 14 of the EPRs (via Chapter V of IED). Some SEAs are also listed as Part A or Part B installations under the EPRs and therefore must apply the relevant BAT requirements.

We believe there is an opportunity to simplify this arrangement and ensure comprehensive pollution control through the proposed approach that any activities listed as SEAs would apply BAT and integrated pollution control. The impacts of this change would vary based on the specific activity (given that many SEAs are already covered by either Part A or Part B BAT), however it would generally simplify regulation and reduce emissions of volatile organic compounds (VOCs).

Q. Do you have any comments on the proposal to consider applying BAT and integrated pollution control to all solvent emission activities? Please outline your views on any potential costs or benefits the proposal may bring to you and/or your organisation, as well as any positive or negative impacts it could have on human health or the environment.

Medium combustion plant and specified generators

Medium combustion plant (MCP) and specified generators must meet emission limits set out in Schedule 25 of the EPRs for emissions to air but are not required to apply BAT or integrated pollution control.

There are also other inconsistencies and inflexibilities which mean that regulation of MCP has become outdated and lags behind the development of new technologies, fuels and standards. For example:

- there are different requirements for combustion plant above 20MWth under Part B regulation
- there are inconsistencies in the requirements for generators under Schedule 25B and MCP under Schedule 25A in relation to ensuring compliance with air quality standards
- there is also no equivalent of IED Article 14(6) for MCP and generators which means that the EPRs do not allow regulators to set emission limits for new fuels (such as hydrogen or biofuels), and in September 2024, as a short-term stopgap, Defra issued a ministerial direction to require the EA to set and apply emission limit values for new fuels used in stand-alone medium combustion plant

For MCP and specified generators the main benefit of this proposal would be in giving EA the flexibility to set suitable standards for all MCP to provide appropriate environmental protection based on a plant's level of risk to the environment. For example, setting emissions standards for new and emerging fuels, and requiring the inclusion of an air quality impact assessment where compliance with local air quality standards might require stricter emission limits to be put in place, in consultation with the operator.

This approach would simplify the regulatory arrangements for combustion plant and enable permitting of MCP to be flexible and responsive to environmental and health risks on the principle of proportionate, risk-based regulation.

Q. Do you have any comments on the proposal to consider applying BAT and integrated pollution control to medium combustion plant and specified generators? Please outline your views on any potential costs or benefits the proposal may bring to you and/or your organisation, as well as any positive or negative impacts it could have on human health or the environment.

Q. Do you agree or disagree that the proposals in this chapter will achieve the goal - 'Agile standards - rapid, predictable and integrated standard setting? If you disagree then please provide alternative suggestions along with supporting evidence where available

Chapter 3: Proportionate regulation and coherence in the framework

The previous chapters covered the approach to innovation under the framework and the approach to setting industrial emissions standards. This chapter considers the fundamental question of the sectoral scope of permitting and ensuring it is consistent with climate, energy and circular economy policy and developing technology.

The sectoral scope of the industry elements of the EPRs were largely developed in the 2000s, well before many of the current generation of clean technologies emerged. Whilst polluting activities need to be regulated carefully, in certain cases regulation is too onerous on low-risk clean technologies. In other cases, potentially polluting technologies are excluded entirely from regulation – not only does this undermine health and environmental protection, but the lack of clarity on the regulatory position for these technologies can undermine industry planning and investment.

The government has committed to deliver clean power by 2030, net zero by 2050 and to publish a Circular Economy Strategy in Autumn 2025. The environmental permitting framework has an important role to play in delivering these commitments by ensuring emerging technologies and supply chains have a stable, proportionate and coherent regulatory framework, which protects local communities and the environment whilst enabling the required rapid expansion of these sectors. Regulation of these technologies should be based on the risk presented to public health and the environment and streamlined where possible, which will also deliver significant benefits for the growth of emerging sectors. We must also ensure that activities are regulated by the most appropriate regulator according to the level of risk associated with those activities. In addition, the EPRs and accompanying guidance have amassed themselves over time through various EU directives and domestic statutory instruments - they are outdated, complex and difficult to interpret. The framework as a whole requires reform to create a more coherent permitting system that is easier to understand.

In the following sections we explore proposals to address these issues, including:

- flexible tiers of regulation
- streamlining regulation for low-risk activities
- regulation of new net zero and circular economy activities
- reconsidering regulator roles and responsibilities
- simplification of the EPRs and related guidance

Further detailed policy development and consultation will be required on all of these proposals, which will be shaped by the responses to this consultation. We will also engage with the devolved governments to try and agree UK-wide approaches where possible.

We are separately considering the position on how future environmental permitting requirements might apply to the agriculture sector (beyond the existing coverage of pig and poultry rearing above specified thresholds). For this reason, they are not within the scope of the current consultation.

Consultation proposals

Flexible tiers of regulation

Industrial installation permitting covers a huge range of areas, from oil refineries to dry cleaners. Under the EPRs framework, regulatory effort should be proportionate to the level of environmental risk, impacts and operator performance. Regulators concentrate on higher risk activities to achieve the desired environmental outcomes and to make the most effective use of resources. 2023's post implementation review found the EPRs to be functioning effectively but also identified opportunities to improve the flexibility of how the EPRs are operated, for example, to streamline the process of implementing exemptions and registrations. This is why Defra and Welsh Government jointly consulted on proposals to streamline the process for setting, amending and revoking exemptions from the requirement to hold a permit for regulated facilities where the concept of exemptions already exist (which does not include industrial installations) earlier this year.

We are considering similar proposals for industrial permitting as the EPRs can currently place excessive requirements on certain industrial activities and limit regulators' flexibility to make sensible, risk-based decisions on the appropriate level of regulatory control. This issue is exacerbated by the fact that the legislation is over a decade old and was not designed with emerging growth industries in mind. For example, the EPRs currently require that hydrogen production facilities of any size require a permit, despite the emergence of small-scale modular 'green' hydrogen production units, which are arguably less necessary to permit because of their low risk. The EA is using the tools currently at its disposal, including standard rules permits for low impact installations, to streamline permitting requirements where possible for low-risk activities, however we would like to consider going further.

Our proposal is two-fold, firstly we are considering the case for amendments to the EPRs to streamline or remove permitting for certain low-risk technologies like small-scale green hydrogen production or small backup generators where we currently have sufficient information on risk (outlined further down in this section). This is not about wholesale deregulation, as permitting for most industrial activities remains essential given the significant pollution impacts. Instead, it is about ensuring that regulation is proportionate to risk and does not inhibit the rollout of technologies which deliver significant overall health and environmental benefits.

Secondly, we are considering the case for moving to a more tiered system of permitting (as already exists for other sectors regulated by the EPRs), by giving the EA flexibility to make sensible, risk-based decisions moving forward on whether certain activities should, instead of being permitted, instead be:

- registered (also known as registered exempt), meaning that operators must register their facility with the regulator and agree to comply with conditions set by the regulator or in legislation
- non-registered exempt, meaning that they must comply with conditions set by the regulator or in legislation, but are not required to register their facility with the regulator

Regulators have the usual powers of inspection and monitoring with regards to registrations and exemptions and can revoke the registration or exemption in situations where an operator fails to comply with the requirements of the exemption.

This change could significantly increase the adaptability of permitting and the ability of regulators to make risk-based judgements, taking into account the overall environmental benefits of a technology. This change would be crucial in allowing regulation to adapt to emerging technologies, for example, future generators of hydrogen and carbon capture process which might result in no environmental impacts in normal operation and where permitting is not required.

Using registration approaches in low-risk sectors would also significantly speed up approval timelines and reduce costs on industry. Bespoke installation permits can typically take 9-12 months to be issued and standard rules permits currently take roughly 70 days on average – registration-based approaches would remove the majority of this waiting time, therefore lowering costs to business.

Further policy work is required on this proposal, and on safeguards to ensure the power is used appropriately by regulators, however we would generally seek to align the approach with the recent consultation on exemptions process reform for water discharge, groundwater, waste operations and flood risk classes of regulated facility. That consultation proposed a new power for regulators to create, amend, or remove exemptions, subject to the following safeguards:

- regulators could only create new exemptions or registrations for ‘low-risk’ activities
- regulators would have to consult before using the power
- regulators would not be able to use the power in a way that contravenes the applicable objectives and criteria in the EPRs
- existing powers for ministerial intervention through directions and guidance will be retained and used where appropriate
- if necessary, limits could be placed on the number of exemptions or registrations at a particular site

Specifically for industrial installations, we also need to consider how this power would be used for local authority regulated industries. It would be administratively complex and potentially geographically distorting for each local authority to have this power, so it could either rest with Defra or with the EA. As set out in the proposal in Chapter 2 on 'a more dynamic approach to setting BAT', we believe that the EA could be well suited to carry out this kind of technical role, however bespoke arrangements would need to be developed around EA engagement and consultation with local authorities, and for funding EA to carry out this function.

Q. Do you have any comments on the proposal to develop more flexible tiers of regulation? Please outline your views on any potential costs or benefits the proposal may bring to you and/or your organisation, as well as any positive or negative impacts it could have on human health or the environment.

Combustion plant

Registration approach for smaller Medium Combustion Plant

Medium combustion plant (MCP), which range in size from large gas power plant down to commercial scale boilers used at schools or offices, were brought into permitting to implement the EU's 2018 Medium Combustion Plant Directive ("the MCP Directive"). The MCP Directive included a staged approach to implementation for MCP that were in operation before the MCP Directive came into force, with larger MCP (those with a rated thermal input greater than 5 megawatts) brought into regulation in 2025 and smaller MCP (those with a rated thermal input between 1 and 5 megawatts) in 2030.

The EA has used available tools to simplify the permitting of MCP, for example, through the use of standard rules permits. However, the 2030 implementation date will involve bringing roughly a further 15,000 MCP into regulation according to the MCP Directive impact assessment, many of which will be organisations such as offices or schools that have never interacted with the permitting system before, or smaller businesses for which permitting costs would be a substantial burden.

We are therefore exploring a simpler, registration-based approach (outlined in the previous section) for smaller MCP. We believe this could be more proportionate given the inherently lower risks posed by smaller combustion plant, and the fact that new MCP of this size are often off-the-shelf units where components and operation are more standardised and set by the manufacturer, and which evidence suggests are generally compliant with MCP limits.

Further policy development is required on the design of a registration-based approach prior to more detailed consultation, however, in short, a registration-based approach would require operators of MCP to register their unit with the EA and commit to meet the emission limits set out in legislation. The EA would then carry out inspections and enforcement as

necessary to ensure compliance with the requirements. A system would be needed for processing registrations which would incur a cost – but a smaller cost than a permit.

This approach could significantly cut down waiting times as standard rules permits currently take an average of 70 days to be issued, whereas registrations would require only minimal processing which could cut months off this process.

While we believe a registration-based approach could be more proportionate on the whole, it will likely not be appropriate for MCP in Air Quality Management Areas (AQMAs), where a more active regulatory approach may be required, for example, in setting tighter ELVs than those set out in legislation to protect air quality.

A registration-based approach would be in line with the original requirements from the MCP Directive, which gave EU member states flexibility on whether to implement the MCP Directive through permits or registrations, so this would not represent a regression under the EU-UK Trade and Cooperation Agreement.

Q. Do you have any comments on permitting versus registration-based approaches for smaller MCP as outlined in this section? Please outline your views on any potential costs or benefits the proposal may bring to you and/or your organisation, as well as any positive or negative impacts it could have on human health or the environment.

Back-up generators and data centres

Back-up generators ensure power supply is available during emergency situations and power outages. Most industries and critical services have some form of back-up power generation in place.

Back-up generators have the potential to be harmful to people and the environment when they operate as they often combust diesel without abatement for nitrogen oxides (NOx), which then produces high levels of NOx emissions. However, the very limited operating hours (for testing) of true back-up generators can mean they are a low-risk activity outside of an emergency.

Back-up generators above 1MWth are currently in scope of the EPRs and will require a permit. However, for back-up generators there are no emission limit values (ELVs) set and there is limited compliance activity due to their restricted use during emergency situations in power outages.

Published figures through the MCP Directive impact assessment estimate there are around 9,000 back-up generators in scope of permitting. A recently published research project commissioned by Defra on the small to medium industrial combustion sector suggests the number of diesel back-up generators to be in the tens of thousands. Proportionate regulation

of back-up generators has the potential to reduce burden on both industry and the regulator – four options to enable this are detailed below.

Exploring options for the proportionate regulation of back-up generators is dependent on maintaining a clear distinction that back-up generators are for emergency situations and testing only. If a generator wants to self-supply for any reason outside of an emergency the operator would need to seek the appropriate permit.

Removing carbon monoxide and nitrogen oxides monitoring for back-up generators

One option is to remove the requirement for carbon monoxide (CO) and NO_x monitoring for back-up generators. Schedule 25B of Annex III of the MCP directive currently requires operators of back-up generators to monitor CO and NO_x emission. However, no emission limit values are set for back-up generators due to their restricted use during emergency situations and power outages. The requirement to monitor CO and NO_x emissions is therefore not related to a compliance activity and the reported data is not used by the regulator. The monitoring would also incur costs for operators. In some instances, the requirement to monitor could mean back-up generators were operated solely for the purposes of monitoring which is incoherent.

For these reasons we consider the monitoring requirement to be both disproportionate and unnecessary. This option would remove the requirement for operators of back-up generators to routinely monitor CO and NO_x emissions.

Registration for back-up generators

Back-up generators (above 1MWth) are currently in scope of the EPRs and will require a permit. The EA can permit back-up generators under standard-rules and has consulted on reduced subsistence for operators of some back-up generators, which in itself is a proportionate approach that balances regulatory requirements and environmental risk.

One option is that a registration approach for genuine back-up generators, rather than permitting, may be a more proportionate approach and have the potential to reduce burden both on industry and the regulator. This option would also include removing the requirement to monitor CO and NO_x emissions (see section above).

Data centres

Data centres are a rapidly expanding industry in the UK and further growth is predicted to be significant. Data centres come into scope of the EPRs because of the back-up generation that is installed. Depending on the aggregated size of back-up installed they will be regulated under MCP directive, Part B of the EPRs, or the IED. The development of this relatively new sector means the current regulatory framework has not kept pace with industry practices. For example, the rules and requirements currently vary depending on the aggregated size of the back-up generation that is installed and it is not clear that the different scaling-up

requirements are appropriate, proportionate or apply equally. This means that if a data centre grows and expands it could be subject to different rules and requirements that may not be appropriate or proportionate and may also not have been considered at the design stage.

We want to make sure that a coherent, proportionate and business-friendly regulatory framework is in place that will both support the growth of this sector and enable the best environmental outcome overall. Large amounts of aggregated back-up can potentially be a risk to health and the environment if they operate for extended periods. However, this should be rare as back-up generators only operate in emergencies and power outages or for short periods of testing and maintenance.

We are looking for feedback to inform policy development to ensure regulation of back-up generators is proportionate, whilst maintaining the existing policy objective of controlling the impacts of medium combustion plant, by having the flexibility to tailor requirements to control only those parameters that present a risk to health and air quality.

Operation of back-up generators under Schedule 25B

We have identified that some generators below 1MWth, installed as back-up for the purposes of maintaining power for an on-site emergency, could be operated to self-generate power outside of an emergency.

In this situation they may not adequately fall within the definition of a 'Specified Generator', as the operators of these individual generators may not have a capacity or balancing service agreement directly. Instead, they could potentially participate in demand side response indirectly through aggregators.

We propose exploring amendments to the wording of Schedule 25B to make clear that generators used to self-generate power outside of an emergency, by participating in demand side response, shall be subject to regulation and require a Specified Generator permit. The amendment would close a loophole for any potential increase in pollution.

Q. Do you have any comments on the regulation of back-up generators and data centres as outlined in this section? Please outline your views on any potential costs or benefits the proposal may bring to you and/or your organisation, as well as any positive or negative impacts it could have on human health or the environment.

Hydrogen activities

Hydrogen production

In the IED 2.0 the EU have raised the threshold for permitting of hydrogen production via the electrolysis of water to 50 tonnes per day. The EA is already using mechanisms

including GET and standard rules to expedite and streamline permitting but given the importance of this technology and the relatively low environmental risks associated with the sector, we would like to explore the case for going further in streamlining regulation.

This could be achieved by setting a new threshold for permitting of hydrogen in Schedule 1 of the EPRs (for example at 50 tonnes per day as in the EU) which would remove the need for sites below the thresholds to obtain an installation permit. Alternatively, we could consider a registration approach (as outlined in the previous section) for smaller-scale electrolysis to reduce cost and approval timelines, while maintaining some degree of regulatory oversight.

Q. Do you have any comments on the most proportionate approach to permitting of hydrogen production via the electrolysis of water? Please outline your views on any potential costs or benefits the proposal may bring to you and/or your organisation, as well as any positive or negative impacts it could have on human health or the environment.

Sub-surface storage of hydrogen

Many new 'low carbon' technologies that use the subsurface (below ground) to extract and store green energy and to reduce carbon dioxide (CO_2) could potentially be commercialised in the UK in the coming years. One such retrievable energy storage technique is deep underground hydrogen storage. Depleted oil and gas reservoirs, man-made salt caverns, deep aquifers, hard rock caverns and abandoned mines may be considered for hydrocarbon storage.

Direct discharges of pollutants to groundwater are prohibited under the EPRs via the Water Framework Directive (WFD), unless specifically listed as being exempted from this prohibition (and as such the listed exempted activities can be potentially permitted). Unless the EPRs are amended then the prohibition on the direct discharges of pollutants would apply to the underground hydrogen storage in deep aquifers and depleted oil and gas reservoirs.

We would appreciate views on the case for amending the list of exemptions from the prohibition on direct discharges to groundwater within Paragraph 8 of Schedule 22 to the EPRs to include underground hydrogen storage in deep aquifers and depleted oil and gas reservoirs. This would remove legal constraints and enable the EA to apply appropriate permitting controls as necessary to facilitate such innovative energy storage technologies. Without this change, hydrogen storage in deep aquifers and depleted oil and gas reservoirs cannot lawfully be permitted.

Q. Do you have any comments on groundwater permitting of sub-surface storage of hydrogen? Please outline your views on any potential costs or benefits the proposal

may bring to you and/or your organisation, as well as any positive or negative impacts it could have on human health or the environment.

Carbon capture activities

In the transition to net zero the role of carbon capture is evolving with several types of carbon capture technologies emerging. Carbon capture needs effective regulation in the EPRs as capture technologies can use amine solvents in the process, which can create nitrosamines and other pollutants when released into the air.

Currently the permitting framework only covers one specific activity – capture of carbon for the purposes of geological storage. However, proposals for new plants, including both for storage and utilisation, are already coming forward.

The regulated activity under the EPRs Schedule 1 Part 2 Chapter 6 Section 6.10 Part A(1)(a) is defined as:

> *"Capture of carbon dioxide streams from an installation for the purposes of geological storage pursuant to Directive 2009/31/EC of the European Parliament and of the Council on the geological storage of carbon dioxide."*

Where carbon is captured for utilisation and the plant is part of an EPRs schedule 1 Part 2 installation, then the regulator can permit this as a directly associated activity (DAA).

However, certain carbon capture activities are not currently covered by the regulations, for example, carbon capture for storage or utilisation on standalone medium combustion plant (MCP), and direct air carbon capture (DACC). This means that operations that could have similar environmental risk are treated differently. A particular capture technology (such as amine absorption) will present the same environmental hazards whether the captured CO_2 is going to geological storage or utilisation.

We are minded to consult on amending the EPRs to address these regulatory gaps and include different carbon capture activities in the regulations. These would include:

- carbon capture for geological storage
- carbon capture for utilisation
- carbon capture technologies such as DACC

This would provide a level playing field, support the deployment of carbon capture technology, and ensure environmental risks are appropriately managed. We would appreciate views on the case for and against extending regulation in this way.

Other emerging capture technologies, such as solid-state capture, may have different environmental risks. As different capture technologies emerge and develop, they too should be regulated in a way which is proportionate to the level of risk to the environment.

Q. Do you have any comments on the regulation of carbon capture activities as outlined in this section? Please outline your views on any potential costs or benefits the proposal may bring to you and/or your organisation, as well as any positive or negative impacts it could have on human health or the environment.

Battery energy storage systems

Battery energy storage systems (BESS) are a key technology in delivering Clean Power by 2030 as part of making Britain a clean energy superpower. In the Clean Power Action Plan (published December 2024) the government set out that 23-27 GW of battery capacity could be needed by 2030. BESS help balance the electricity system at lower cost and maximise the output from intermittent low carbon generation (such as solar and wind) and thus minimise investment in new generation capacity and network upgrades to meet peak demand. Batteries also bring benefits for air quality as they accelerate the transition from fossil fuels to renewables – current significant growth in this sector is supporting this transition.

However, if not managed appropriately, the lithium-ion batteries used at BESS sites have the potential to cause significant and lasting pollution to air, soil, surface and groundwater in the event of a fire due to the nature of the materials contained in them. There is growing public concern about potential risks and the environmental and public health impacts from BESS fires. We have therefore reviewed regulatory options for BESS. Grid-scale batteries are already subject to safety checks and oversight, for example through planning practice guidance to encourage engagement between developers and local fire and rescue services; through the Health and Safety Executive's enforcement of legislation such as the Health and Safety at Work Act 1974 and the Dangerous Substances and Explosive Atmosphere Regulations 2002; and through a growing body of practice developed and disseminated by developers, insurers, and public institutions, which the government monitors and influences through the industry-led Health and Safety Governance Group. As part of this wider framework and in order to future-proof the system as we build towards a five-fold expansion of Great Britain's installed battery capacity in the next five years that we are considering augmenting the regime with additional, national provisions on environmental and health safety. Regulatory certainty could be beneficial in supporting investment in the sector - clarity for businesses on regulatory arrangements could support securing project finance and reassure potential investors.

We have considered a range of options with regards to further regulation of BESS. BESS facilities already require planning permission from local planning authorities to be built, and whilst planning practice guidance encourages engagement between developers, local planning authorities and local fire and rescue services to ensure that land-use planning matters such as siting and access are considered in this process, it is not the role of the planning system to regulate fire risk and there is limited provision through the planning system to ensure that measures are maintained.

BESS sites are not regulated under the Control of Major Accident Hazards (COMAH) Regulations as COMAH is an inventory based regulatory regime for facilities which hold prescribed substances above specified quantities. Lithium-ion batteries are considered 'articles' and are therefore out of scope.

Finally, the EPRs could provide a framework to manage potential fire risks and subsequent environmental and public health impacts through environmental permits. Permitting is a trusted and effective framework for controlling pollution from industry and energy sectors, with an inspection regime providing ongoing assessment of compliance. Standard rules permit conditions could be applied to BESS sites through the EPRs which would provide a transparent, proportionate, and consistent way of controlling the risks. The fact that we are currently reviewing the sectoral scope of the EPRs means that it would be the fastest route to achieve the desired outcomes around regulatory certainty and environmental and health protection.

We would therefore like to test the principle that the EPRs provide the most suitable regulatory framework for BESS, prior to carrying out further policy development and consultation on this proposal.

We have set out some further initial thinking below on key policy issues to inform responses.

Development of standards

Under the EPRs, there is an established process for developing the sectoral standards which are then implemented through environmental permits. As set out in the 'Case for Change' chapter, permit conditions are based on BAT (the available techniques and technologies which are best for preventing or minimising emissions and impacts on the environment). If it is decided that we should proceed further with proposals to include BESS in the EPRs, then the EA would work with industry, experts and other interested parties, through a Technical Working Group, to develop and agree standards, which will then be publicly consulted on.

Thresholds

We are not aware of a specific definition of 'Grid Scale Storage' but the National Fire Chiefs Council (NFCC) and DESNZ's Health and Safety guidance refer to sites with 1MW or greater of installed capacity. We would like to test the appropriateness of this threshold (including both stand-alone open-air sites and those co-located with large scale generation or demand).

Types of BESS in scope

While lithium-ion batteries are currently the dominant technology and primary area of concern, our initial thinking is that the EPRs activity could cover all types of BESS to ensure regulation is future-proofed. Where a particular type of BESS technology would

result in more limited or no significant environmental or health impacts, regulators could use the new flexibilities proposed in this consultation around exemptions and registrations to tailor regulatory approach to risk.

Existing sites

When new activities are added into the EPRs, permits are required for new and existing sites in order to deliver a level-playing field and ensure risks from all sites are managed. Existing sites are given an implementation period to apply for a permit and meet standards (typically 4 years) and standards can be varied for new and existing sites based on what is technically and economically feasible. Subject to further policy development we would likely propose aligning with this approach for BESS.

Q. Do you have any comments on the appropriateness of using environmental permitting to manage the risks and impacts to public health and the environment of fires at BESS sites? Please outline your views on any potential costs or benefits the proposal may bring to you and/or your organisation, as well as any positive or negative impacts it could have on human health or the environment.

Battery manufacturing

The battery manufacturing industry is a growing sector in the UK that is important for the government's commitments on decarbonisation and growth. However, it has the potential to cause significant environmental and health impacts if not effectively regulated. Most notably through the use of toxic chemicals such as NMP (N-Methyl-2-pyrrolidone).

Currently, the manufacturing of batteries is regulated for its use of organic solvents under the EPRs. Depending on size and the type of the emissions, it is regulated as either a Part B or part A2 activity and can be captured by Chapter V of the IED. However, there is not a specific activity in the EPRs for battery manufacturing which means that permitting only covers solvent use and not wider aspects of the manufacturing process and appropriate and integrated standards have not been developed covering all emissions and environmental impacts. The lack of bespoke regulation could also impact industry certainty for investment.

We are minded to consult on proposals to define battery manufacturing as a Part A1 activity under the EPRs, which would allow appropriate standards to be set and would transfer permitting from local authorities to the EA. The EA would in our view be the more appropriate regulator due to the scale of the relevant installations and their capacity and expertise in regulating the relevant impacts. Overall, this change could provide consistency, transparency and predictability for industry.

We are seeking feedback on the costs and benefits of this regulatory approach. further policy development is also required on potential thresholds for permitting and we would

appreciate feedback on this point. The EU's revised IED 2.0 only covers battery manufacturing with "*a production capacity of 15,000 tonnes of battery cells (cathode, anode, electrolyte, separator, capsule) or more per year*." However, this would only cover very large battery manufacturers, so we would like to consider a lower threshold to ensure consistency across different sizes of site. In addition, we could consider defining thresholds in terms of the chemicals used rather than the weight of batteries, as that would be a more accurate proxy for environmental impact.

Q. Do you have any comments on the regulation of battery manufacturing as outlined in this section? Please outline your views on any potential costs or benefits the proposal may bring to you and/or your organisation, as well as any positive or negative impacts it could have on human health or the environment.

Non-waste anaerobic digestion

Anaerobic digestion (AD) is a biological process that breaks down organic matter, such as food waste and agricultural residues, in the absence of oxygen, to produce biogas and a nutrient-rich digestate. The biogas can then be upgraded into biomethane, a low carbon gas that can be injected to the gas grid as a direct replacement for natural gas. Biomethane production from AD has an important role to play in the transition to net zero, decarbonising the gas supply, reducing reliance on fossil fuels, and increasing our country's energy security. It has potential across a variety of end uses, including being a flexible fuel to support decarbonisation across heat, buildings, industry, power generation, transport, agriculture, and hydrogen production.

AD has the potential to provide significant environmental benefits. AD sites can provide an effective treatment method to process organic wastes and residues that would otherwise be sent to landfill. The AD process captures methane - a potent greenhouse gas - that would otherwise be released to the atmosphere. The by-product of AD, a nutrient-rich digestate, when managed well, can also contribute to the circular economy by providing a natural alternative to chemical fertilisers. Furthermore, biomethane production has the potential to deliver negative emissions, through carbon capture technology both at the point of production and point of combustion.

In Great Britain, the AD sector is supported by government initiatives such as the Green Gas Support Scheme which provides tariff-support for biomethane produced via AD and injected into the gas grid. The government is currently considering options for post-GGSS support for the sector.

As the AD sector grows, it is important to ensure that AD sites continue to be properly managed. If poorly operated, AD sites can pose serious environmental and health and safety concerns, causing pollution of air, land and water through fugitive emissions, such as methane, and land and water pollution from accidents which can damage the

environment. The EA has documented numerous incidents at AD plants, including pollution, containment failures and fires, highlighting the need for regulatory oversight of the AD process and clear industry standards. Research from the Methane Emissions from Anaerobic Digestion (MEAD) study also found evidence of fugitive methane emissions from both waste-fed and non-waste fed AD sites which highlights the risk of emissions from these sites when poorly managed, emphasising the importance of effective monitoring and operational controls.

AD facilities using waste feedstocks (for example, commercial or retail food waste, wastewater), are subject to environmental permitting, which sets controls on emissions and site operations, including the techniques used, waste management and environmental safeguards. These regulations help prevent pollution, manage risks and ensure safe operation. However, regulation does not currently apply consistently across the sector.

AD facilities processing non-waste feedstocks, such as those using purpose-grown crops or crop residues as feedstock, fall outside the permitting regime. Despite using the same technologies and posing similar environmental risks, they are not required to meet the same standards, although some plants do adhere to these standards on a voluntary basis. This weakens environmental protection and creates inconsistencies in industry standards and the AD regulatory landscape causing market distortions. It also limits the potential of AD infrastructure, as co-digestion of waste and non-waste materials is underutilised.

We are minded to consult on making the anaerobic digestion of non-waste feedstocks a Part A1 activity of the EPRs, requiring sites that meet certain thresholds to hold an environmental permit. Currently, waste-fed AD facilities are regulated under the EPR and must operate under either an exemption, a standard rules permit or a bespoke permit.

Standard rules permits apply to lower-risk waste treatment scenarios, for example, AD facilities treating up to 100 tonnes of waste per day. Larger AD plants processing over 100 tonnes per day are classed as installations under the IED and require a bespoke environmental permit. Smaller AD operations treating waste can operate under Registered Exemptions, subject to limits including the volume of waste stored or treated (for example, up to 1,250 cubic metres for on-farm sites and 50 cubic metres for non-farm sites) retention time and thermal input.

Applying a similar permitting threshold to non-waste AD facilities would help close this regulatory gap. A consistent permitting approach would strengthen environmental protection, standardise requirements, and support fairer competition across the sector. A consistent approach would also present an opportunity for non-waste AD plants to more easily demonstrate that they are working to an acceptable environmental standard.

This change would align with an EA review updating standards for the AD industry, helping to establish a more cohesive regulatory framework and ensure the same environmental rules and operating standards apply across the sector.

Q. Do you have any comments on the regulation of non-waste anaerobic digestion as outlined in this section? Please outline your views on any potential costs or benefits the proposal may bring to you and/or your organisation, as well as any positive or negative impacts it could have on human health or the environment.

Mining and treatment of metals and minerals

Extraction and treatment of metals and minerals, particularly critical minerals, is a growth area in the UK - with recent significant lithium and tin mining developments in Cornwall advancing and permit applications expected soon. Whilst the management of mining waste is regulated through the current permitting regime, the EPRs are not designed with the extractive activities in mind and they are therefore covered by a patchwork of regulation, including the EPRs Part B permitting of various mineral processing activities and coverage of certain treatment activities under the EPRs Part A chemical or refining activities. The lack of a bespoke activity and standards for extraction and on-site treatment makes determining permits more challenging for regulators and undermines regulatory certainty for industry.

Through the IED 2.0 the EU has added *"extraction including on-site treatment (operations such as comminution, size control, beneficiation and upgrading) of the following ores on an industrial scale: bauxite, chromium, cobalt, copper, gold, iron, lead, lithium, manganese, nickel, palladium, platinum, tin, tungsten and zinc".*

We would like to seek early feedback on the option of making extraction and on-site treatment of ores a Part A1 activity of the EPRs. This proposal aims to clarify the permitting application process and regulation of mining and processing activities, and thus better support critical minerals businesses.

It should be noted that the EPRs include requirements for Part A activities around restoring sites to a satisfactory state upon the cessation of activities – and requirements around site condition are therefore a legitimate aim of the permitting and BAT processes. For example, in the landfill sector there are financial or escrow provisions which aim to ensure long-term funding for site restoration after the cessation of activities.

Q. Do you have any comments on the mining and treatment of metals and minerals as outlined in this section? Please outline your views on any potential costs or benefits the proposal may bring to you and/or your organisation, as well as any positive or negative impacts it could have on human health or the environment.

Alternative thermal treatment

Emerging technologies have the potential to both convert currently non-recyclable materials, particularly plastics, into raw materials for new products as part of the circular economy, and to recover a broad range of materials from residual waste to create low or recycled-carbon fuels and support the decarbonisation of otherwise difficult to decarbonise sectors.

Other than incineration, the thermal treatment of waste to undertake non-mechanical recycling or create waste-derived low or recycled carbon fuels is not clearly defined in the EPRs. Technologies to produce or refine fuels and chemical outputs are only accounted for in the regulations for their application to fossil materials, and not residual waste.

This is no longer adequate as there are carbonaceous fuels now derived from biomass or waste. Currently, the regulator has to either permit these processes under waste incineration regulations or define residual waste as a "carbonaceous material". The existing regime hasn't kept up to date with changing practices and risks inconsistency and uncertainty for developers.

We are minded to consult on amending the EPRs to clarify what thermal treatment is and where these technologies are accounted for in the regulations. The aim of this amendment is to provide regulatory clarity and certainty for businesses on permitting arrangements. This proposal supports cross-government work on alternative thermal treatments of waste.

Q. Do you have any comments on the regulation of alternative thermal treatment as outlined in this section? Please outline your views on any potential costs or benefits the proposal may bring to you and/or your organisation, as well as any positive or negative impacts it could have on human health or the environment.

Other technical scope changes

We are working with regulators to identify other areas where the EPRs activity descriptions have become outdated or where thresholds are creating pollution problems or issues for industry.

Reconsidering regulator responsibilities

As set out in the 'Case for Change' chapter, there is a complex split between industrial activities regulated by the EA and those regulated by local authorities. While not entirely consistent, the broad rationale for the split is based on:

- **scale of environmental risk** – the EA generally has responsibility for activities where individual sites have potentially wide-ranging cross-media impacts and

significant emissions whereas local authorities generally oversee activities where individual sites have lower risk profiles
- **technical complexity** – the EA generally handles more complex facilities requiring specialised expertise whereas local authorities manage less complex facilities where more standardised regulatory approaches are possible
- **historical and practical factors** – local authorities are generally better positioned to understand local conditions and concerns and have historical expertise in certain sectors

However, the split between the two regulators has not been properly reviewed for decades, during a period of significant and accelerating industrial transformation. We would like to consider whether there are specific activities which should be transferred between regulators, for example, because risk profiles have changed, more nationally-directed approaches are required or because certain sectors are undergoing significant transformations which require specific expertise that one regulator is better placed to provide.

Above we have already proposed moving battery manufacturing regulation from local authorities to the EA, given the scale and risks from these processes and the relevant expertise in the EA. However, we would also like to receive feedback on other areas where a change in regulator should be considered.

Q. Do you have suggestions of regulated activities where a change in regulator would be beneficial? Please set out how your proposal would result in benefits to yourself or your organisation, or where proposals would result in harm or benefits to human health or the environment.

Simplification of the EPRs and related guidance

The Corry Review highlighted that the complexity of environmental legislation and associated guidance makes it challenging for customers to know what standards they are expected to meet and recommended that Defra should rapidly review and rewrite its existing catalogue of compliance guidance to ensure it is fit for purpose, removing any duplication, ambiguity and inconsistency.

This assessment is accurate for the industrial emissions elements of the EPRs, which are overcomplex in places due to their piecemeal development through multiple EU directives and domestic amendments. Simplification is required to make them easier to navigate for industry and the public.

Defra's existing suite of guidance is also quite old and we are aware of examples of outdated guidance which have impacted permitting timelines. We will update this guidance as part of improvements to the whole permitting framework for industry. We will also make other technical changes to simplify, streamline, and remove duplicative regulation. This will

improve transparency and trust in the framework and support better engagement with the regulations and guidance.

Q. Do you agree or disagree that the proposals in this chapter will achieve the goal - 'Proportionate regulation and coherence in the framework'? If you disagree then please provide alternative suggestions along with supporting evidence where available

Chapter 4: Regulator effectiveness and efficiency

The EA and local authorities serve as the regulators responsible for implementing and overseeing permitting of our industry and energy sectors (and other sectors, such as waste). The EPRs set a framework for delivery of permitting, for example, setting out requirements on what permits should cover, requirements to set emission limits based on BAT, the approach to cost recovery, inspection and compliance requirements and many other areas. Within this framework, regulators have discretion as to how they implement the EPRs' requirements.

In order to deliver the government's aims for the permitting regime, regulators should have sufficient personnel, resources, systems and skills to permit industry effectively, ensuring permit applications are assessed and actioned promptly and that they protect the environment and health. The legislative framework should ensure that regulators are able to recover costs in line with polluter pays principle, new approaches to permit delivery are developed for novel and complex sites, and interactions with other regimes are clear with a minimum of duplication or inconsistency.

Industry has highlighted permitting timelines as a persistent issue, and one which is becoming more pressing given the pace of industrial transformation required to deliver net zero and a circular economy. Current timelines are a result of numerous factors – in certain cases they can be an unavoidable result of the challenges of permitting new sectors and pollutants, for example, the lack of basic scientific data a result of poor quality or incomplete applications which require significant back and forth with the regulator.

However, it is also essential that regulators continue to develop risk-based and efficient approaches to permit delivery while ensuring essential environmental and health protections are in place.

Defra and DESNZ have funded the EA to develop standards and guidance for new technologies including hydrogen and anaerobic digestion to help speed up permitting. The EA has made use of standard rules permits, including for low-impact installations and for R&D, to ensure the permitting process is proportionate to the impacts from lower-risk activities. Previous chapters in this consultation have set out other reforms which will provide more tools for risk-based permitting, for example, 'flexible tiers of regulation' in Chapter 3.

The EA is also rolling out a permitting transformation programme designed to modernise the permitting service. The Accelerated Permitting Transformation Programme aims to innovate and implement digital, regulatory, and business reforms to improve how the EA provide permissions, making them a more effective, anticipatory, and adaptable regulator while remaining a trusted decision-maker. Specific initiatives will include a streamlined validation process to speed up determination times and provide clarity to applicants; a new

priority tracked service for complex multi-permit and NSIP sites in support of construction and major developments; and a new digital ‘apply and manage’ service, providing an all-inclusive, easy, seamless, and accessible digital platform.

For local authority regulators, the Local Authority Unit (LAU) in the EA provides support by developing guidance and assisting local authorities on complex permit applications.

Separate to these operational matters, this consultation provides an opportunity to consider reforms to the legislative framework for permitting delivery, including in relation to cost recovery, new models of permitting delivery and interactions with other regimes.

Consultation proposals

New approaches to permitting delivery

Outline permitting approval

Industry representatives have highlighted that for major new projects or significant transformations to existing sites, private investors or government will sometimes require that permits are in place prior to investing to reduce uncertainty. However, at this early stage of the process, the detailed design plans that are required to inform permitting are not generally in place, which means that developers may have to apply for a permit once based on a set of assumptions and then vary the permit further down the line when detailed design is finalised. This can involve a significant time and resource commitment by developers who effectively go through the permitting process twice. The EA currently offers a pre-application service, however this is advisory and does not provide indications to developers on whether permits will ultimately be approved. The EA also offers an optional paid-for ‘priority tracked service’, which provides early advice on permits and licenses and a single point of contact within the EA.

We are interested in whether there are alternative permitting approaches where sufficient reassurance on permitting approval could be provided earlier in the process to derisk investment, with detailed design considerations coming later. It should however be noted that developers and investors will always have to bear a significant degree of risk, as it is only when detailed assessment is carried out that the acceptability of a proposal can definitively be determined.

One such approach would be creating an optional new stage of outline permitting approval early in the process, based on the model of outline planning permission. While this could not definitively approve a project as detailed assessment would be required, it could set out that the regulator would be minded to approve a project for outline permitting if it complied with certain broader conditions based on an initial streamlined assessment. Significant further policy development would be required alongside regulators and industry to determine what this assessment could involve and how it could differ from the typical

permitting process. It could however include commitments from the operator to apply BAT and initial assessment against local environmental constraints and limits.

In helping us to decide whether approaches of this sort should be considered further, we are interested in views from investors on what kind of certainty they require with regards to permits to justify investment. We would then consider whether an outline permitting permission could realistically provide that degree of certainty without compromising the integrity of the permitting process.

We are also interested in views from regulators, developers and operators on whether outline permit approvals could offer material benefits, given that it would add a new step into the permitting process which could create more work for operators and regulators.

Q. Do you have any comments on the outline permitting approvals approach as outlined in this section?

Site-level flexible permitting approaches

While reviewing the permitting system for industry, we have looked at permitting approaches in other countries to identify novel approaches which could be used in the UK. One such approach are the various types of 'flexible' permit that have been used as part of the industrial pollution control system in the USA, for example through Plantwide Applicability Limit (PAL) permits. These approaches move away from setting emission limits for each separate technology or process at an industrial facility and instead set an overall cap for the facilities' emissions of certain pollutants (for example, particulate matter or nitrogen oxides).

A version of this approach is already used in the UK called the 'bubble' approach, as described in the refineries EU BAT reference document (BRef).

The key benefits of 'flexible' permits are:

- **reduced bureaucracy** – as operators do not need to obtain a permit modification for every significant change they make to their facility, as long as they stay below the overall cap for a particular pollutant
- **cost reduction** – the cost of reducing a particular pollutant from different processes or technologies within a facility is not equal, so these approaches give operators flexibility to reduce emissions in the least cost way, as long as they stay below the overall cap
- **potential emissions reduction** – the cap is generally established by adding together the relevant process or technology specific emission limits for a particular pollutant from a facility, however some flexible permit approaches in the USA then subtract 10% from the sum of the process specific emission limits to ensure that the system delivers emissions reductions as well as greater flexibility to operators

The emission cap could be revised down in line with any new BAT conclusions that were issued for a sector, which would ensure emissions are reduced in line with BAT.

Approaches of this sort generally work best for larger industrial facilities with a large number of point sources, as the flexibility will provide greater value. They also generally work best for high-volume, relatively uniform pollutants such as nitrogen oxides, sulphur oxides, ammonia and particulate matter. For less uniform pollutants such as volatile organic compounds (VOCs), there is a risk that less harmful VOCs are reduced to provide more headroom to emit more harmful VOCs.

These approaches could also provide value in simplifying permitting for facilities that are decarbonising through the use of new fuels. For example, an installation with a flexible permit that is switching from natural gas to hydrogen would not require a permit variation if it could demonstrate that the change would not lead to exceedances of the NO_x emissions cap for the site and would not lead to wider emissions or environmental impacts that were not covered by the flexible permit.

Significant further policy development would be required on this proposal. In helping us to decide whether approaches of this sort should be considered further, we are interested in views from respondents on whether such an approach would provide significant benefits (of the types listed above) in comparison to the existing regulatory framework and the existing flexibilities used by regulators.

Q. Do you have any comments on the use of the flexible permit approach as outlined in this section?

Industrial clusters

As the UK transitions to net zero, the deployment of low-carbon technologies, such as carbon capture and storage (CCS) and hydrogen, will increasingly occur alongside existing industry to utilise shared infrastructure, supply chains and workforce. Industrial clusters - economic regions with co-located industries such as power stations, chemical plants, refineries, and manufacturing - are estimated to account for half of UK industrial carbon dioxide emissions (CO_2). The transition to low-carbon development in industrial clusters must be able to operate within the context of its local environmental capacity. Local environmental and health limits, such as air quality limits and water availability, are already under pressure in some regions. These pressures could become barriers for new industrial projects seeking environmental permits, particularly where headroom is limited. Meanwhile, there is significant uncertainty around how these low carbon clusters may evolve over the coming decades due to market forces and other factors.

Currently, the environmental permitting framework for industrial activities takes a first-come-first-served approach to permitting each site individually to, predominantly, national standards for that sector, rather than fully considering sites within their spatial context. The

permitting process does not take into account future development and how it could operate within environmental constraints alongside existing industry, reflecting the overall environmental pressures in a fair way within each installation's permit conditions. This creates a risk that existing industry takes up most of the environmental capacity in an area, leaving little available headroom for new industry - even if it is cleaner and more efficient. For example, in the Humber Industrial Cluster water scarcity is already an issue, with existing sectors abstracting all the available water. Similarly, in the Teesside Industrial Cluster, nutrient pollution from existing sectors means that new industries might find it hard to get permits that add to the nutrient loads on the environment. As a result, new industrial projects inside a cluster may face delays or challenges when going through the permitting framework.

In setting permit conditions, regulators set upper limits for emissions to air, water and land on individual operations to protect public health and the environment, and most operators manage their businesses to come in just below those limits. As a result, existing facilities may not be operating at the highest level of efficiency or environmental performance, with permit conditions that license resources or headroom that might not be needed. This has the effect of limiting resources or headroom available for new developments.

Without a shift in approach, there is a risk that existing, often less efficient and more polluting industry may continue to use up local environmental capacity, thereby holding up the rollout of new, cleaner industry and technologies. This could undermine progress towards net zero and compromise local environmental and public health outcomes.

Understanding local environmental capacity and managing the cumulative impacts of industrial clusters is essential to protect public health and the environment. The EA has undertaken a four-year review of the environmental capacity needed to support CCS and hydrogen development in three English industrial clusters: Humber, Tees and HyNet (North West). This review highlights the need for more strategic coordination around industrial clusters. The project sets out findings and recommendations around strategic planning, environmental permitting, water availability, water quality, air quality and climate impacts.

We have started to explore a range of options to better align industrial permitting with the realities of net zero industrial clusters.

Existing regulatory mechanisms

There are existing regulatory mechanisms that may help address this issue. It would be possible for the EA to review all the industrial permits in an area to ensure that older industrial installations are working to up-to-date standards. This would be likely to create some additional environmental headroom but probably not enough to enable significant investment in new sites, as regulated industry is generally only one amongst many sources of pollution in an area. There are currently no mechanisms for regulators to mandate standards for an installation that are significantly tighter than national levels for

each sector to reflect local pressures, unless tighter standards are required to meet a local Environmental Quality Standard.

Non-permitting mechanisms

In addition to voluntary industry action, there are a range of market-based non-permitting mechanisms that could, in principle, be used to increase environmental headroom such as off-setting and emissions trading but they would all have drawbacks in terms of costs and complexity of participation, monitoring and enforcement in a multi-constraint context.

A strategic approach

Permitting could be well placed to manage environmental capacity at industrial clusters but alone cannot solve the issue. The permitting framework does provide an effective existing vehicle for setting, monitoring and enforcement of environmental standards for individual sites. It would be possible for legislation to allow for standards in a permit to be tighter in a local area than national requirements, if regulators could reference sufficiently detailed, established cluster-level plans with a high level of legitimacy with the businesses affected.

In December 2024, the government's Clean Power 2030 Action Plan committed to "*explore strategic approaches to managing environmental pressures around industrial clusters which engages effectively with the planning and permitting systems. This will help to enable cluster decarbonisation within environmental constraints and address emerging issues prior to projects entering the planning system.*"

As set out in the Clean Power Action Plan, a more strategic, forward-looking approach to managing industrial clusters might be needed, especially as the net zero transition accelerates into the 2030s and 2040s. A clearer articulation of the environmental impacts from both existing industry and from the development of new industry within a cluster could make it possible for regulators to issue new, and review old, permits within a cluster area to ensure compliance with that broader plan. This could include spatial planning for industrial clusters, industrial cluster growth forecasts, and further area assessments of environmental capacity. Such clarity could support both more robust regulatory decisions and contractual agreements between existing and new operators to create environmental headroom.

Q. Do you have any comments on whether further action is needed to improve the environmental permitting framework to allow regulators to manage environmental capacity for industry in an effective and fair way? Please outline your views on any potential costs or benefits the proposal may bring to you and/or your organisation, as well as any positive or negative impacts it could have on human health or the environment.

Interactions with other regimes

Industrial installations will generally have to interact with a number of processes in order to gain approval to operate. This includes environmental permitting, planning, Control of Major Accident Hazards (COMAH), chemicals and hazardous substances regulations and others. Legislation and guidance generally sets out clearly the role of each of these processes and how they should interact, however we are keen to ensure that interactions are streamlined where possible and any duplication is removed. We have focussed below on the planning and permitting interaction, as this is the main area of interest highlighted by stakeholders, however we would appreciated views on interactions between permitting and any other regimes.

Planning

With regards to planning and permitting, existing planning guidance clearly sets out the distinct roles of the two systems. Planning is responsible for assessing whether a development is an appropriate use of land, whereas permitting is responsible for controlling pollution and wider environmental impacts from the operation of permitted sites (including industrial installations).

The key issues highlighted by stakeholders to date on the interaction between the planning and permitting systems are firstly duplicative or conflicting data requirements through the planning and permitting system which add complexity to applications. And secondly, the fact that operators generally apply for permits after planning, has led to some instances where permit conditions have required reconsideration or changes to the planning permission.

On the former, where planning and permitting decisions rely on and consider similar or the same information, these data processes should avoid duplication as far as possible. We will work with regulators to assess whether any changes could be required here.

On the latter, parallel tracking of planning permission and other consents such as permits is encouraged where possible to avoid issues of this kind. The EA has an existing enhanced pre-application advice service which can provide advice on a range of matters, including the option of parallel tracking with planning permission.

Q. What key factors should be considered when exploring options for better alignment of the planning and environmental permitting systems for industry?

Local Air Quality Management (LAQM)

We are keen to consider whether there is a case for closer alignment between the Local Air Quality Management (LAQM) and environmental permitting regimes, so that swifter, more complementary action can be taken to resolve local air quality issues.

At present, the EA is required to act as an air quality partner if emissions from an EA regulated facility contributed to a local exceedance of an air quality objective or standard – but only once an exceedance necessitating declaration of an Air Quality Management Area (AQMA) is identified. Air quality partners are required to propose actions they will take for inclusion in local authority Air Quality Action Plans (AQAP) that will reduce emissions and assist the local authority to meet air quality objectives.

Under the Schedule 7 and 8 of the EPRs, where compliance with an air quality objective or standard requires stricter conditions than those achievable by the use of BAT for a particular installation, the EA or local authority as regulator are required to include stricter measures in the permit, including stricter ELVs where necessary. Defra guidance on Part A1 installations and Part A2 and B installations sets out the approach EA and local authorities should take to ensure compliance with air quality objectives and standards through permits. This is a complex site-specific assessment.

In practice, most AQMAs are currently declared because of roadside exceedances of NO_2 although industrial sites can contribute to NO_2 emissions. Industrial sites may also contribute to AQMAs declared for exceedances of other pollution objectives such as SO_2 and particulate matter (PM_{10}). There may be scope to ensure there is earlier engagement between the EA and local authorities on the potential pollution impact locally from proposed permitted industrial activities. There may also be potential to strengthen the expectation that where there is a relevant AQMA, tighter permit conditions should automatically be put in place by the EA.

Q. Do you have any comments on how to achieve better alignment between the Local Air Quality Management and environmental permitting regimes?

Alignment of industry and legal standards regimes

The British Standards Institution (BSI), the UK's National Standards Body, works with industry and other stakeholders to define and develop standards to raise and enhance performance. These standards are best practice and voluntary, whereas Best Available Techniques and other standards developed under the environmental permitting regime for industry are the legal requirements for installations to operate. These different systems for setting standards should be complementary.

We will aim to ensure alignment and coherence between the two standards regimes and work with industry and BSI to avoid contradictory requirements. To help reduce administrative burdens, we will also explore options to allow operators to demonstrate

compliance with legal requirements under environmental permitting through use of voluntary standards supported by sufficiently robust assessment and certification.

Local authority fees and charges

Effective cost recovery is important in ensuring the EPRs operate on the basis of the polluter pays principle, and that regulators have the resources and skills to efficiently and effectively process permits. While the EA has an established system for regularly updating its fees and charges to deliver cost recovery, the current system for setting local authority (LA) fees and charges is not working effectively. Defra has not updated LA fees and charges since 2017, and they cannot fully recover costs for key activities such as compliance work or agreeing derogations from regulation.

We are exploring updates to deliver better cost recovery and create a more dynamic and predictable framework moving forwards (with due consideration of the impacts on small and medium-sized enterprises).

Current cost recovery

Defra is planning to consult this year on an inflationary uplift to LA fees and charges. However, we have evidence that an inflationary uplift may not be sufficient to deliver cost recovery for LA permitting activity. For instance, the Local Pollution Control Statistical Survey (LPCSS) in 2018, with participation from 245 English LAs (out of 345 LAs at that time), showed that the average and median of annual cost shortfall experienced by LAs was £3,624 and £256, respectively. Additionally, 2014 and 2015 cost accounting data shows that at least 149 LAs have experienced annual deficits, with 9 LAs reported a cost recovery deficit that was greater than £50,000. Anecdotal evidence suggests shortfalls are particularly large for more complex Part A2 installations.

Issues around the current LAs Fees and Charges Scheme

<u>Issues with the current risk rating system</u>

The current fees and charges scheme is underpinned by a risk rating system, which sets the level of fees and charges for activities on the basis of recommended numbers of hours spent annually for regulatory effort. However, the system does not always represent the true amount of effort, since activities that fall under the same risk rating can vary in the amount of effort required. This has been a result of (i) variations in type of facility regulated, (ii) the location and spread of facilities, and (iii) the varying extent of operational performances causing different levels of support and advice from LAs. All these factors have impacted the amount of time and other resources that have been spent.

Local authorities cannot recover costs for all activities

The EA can generally use time and materials charges to recover their costs, while LAs cannot because there is no time and materials charges option within the England Local Authority Fees and Charges Schemes (for Part A2 and Schedule 13 SWIPS and for Part B and Schedule 14 SEAs). Examples of this include:

- **pre-application engagement** – LAs cannot currently charge for offering pre-application engagement to industry, which limits their ability to carry out this essential service
- **compliance work** – while the risk rating system considers the amount of inspection and ongoing monitoring activity that will typically be required for a particular facility type, it does not allow for additional charges in cases where substantial compliance work is required – costs can be recovered by bringing a case for prosecution, however, this is expensive, time consuming and not always the appropriate route
- **derogations** – in some cases, LAs need to consider requests for derogations, but this is currently free of charge
- **transfer of regulator** – in the event of changing regulators, the cost associated with the process is not covered and there is no mechanism to set new fees and charges after new activities become regulated by LAs – in particular, the higher fees due to previously being regulated by the EA become disproportionately lower once they are regulated by LAs (this is often not appropriate since the activities and the regulatory efforts are the same but the costs to regulate them suddenly become much lower)
- **BAT related works** – LAs are involved in the updating of BAT for industrial sectors they regulate, yet the costs are not covered by the Fees and Charges scheme
- **Part B minor variations** – currently this is a free service for Part B activities but given that most regulated activities are Part Bs (80% of all LAs regulated activities under the EPRs), the time and costs often exceed than what is required by the risk rating system, adding cost burdens for LAs

An improved system for setting fees and charges

We intend to consult on an improved framework for setting LAs permitting fees and charges. We are developing a range of options and would like to test initial thinking through this consultation. The first broad option would be based on the EA's successful approach to setting fees and charges, and would include:

- an initial review of the risk rating system that underpins the level of permit application and subsistence fees, to ensure they represent cost recovery for those core activities
- consideration of a time and materials system to cover costs of regulator activities not covered by permit or subsistence fees, including pre-application engagement, compliance and complaint investigations and derogations

- consideration of existing ‘reduced-fee’ activities, to assess whether there are additional low-risk activities which could be added to the list or higher-risk activities which should be added
- introduction of an automatic inflation-based uplift to ensure fees and charges remain up to date

Alternatively, we could consider more devolved models, where individual LAs have more powers to set their own permitting fees at level that would achieve, but not exceed, cost recovery. Models of this kind were explored in Chapter 11 of the recent consultation by the Ministry of Housing, Communities and Local Government in relation to local authority planning fees. However, in a permitting context these options could involve additional burden on local authorities and could result in variation in fees across England.

Q. Do you have any comments on improving the system for setting LAs permitting fees and charges? Please set out any evidence regarding current shortfalls in cost recovery. Additionally, please outline your views on any potential costs or benefits the proposal may bring to you and/or your organisation, as well as any positive or negative impacts it could have on human health or the environment.

Emission Limit Value guidance change

Sectoral BAT conclusions generally set emissions standards as a range, known as BAT associated emission levels (BAT-AELs). Section 4.35 of the Industrial Emission Directive EPRs Guidance on Part A installations, which is applicable in England and Wales, tells permit writers how to use the ‘BAT-AEL range when setting emission limit values (ELVs). The guidance currently stipulates that the ELV should be set at the top (least strict end) of the relevant BAT-AEL range, unless the installation is demonstrably capable of compliance with a substantially lower ELV based on BAT proposed by the operator.

There was a previous public consultation through the UK BAT consultation (2022) on allowing regulators more discretion to select the most appropriate ELV within the BAT AEL range – in order to reduce emissions where economically and technically feasible. This determination would be made during the usual permitting process and so would involve regulators considering the appropriate conditions with the relevant industry. The change would ensure consistency in the approach taken in England with that of Scotland and would also align the UK more closely with the EU approach. The proposal was that this change would only take affect at the usual point at which an installation is due to have its permit reviewed.

Recent feedback from industry has highlighted the value of having specific emission limits set out in legislation (which the current approach largely provides), which industry can plan towards without the need for extensive engagement with regulators. Since we consulted in 2022, the EU has also changed its approach, which is now that ELVs “shall be based on

an assessment by the operator of the entire BAT-AEL range, analysing the feasibility of meeting the strictest end of the BAT-AEL range and demonstrating the best overall performance that the installation can achieve by applying BAT as described in BAT conclusions, having regard to possible cross-media effects". This approach provides more specific instructions to regulators and operators and a clearer presumption of where in the AEL range that ELVs should be set (the strictest end), which could provide greater clarity, while maintaining the ability for ELVs to be set elsewhere in the range based on cross-media effects or local conditions.

We propose working with the Welsh Government to consider the approach to BAT-AELs and ELVs and would appreciate feedback on the costs and benefits of different options.

Q. Do you have any comments on the approach to BAT AELs when setting ELVs? Please outline your views on any potential costs or benefits the proposal may bring to you and/or your organisation, as well as any positive or negative impacts it could have on human health or the environment.

Q. Do you agree or disagree that the proposals in this chapter will achieve the goal - 'Regulator effectiveness and efficiency'? If you disagree then please provide alternative suggestions along with supporting evidence where available

Chapter 5: A transparent framework

Despite significant reductions to industrial pollution in recent decades, air pollution remains one of the largest environmental risks to public health in the UK. Better access to industrial pollution information will increase public awareness about air pollution, a key finding from the Air Quality Systems Review. Improving public knowledge about pollutants from industrial sites supports the government's mission to build an NHS Fit for the Future, enabling citizens to make informed choices which will contribute to tackling cycles of poor health which hold back opportunities and growth. Greater transparency and better access to information about industrial activities in local communities underpins public acceptance of the government's central mission, economic growth. Recognising that transparently accessible industrial pollution information relies on good quality data provided by operators, we will consider how to modernise the Pollutant Release and Transfer Register (PRTR) digital platform, and we will consider whether there are opportunities to align the UK PRTR reporting with other environmental reporting in order to reduce reporting burdens on businesses.

Consultation proposals

Modernising the UK Pollutant Release and Transfer Register

The main reporting mechanism for industrial emissions in the UK is the Pollutant Release and Transfer Register (UK PRTR), an inventory of pollution emissions and waste transfers from industrial sites. It covers data on 91 pollutants from across the UK that are potentially hazardous substances released to air and water and transferred as waste off-site.

The requirement to report derives from the Kyiv Protocol (the Protocol). The Protocol requires signatories to report on industrial emissions annually under set parameters. The Protocol outlines those parameters and sets a threshold for each pollutant. If pollution falls below the threshold, industry is not required to report on the emission levels.

Industrial changes, regulatory reforms and environmental considerations have led to a decrease in most pollutants since the Protocol came into effect. Reported emissions of the five key air quality pollutants declined over the period 2003 - 2023, including NO_x, SO_x, PM_{10}, ammonia, and non-methane VOCs. However, other pollutants with potentially harmful health and environmental impacts, for example, PFAS have become more prevalent but are not captured by the UK PRTR.

The UK PRTR has not been updated since coming into effect in 2007. To reflect those changes in emission landscapes and make the UK PRTR a more accurate and comprehensive tool, we believe some additions could be made to the UK PRTR. A significant improvement would be adding new pollutants to the Register that are of

increasing concern – such as PFAS and PM_{10}. Another helpful addition could be to modify pollutant reporting thresholds to reflect changes in the UK's emission landscape since the PRTR came into effect in 2007.

Q. What factors should be considered when developing a more transparent reporting framework, including adding new pollutants, lowering reporting thresholds and aligning UK PRTR reporting with other environmental reporting?

Next steps

Following this consultation, we will publish a summary of responses and a government response. Once completed, the responses to this consultation will inform policy development towards preferred approaches which will then be subject to further public consultation. Following this, legislative amendments will, as necessary, be made through statutory instrument on any agreed proposals.

This consultation has been issued by the UK government in respect of industrial pollution control in England. We will continue to work closely with the devolved governments and will jointly consider future policy with the aim of maintaining UK-wide standards and aligned processes for industrial pollution control where possible.