DEPARTMENT OF ENERGY & CLIMATE CHANGE

Draft National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4)

Planning for new energy infrastructure

November 2009

Department of Energy and Climate Change

Draft National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4)

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Contents

Part 1. The Purpose of Energy National Policy Statements

1.1 Introduction

1.1.1 The efficient import, storage and transmission of natural gas and oil products is crucial to meeting our energy needs during the transition to a low carbon economy. We cannot achieve national objectives relating to security of supply without enabling investment in new infrastructure.

1.2 Role of this NPS in the Planning System

1.2.1 This National Policy Statement (NPS), taken together with the 'Overarching National Policy Statement for Energy: A Framework Document for Planning Decisions on Nationally Significant Energy Infrastructure' (EN-1), provides the primary basis for decisions by the Infrastructure Planning Commission (IPC) on applications it receives for gas supply infrastructure and gas and oil pipelines as defined at Section 1.7. Under the Planning Act 2008[1], the IPC also has to have regard to any local impact report submitted by a relevant local authority, any relevant matters prescribed in regulations and any other matters which the IPC thinks are to be both important and relevant to the decision.

1.2.2 The Planning Act 2008 (section 104(3)) also requires that the IPC must decide an application in accordance with this NPS except to the extent it is satisfied that to do so would:

- lead to the UK being in breach of its international obligations;
- be in breach of any statutory duty that applies to the IPC;
- be unlawful;
- result in adverse impacts of the development outweighing the benefits; or
- be contrary to regulations about how its decisions are to be taken.

1.2.3 Applicants should therefore ensure that their applications, and any accompanying supporting documents and information, are consistent with this NPS, EN-1 and any other NPSs that are relevant to the application in question.

1.2.4 This NPS, and in particular the policy and guidance on impacts in Part 2, may be helpful to local planning authorities (LPAs) in preparing their local impact reports. In England and Wales this NPS may also be a material consideration in decision making on applications that fall under the Town and Country Planning Act 1990 (as amended). Where relevant, those making decisions on such applications in England should apply the policy and guidance in this NPS as far as practicable.

1 Section 104 (2).

1.2.5 In this NPS, the terms “effects”, “impacts” or “benefits” should be understood to mean likely significant effects, impacts or benefits.

1.3 Relationship with EN-1

1.3.1 This NPS is part of a suite of energy NPSs in which EN-1 covers:

- the high level objectives, policy and regulatory framework for new energy infrastructure consistent with the objective of contributing to the achievement of sustainable development and the Government’s policies on mitigating and adapting to climate change;
- the need and urgency for new energy infrastructure and the social and economic benefits of meeting the need;
- the need for specific technologies, including the infrastructure covered by this NPS;
- key principles to be followed in the consideration and examination of applications;
- the role of the Appraisal of Sustainability and its outcome in relation to the suite of energy NPSs;
- policy on good design, climate change adaptation and other matters relevant to more than one technology specific NPS; and
- the assessment and handling of generic impacts that are not specific to particular technologies.

1.3.2 This NPS does not repeat the material on need set out in EN-1.

1.3.3 Further information on the relationship between NPSs and the town and country planning system, as well as background on the role of NPSs and the arrangements in the devolved administrations, will be issued by the Department for Communities and Local Government (CLG).

1.4 Geographical coverage

1.4.1 Responsibility for decision making on this infrastructure will not all fall to the IPC but will vary across England, Wales and Scotland and also between onshore and offshore.

1.4.2 In **England**, the IPC will decide all applications falling under categories (i), (ii), (iii) and (iv) at paragraph 1.7.1.

1.4.3 In **Wales**, the IPC will decide only applications for:

- under category (i), underground gas storage facilities in natural porous strata where the proposed developer is a Gas Transporter;
- under category (iii) the English section of a Gas Transporter pipeline which crosses into Wales; and
- under category (iv), pipelines over 16.093km (10 miles) long currently requiring consent under s.1 of the Pipelines Act 1962 together with diversions to such pipelines regardless of length.

1.4.4 In **Scotland**, under category (iv) the IPC will decide cross border oil and gas pipelines over 16.093km (10 miles) long currently requiring consent under s.1 of the Pipelines Act 1962 together with diversions to nationally significant pipelines regardless of length. This is where the pipelines have one end in England or Wales and the other end in Scotland. Under category (iii), the IPC will only decide the English section of a Gas Transporter pipeline which crosses into Scotland.

1.4.5 **Offshore**, the IPC should note that the Secretary of State for DECC will be responsible for licensing gas storage in the offshore area and LNG unloading infrastructure where the unloading is to a pipeline or installation at sea. These arrangements include a consenting regime for construction of platforms and for the conversion of geological features for gas storage purposes. The Crown Estate is responsible for leasing the sub-sea storage area or area of the sea bed and water column.

1.4.6 Offshore oil and gas pipelines consents are also the responsibility of the Secretary of State for DECC and are issued in accordance with the Petroleum Act 1998. They cover marine pipelines in controlled waters meaning the UK territorial sea (up to the Low Water Mark or a bay closure line) and any part of the sea on the UK Continental Shelf.

1.4.7 In **Northern Ireland**, planning consents for all nationally significant energy infrastructure projects are devolved to the Northern Ireland Executive, so the IPC will not examine applications for energy infrastructure in Northern Ireland.

1.5 Period of Validity and Review

1.5.1 This NPS will remain in force in its entirety unless withdrawn or suspended in whole or in part by the Secretary of State. It will be subject to review by the Secretary of State in order to ensure that it remains appropriate for IPC decision making.

1.6 Appraisal of Sustainability

1.6.1 This NPS has been subject to an Appraisal of Sustainability (AoS) incorporating the requirements for Strategic Environmental Assessment (SEA). The conclusions of the AoS for all the non-nuclear NPSs are summarised in Section 1.6 of EN-1.

1.7 Infrastructure covered by this NPS

1.7.1 The infrastructure covered by this NPS is the nationally significant infrastructure caught by the relevant Planning Act thresholds (sections 17 – 21 of the Planning Act 2008), as follows:

(i) Underground gas storage and LNG facilities which meet one of the following two tests:

- *the storage or working capacity test*: a project would pass this test if the storage capacity on completion of the proposal is expected to be at least 43 million standard cubic metres (Mcm) of gas or higher; or
- *the maximum flow rate test*: a project would pass this test if it has a projected delivery flow rate of at least 4.5 million standard cubic metres of gas per day (Mcm/d).

An alteration to an underground gas storage facility or an LNG facility will be for the IPC to consider if it increases the storage capacity or the maximum flow rate of the facility by the above volumes.

Applications under this category will include: underground gas storage in natural porous strata (depleted hydrocarbon fields, aquifers); underground gas storage in caverns; and LNG facilities capable of receiving, storing and re-gasifying LNG.

(ii) Gas reception facilities with a projected maximum flow rate of at least 4.5 million standard cubic metres of gas per day (Mcm/d) (there is no capacity test).

An alteration to a gas reception facility will be for the IPC to consider if it increases the maximum flow rate by the above volume.

Applications under this category will cover gas reception facilities where gas is received in gaseous form from outside England, Scotland and Wales.

(iii) Gas Transporter Pipelines which are (a) expected to be more than 800mm in diameter and more than 40 kilometres in length or (b) likely to have a significant effect on the environment. The design operating pressure must be expected to be more than 7 bar gauge. The pipeline must be expected to convey gas for supply to at least 50,000 potential customers. These pipelines are referred to in this NPS as Gas Transporter Pipelines.

(iv) Pipelines over 16.093km (10 miles) long which would otherwise require consent under s.1 of the Pipe-lines Act 1962 together with diversions to such pipelines regardless of length. These pipelines are referred to in this NPS as cross-country pipelines.

1.7.2 This NPS does not cover pipelines carrying anything other than gas or oil.

Part 2. Assessment and Technology-Specific Information

2.1 Introduction

2.1.1 Part 4 of EN-1 sets out the general principles that should be applied in the assessment of impacts and sets out policy on the assessment of generic energy impacts which are common across a range of energy technologies. This NPS is concerned with policy on impacts and other matters which are specifically associated with gas supply infrastructure and oil and gas pipelines or where, although the impact is generic and covered in EN-1, there are further specific considerations arising from the technologies covered here. The guidance in this NPS is additional to that on generic impacts set out in EN-1 and does not replace it. The IPC should consider this NPS and EN-1 together. In particular, EN-1 sets out the Government's conclusion that there is a significant need for new major energy infrastructure (see summary and conclusion in Part 3 of EN-1). EN-1 Sections 3.9 and 3.10 include assessments of the need for gas supply infrastructure and gas and oil pipelines. In the light of this, the IPC should start its assessment of applications for infrastructure covered by this NPS on the basis that need has been demonstrated.

2.1.2 Factors influencing site selection by developers of gas supply infrastructure and oil and gas pipelines are set out below. They are included to provide the IPC with guidance on the criteria that applicants consider when choosing a site. But the specific criteria considered by applicants, and the weight they give to them, will vary from project to project. This is at the commercial risk of the applicant. Energy market participants decide what applications to bring forward and the Government does not seek to direct applicants to particular sites for gas supply infrastructure and oil and gas pipelines. A crucial consideration for the IPC is whether the proposal is in line with EN-1 and this NPS (including the impact considerations they set out).

2.2 Climate Change Adaptation

2.2.1 Paragraphs 2.1.7 and 2.1.8 of EN-1 set out Government policy on adaptation, while Section 4.8 sets out the generic considerations that applicants should take into account with regard to the potential impact of climate change on all energy infrastructure including gas supply infrastructure and oil and gas pipelines. EN-1 describes how projects should be designed to be resilient to such impacts. Climate change is likely to increase risks to the resilience of some infrastructure, for example from flooding, where it is located near the coast or an estuary or is underground. Applicants with projects relevant to this NPS should, in particular, set out how the proposal would be resilient to:

- increased risk of flooding (from all sources including surface water and rising sea levels) to LNG facilities and gas reception facilities and pipelines;
- damage from increase in wind and storms to LNG facilities and gas reception facilities and their above ground installations;

- higher temperatures affecting the storage, processing or re-gasification of liquefied natural gas at LNG import facilities;
- increased risk of earth movement or subsidence from increased risk of flooding and drought affecting pipelines; and
- any other increased risks identified in the applicant's assessment.

2.2.2 The IPC should expect that climate change resilience measures will form part of the relevant impact assessment in the application or the Environmental Statement (ES) accompanying the application. For example, future increased risk of flooding should be covered in the flood risk assessment.

2.3 Consideration of good design principles

2.3.1 Section 4.5 of EN-1 sets out the principles for good design that should be applied to all energy infrastructure.

2.3.2 With regard to this NPS, the IPC needs to be satisfied that, having regard to regulatory and other constraints, gas supply infrastructure and pipelines are as attractive, durable and adaptable (including taking account of natural hazards such as flooding) as they can be. In so doing, the IPC should satisfy itself that the applicant has taken into account both aesthetics and functionality (including fitness for purpose).

2.3.3 The IPC should expect applicants to demonstrate good design, in particular where mitigating the impacts relevant to the infrastructure.

2.4 Hazardous Substances Consent

2.4.1 All establishments wishing to hold stocks of certain hazardous substances, which include oil and gas, above a threshold quantity must apply to the Hazardous Substances Authority (HSA) for hazardous substances consent. In the case of natural gas, the threshold is 15 tonnes.

2.4.2 The IPC acts as the Hazardous Substances Authority for energy infrastructure applications it receives. The IPC should consult the Health and Safety Executive (HSE) for its advice before deciding whether to make an order directing that hazardous substances consent shall be deemed to be granted alongside making an order granting development consent.

2.4.3 HSE assesses the risks based on the consent particulars and, in some cases, other plant features which have the potential to significantly affect the risk to people. If HSE does not advise against the HSA granting the consent, it will also recommend whether the consent should be granted subject to any conditions. Where consent is granted, HSE will set a consultation zone around the major hazard site and notify the IPC (in its capacity as HSA).

2.4.4 Whenever a development is proposed within the consultation zone, HSE should be consulted for its advice on locating the particular development there.

2.4.5 Two public information leaflets published in 2007 set out the safety issues relevant to underground gas storage and LNG import facilities:

- "Gas Storage in your area – your questions answered" is available at http://www.berr.gov.uk/files/file40536.pdf; and
- "LNG in your area – your questions answered" is available at http://www.berr.gov.uk/files/file40537.pdf.

2.5 Control of Major Accident Hazards

2.5.1 Gas storage and supply infrastructure sites are subject to stringent safety standards under the Control of Major Accident Hazards (COMAH) Regulations 1999. The COMAH regulations apply to underground gas storage facilities, LNG import facilities and gas reception facilities. All these categories of infrastructure qualify as top tier COMAH sites (those carrying more than 200 tonnes of gas). The COMAH regulations are enforced throughout the life cycle of the facility, i.e. from the design and build stage through to decommissioning. The COMAH regulations are enforced jointly by the competent authority: the HSE and the Environment Agency (EA) in England and Wales (and by the Scottish Environment Protection Agency in Scotland).

2.5.2 Applicants seeking to develop gas supply or storage infrastructure as defined in this NPS should make early contact with the Competent Authority, which will expect applicants to make an assessment of the risks to safety and how these will be controlled or mitigated. The assessment should cover the responsibilities of developers, builders and operators during the design, construction, operation and decommissioning of sites and how safety standards will be complied with. The IPC should satisfy itself that this requirement has been complied with.

2.6 Underground Natural Gas Storage

Introduction

2.6.1 Underground natural gas storage can occur in porous rock, both on- and off-shore and in salt caverns. The IPC is responsible for the consenting of onshore natural gas storage facilities as defined in Section 1.7 above.

2.6.2 Nationally significant underground natural gas storage facilities will hold 43 million standard cubic metres (Mcm) of gas or higher; or will have a projected delivery flow rate capacity equivalent to 4.5 million standard cubic metres of gas per day (Mcm/d) or higher.

2.6.3 Many of the generic impacts set out in EN-1 are relevant to the consideration of applications for underground natural gas storage facilities. The extent to which they are relevant may depend upon the phase of the proposed development being considered.

2.6.4 The applicant should identify the impacts of a proposal, together with proposals for their avoidance or mitigation wherever possible. These should be set out in a statement that should accompany each project application. Guidance on Environmental Impact Assessments (EIA) can be found in Section 4.2 of EN-1.

Factors influencing site selection by applicant

2.6.5 There are limitations as to where natural gas can be stored underground, as explained below.

2.6.6 Natural gas can be stored underground in a gaseous state in porous rock in a depleted or partially depleted oil or gas field.

2.6.7 Natural gas can also be stored in man-made salt caverns. In some areas, Britain has salt present in strata which are, or could be, suitable for gas storage. The most extensive areas, where suitably thick natural layers of salt are found, are in northern England and in smaller areas further south.

2.6.8 Aquifer storage is another form of storage in porous media. Porous rock is filled with water and an artificial gas reservoir is created by drilling boreholes into the water bearing rock layer and displacing the water with gas. There must be an impermeable rock layer above the porous media and a suitable geological feature to trap the buoyant gas. There is no history of aquifer storage of natural gas in England and Wales although suitable aquifers are likely to exist.

2.6.9 Applicants will have undertaken detailed geological modelling to assess the suitability of the geology for underground gas storage. Applicants will be expected to demonstrate the suitability of the geology for any of the above types of underground gas storage when making an application to the IPC.

2.6.10 Section 3.9 of EN-1 explains that there are very strong seasonal and daily variations in gas demand. It also highlights the fact that our previous ability to rely on direct offshore gas production is diminishing as UK Continental Shelf (UKCS) production declines with a consequent increased need for storage. To respond sufficiently quickly to the daily demand pattern, gas needs to be capable of entering the transmission system at strategic points. A mix of short range and medium range storage could respond to this need. Long range storage, some distance from where the gas is needed in the form of a large underground storage facility, provides seasonal endurance capacity; the storage facility fills in the summer and empties in the winter. Therefore a mix of short range and medium range storage could respond to this need overall.

Underground Natural Gas Storage Impacts: Noise and Vibration

Introduction

2.6.11 EN-1, section 4.26, sets out the generic considerations to be given to the impacts of noise and vibration. This additional section sets out technology-specific considerations which the IPC should expect to see addressed in the applicant's assessment for underground natural gas storage.

2.6.12 The development of gas storage facilities could involve specific noise impacts, which may vary according to the type of underground storage facility. Noise impacts could arise from the drilling of new boreholes into existing gas bearing geological strata or other suitable natural cavities, and from brine pumping.

2.6.13 During operation, the different modes of operating gas storage facilities will include both free-flow and compression. Free-flow may involve a significant reduction in pressure from the reservoir to the National Transmission System (NTS) line pressure, thereby potentially giving rise to high noise levels. Sources of noise during the compression mode will include noise from the compressors and drivers (usually contained in buildings), associated pipework and external coolers.

Applicant's Assessment

2.6.14 The applicant should include an assessment of noise and vibration impacts, following the policy in EN-1 and including specific issues such as those outlined above, where they are relevant. The assessment should include the need for any night-time operations, for example continuous drilling to maintain pressure and explain the need for this. The applicant should set out any mitigation measures proposed.

IPC Decision Making

2.6.15 The applicant's assessment and IPC decision making procedure should be considered in line with the processes as noted within EN-1. The IPC should be satisfied that where 24 hour drilling will be a part of the proposed development's construction, the impact of noise and vibration is minimised as far as reasonably practicable.

Mitigation

2.6.16 Typical noise mitigation measures for gas supply and storage infrastructure include high performance acoustic cladding for buildings, the use of sound attenuators on ventilation systems, acoustic lagging on pipework, multi-stage (inherently quiet) control valves, high performance gas turbine exhaust silencers, acoustic enclosures on pumps and high efficiency low speed cooler fans and the use of electric rather than gas powered compressors.

Underground Natural Gas Storage Impacts: Water Quality and Resources

Introduction

2.6.17 During the construction of an underground gas storage facility in a salt dome, there will be a large demand for water. The issue here is the abstraction of water to leach the salt caverns. The impact of the subsequent disposal of the brine is covered in paragraph 2.5.22 et seq.

2.6.18 EN-1 (Section 4.30) sets out generic advice on the protection of the water environment during the construction, operation and decommissioning of a project. Section 4.10 of EN-1 sets out considerations on the pollution control framework. EN-1 emphasises the need for good design and planning to ensure the efficient use of water, including water recycling. It also covers the biodiversity implications of water abstraction.

Applicant's Assessment

2.6.19 In a salt cavity development, the applicant should provide an assessment of the effect of abstracting water for solution mining on groundwater resources, the natural environment and the public water supply. The applicant should assess the impact of water abstraction for the new development on the loss or reduction of water available to any licensed abstraction or other unlicensed groundwater abstraction. This should be part of the ES.

2.6.20 It is likely that in most cases an abstraction licence will be necessary to obtain water for solution mining and, in some situations, to cover the removal of brine from the cavities. Applicants are advised to make early contact, at or before the pre-application stage, with the EA to discuss the requirements for environmental permits and other consents.

IPC Decision Making

2.6.21 Before making any decisions the IPC will need to cooperate with the EA over any arrangements for licensing water abstraction. The IPC should not refuse development consent unless it has good reason to believe that any necessary abstraction consents or environmental permits will not subsequently be granted.

Mitigation

2.6.22 Measures to control the abstraction of water will be covered by abstraction licences and environmental permits. The EA will set any appropriate conditions.

Underground Natural Gas Storage Impacts: Disposal of Brine

Introduction

2.6.23 A newly developed salt cavern gas storage facility will require leaching new salt cavities, whether built on the site of an existing salt mine or not. This involves injecting water into the underground strata to dissolve the salt until cavities of sufficient dimension have been formed and then the brine is withdrawn through the same well bore. Where associated pipelines are required to carry brine, these should be part of the application. The issue is the disposal of the brine.

Applicant's Assessment

2.6.24 The IPC should expect to see sound measures to dispose of brine covered in the ES. Wherever possible, measures should include disposing of the brine for commercial use by industry so that mineral resources are used sustainably. Applicants should only propose disposing of brine to an underground reservoir (for example, a disused salt mine) or to the sea as a last resort where there is no practical option for re-use. Where the application requires any discharges to water bodies, including to groundwater or to the sea, it is advised that the EA is contacted early on in the process, at or before the pre-application consultation stage, to discuss the requirements (including the information required from the applicant).

IPC Decision Making

2.6.25 Before making any decisions, the IPC will need to cooperate with the Environment Agency (EA) over any arrangements for discharging brine into a reservoir or the sea to ensure that any discharges can be adequately regulated. The IPC should not refuse consent unless it has good reason to believe that any necessary environmental permits or discharge consents will not subsequently be granted.

Mitigation

2.6.26 Measures to discharge brine into an underground reservoir or the sea, where either is an appropriate course of action, will need to be covered by environmental permits or discharge consents and the EA will include appropriate conditions. Where the brine is discharged to the sea, for example, these could relate to the siting offshore of the outflow pipe (to reduce impact on sensitive flora and/or fauna) and the rate of discharge (to reduce saline concentration levels).

2.7 LNG Import Facilities

Introduction

2.7.1 LNG import facilities receive chilled methane from tanker ships. The methane is cooled to a temperature of –160 degrees C, reducing the volume by a factor of 600, for transport.

2.7.2 Conventional onshore LNG import facilities are major installations with unloading facilities (including a jetty), onshore storage and regasification plant. The storage tanks serve the important function of enabling the deliveries of LNG into the terminal to be stored and subsequently converted into gas for transportation by pipeline into the National Transmission System. The regasification plant is essential to raise the temperature of the LNG to convert it to gas.

2.7.3 Many of the generic impacts set out in EN-1 are relevant to the consideration of applications for LNG import facilities. The extent to which they are relevant may depend upon the phase of the proposed development being considered.

2.7.4 The applicant should identify the impacts of a proposal, together with proposals for their avoidance or mitigation wherever possible. These should be set out in a statement that should accompany each project application. Guidance on Environmental Impact Assessments (EIA) can be found in Section 4.2 of EN-1.

Factors influencing site selection by applicant

2.7.5 There are some important siting considerations which will affect the choice of LNG import and storage facility sites.

2.7.6 The primary technical siting considerations for a conventional LNG terminal will be the combination of a deepwater jetty for berthing LNG carriers and the availability of a suitably large site for industrial development. Safety considerations and proximity to dwellings, workplaces and other buildings and facilities used by the public, will be relevant factors, as will pipeline access from the LNG terminal to the National Transmission System.

LNG Import Facilities Impacts: Noise and Vibration

Introduction

2.7.7 Section 4.26 of EN-1 sets out the generic considerations to be given to the impacts of noise and vibration. This additional section sets out technology-specific considerations which the IPC should expect to see addressed in the applicant's assessment for the following types of infrastructure developments.

2.7.8 LNG import facilities will be located in coastal regions. Noise sources will include process plant, including compressors. In addition noise may be generated by the LNG pumps located on board the LNG tankers, and this source of noise should not be overlooked in a noise assessment.

Applicant's Assessment

2.7.9 The applicant should include an assessment of noise and vibration impacts, following the policy in EN-1 and including the specific issues outlined above, where they are relevant. The applicant should set out any mitigation measures proposed.

IPC Decision Making

2.7.10 The applicant's assessment and IPC decision making procedure should be considered in line with the processes as noted within EN-1.

Mitigation

2.7.11 Typical noise mitigation measures for gas supply and storage infrastructure include high performance acoustic cladding for buildings, the use of sound attenuators on ventilation systems, acoustic lagging on pipework, multi-stage (inherently quiet) control valves, high performance gas turbine exhaust silencers, acoustic enclosures on pumps and high efficiency low speed cooler fans.

LNG Import Facilities Impacts: Landscape and Visual

Introduction

2.7.12 Section 4.24 of EN-1 sets out the generic considerations to be given to landscape and visual impacts. This additional section on mitigation sets out technology-specific considerations which the IPC should expect to see addressed in the applicant's assessment for LNG import facilities.

Mitigation

2.7.13 EN-1 explains what the applicant should include in an assessment of landscape and visual effects. It suggests that one way to mitigate the visual and landscape effects of a project would be to reduce its scale. However, reducing the scale or otherwise amending the design of a proposed energy infrastructure project may result in a significant operational constraint and reduction in function, making the project unfeasible. The appearance of some large gas supply infrastructure, such as the large storage tanks required at LNG import facilities, can be reduced through countersinking or the use of squat tanks, without any reduction in function. Where visual impact is likely to be an issue, the applicant's assessment should consider such options.

LNG Import Facilities Impacts: Dredging

Introduction

2.7.14 EN-1 sets out generic considerations for impacts on biodiversity, coastal change (including the impact of dredging and dredge spoil deposition), waste management, water quality and resources. These are relevant across a range of energy infrastructure projects. This section sets out further considerations in relation to the impacts of dredging and spoil deposition at an LNG facility.

2.7.15 LNG import facilities are located on coasts and estuaries. During the operation of an LNG import facility, LNG tanker deliveries by sea will be essential to the facility. This activity gives rise to the need for dredging the deep water channel and jetty to maintain declared depths and to deepen waters to accommodate the large tankers. Subsequently the dredge spoil has to be deposited responsibly.

2.7.16 Dredging may have specific effects on the local marine, coastal and estuarine environments, which are often of fundamental importance to biodiversity, particularly to bird and fish life. For example, dredging can result in the smothering of nearby habitats and benthic communities, and local increases in suspended sediment concentrations may have an effect on fisheries, leading to the migration of fish, whilst disturbed sediment could contain contaminated sediment. Dredging can also affect water quality and resources.

Applicant's Assessment

2.7.17 The applicant should include an assessment in the ES of the dredging required (a) to construct the LNG import facility and (b) to maintain an access channel or berth integral to the facility. The assessment should take into account the magnitude and frequency of dredging and the method selected.

2.7.18 As explained in Section 4.18 of EN-1, the ES should set out any effects on designated sites, protected species and on other biodiversity afforded conservation priority. Where relevant, applicants should undertake sediment transfer modelling to predict and understand impacts and help identify relevant mitigating or compensatory measures. The assessment should include the impacts, effects and benefits on water quality and resources, and on coastal change.

2.7.19 The applicant should assess the scope for mitigating impacts such as by avoiding dredging at certain times of the year.

2.7.20 As explained in Section 4.18 of EN-1, the applicant should be careful to identify the effects on Marine Conservation Zones and designated protected areas. Applicants should consult the Marine and Fisheries Agency (MFA) (or, in due course, the Marine Management Organisation (MMO) – subject to the Marine and Coastal Access Bill) at an early stage about this.

IPC Decision Making

2.7.21 In assessing the application, the IPC should ensure that the relevant marine agency has been consulted and that appropriate weight is attached to designated protected marine and coastal habitats, protected species, biodiversity and the water environment, and to impacts on coastal processes and geomorphology. The IPC should consult the relevant marine management agency on projects which could impact on marine habitats, particularly those involving dredging and disposal, since other projects, which may have coastal impacts, could be under consideration.

Mitigation

2.7.22 The IPC should expect applicants to propose appropriate mitigation measures to address adverse effects of dredging. The IPC should expect the applicant to demonstrate that during construction and operation, best practice will be followed to ensure that risk of disturbance or damage to species or habitats is avoided or minimised. The relevant sections of EN-1 provide further information about mitigation measures.

2.8 Gas Reception Facilities

Introduction

2.8.1 Onshore gas reception facilities currently receive gas in gaseous form by pipeline from fields on the UK Continental Shelf (UKCS) and imports by pipeline from continental Europe. Gas reception facilites process gas to remove hydrocarbon liquids, water and other impurities and bring it into a condition that is acceptable for entry into the National Transmission System (NTS) – where it needs to be in a state that is normally classed as dry, sales gas and is fit for burning in domestic appliances.

2.8.2 Nationally significant gas reception facilities will have a projected maximum flow rate of at least 4.5 million standard cubic metres of gas per day (Mcm/d).

2.8.3 Many of the generic impacts set out in EN-1 are relevant to the consideration of applications for gas reception facilities. The extent to which they are relevant may depend upon the phase of the proposed development being considered.

2.8.4 The applicant should identify the impacts of a proposal, together with proposals for their avoidance or mitigation wherever possible. These should be set out in a statement that should accompany each project application. Guidance on Environmental Impact Assessments (EIA) can be found in Section 4.2 of EN-1.

Factors influencing site selection by applicant

2.8.5 Gas reception facilities are critically linked to the wider network of onshore and offshore gas supply infrastructure and this places limits and requirements on their location.

2.8.6 Gas reception terminals will receive gas piped ashore from producing fields, offshore natural gas storage facilities, and potentially LNG imports where these are regasified at sea. Modifications to existing gas reception terminals could be necessary to enhance the efficiency of the terminals or accommodate new fields and/or more complex and specialised processing equipment needed as a result of changes in gas production over the lifetime of the UKCS. For example, as the more marginal UKCS fields are developed in the future, it is likely that there will be a need to handle more toxic or inert gases, resulting in more hazardous operational activities and waste streams.

2.8.7 Because of their function, gas reception facilities are best sited near the source of incoming natural gas needing to be processed. Factors which may therefore be relevant to their location include the location of new and existing producing fields, offshore natural gas storage facilities and LNG tanker routes. Access to the National Transmission System by pipeline will be a further factor, as will their important role in the wider network of onshore and offshore gas supply infrastructure. Developers may therefore be faced with a limited set of options for sites.

Gas Reception Facilities Impacts: Noise and Vibration

Introduction

2.8.8 Section 4.26 of EN-1 sets out the generic considerations to be given to the impacts of noise and vibration. This additional section sets out technology-specific considerations which the IPC should expect to see addressed in the applicant's assessment for the following types of infrastructure developments.

2.8.9 Gas reception facilities will be located in coastal regions and sources of noise will include above ground pipework, compressors (usually located in buildings) and process equipment such as heaters and inter-stage coolers. The compressors may either be electric motor or gas turbine driven. Electric motors are preferable in terms of environmental noise considerations. Where gas turbines are used, noise from the gas turbine exhausts may be a significant source of low frequency noise unless adequately controlled. Control valves may also be a source of noise which can be radiated by the associated pipework systems.

Applicant's Assessment

2.8.10 The applicant should include an assessment of noise and vibration impacts, following the policy in EN-1 and including the specific issues outlined above, where they are relevant. The applicant should set out any mitigation measures proposed.

IPC Decision Making

2.8.11 The applicant's assessment and IPC decision making procedure should be considered in line with the processes as noted within EN-1.

Mitigation

2.8.12 Typical noise mitigation measures for gas supply infrastructure include the use of sound attenuators on ventilation systems, acoustic lagging on pipework, multi-stage (inherently quiet) control valves, high performance gas turbine exhaust silencers, acoustic enclosures on pumps and high efficiency low speed cooler fans.

2.9 Gas and Oil Pipelines

Introduction

2.9.1 The gas and oil pipeline networks extend between storage and distribution facilities, and provide an important transport mechanism for natural gas, petrol, gas oil, heating oil, diesel and aviation fuel. Nationally significant pipelines are those described in section 1.7 of this NPS.

2.9.2 Many of the generic impacts set out in EN-1 are relevant to the consideration of applications for gas and oil pipelines. The extent to which they are relevant may depend upon the phase of the proposed development being considered.

2.9.3 The applicant should identify the impacts of a proposal, together with proposals for their avoidance or mitigation wherever possible. These should be set out in a statement that should accompany each project application. Guidance on Environmental Impact Assessments (EIA) can be found in Section 4.2 of EN-1.

Pipeline Safety

2.9.4 The principal legislation governing the safety of pipelines (Pipelines Safety Regulations 1996) is goal setting, requiring that pipelines are designed, constructed and operated so that the risks are as low as is reasonably practicable (ALARP).

2.9.5 The HSE enforces these regulations. In judging compliance, HSE expects duty holders (in this case the duty holder would be likely to be the pipeline operator) to apply relevant good practice as a minimum. The IPC should seek advice from HSE about safety issues when considering an application.

2.9.6 In the pipeline industry there are well established standards, covering design, operations and maintenance of UK sector major accident hazard pipelines which can be used to demonstrate risks are ALARP. Some of the established standards are listed below:

- British Standard Code of Practice for Pipelines: BS PD 8010 Part 1: Steel Pipelines on Land;
- IGE/TD/1: Steel Pipelines for High Pressure Gas Transmission – (Pipelines over 16 bar); and
- IGE/TD/3: Steel and PE Pipelines for Gas Distribution – (Pipelines not exceeding 16 bar).

If a duty holder wishes to use other standards, recommendations or guidance then this may be acceptable, provided they can show that they achieve equivalent levels of safety. Applicants should undertake a gap analysis to confirm this.

Factors influencing site selection by applicant

2.9.7 When designing the route of new pipelines applicants should research any below surface usage, historic or current, and consult with the relevant operator, authority or utility. Any areas likely to contain contaminated ground may require detailed investigation.

2.9.8 Undetected underground cavities from mine workings, abandoned industrial sites and other activities, such as waste disposal, or other utilities' services (water, telecommunication, etc.) could have an effect on the integrity and safety of a pipeline. The effects might include collapse of underground tunnels, damage to utility services and pollution of water courses. Developers will undertake desktop surveys to identify historic or current mine workings, underground cavities serving industrial usage, the nature of any made ground, waste sites, unexploded ordnance, utility services and any other below surface usage when assessing routes for a pipeline.

2.9.9 Applicants will seek to select a route that avoids or minimises adverse effects from usage below the surface. Where it is not considered practicable to select a route that avoids below surface usage, applicants should demonstrate in the ES that mitigating measures will be put in place to avoid both adverse effects on other below ground works as well as adverse effects on the pipeline. Mitigating measures may include: protection or diversion of underground services; gas detection near landfill sites; horizontal direct drilling (HDD) techniques and rerouteing. Contaminated material may need to be removed and disposed of.

Gas and Oil Pipelines Impacts: Noise and Vibration

Introduction

2.9.10 Section 4.26 of EN-1 sets out the generic considerations to be given to the impacts of noise and vibration. This additional section sets out technology-specific considerations which the IPC should expect to see addressed in the applicant's assessment for pipelines.

2.9.11 Where possible, pipelines should be routed to avoid areas of human habitation or other noise sensitive sites. The assessment of potential noise and vibration impacts should identify all noise sensitive locations within a 300 metre corridor either side of the route of the pipeline.

2.9.12 Construction tasks may include site clearance, soil movement, ground excavation, tunnelling, pipe laying and welding, and ground reinstatement. In addition, increased HGV traffic will be generated on local roads for the movement of materials. These types of noise impacts will need to be assessed.

2.9.13 The commissioning of a new pipeline can involve extensive periods of drying after hydrotesting, using air compressors, and noise mitigation may be required for this type of activity.

2.9.14 A new gas pipeline may require one or more gas compression stations on the route of the pipeline to boost transmission line pressure. A new oil pipeline may require interim pumping stations. These can be located in quiet rural areas, and therefore the control of noise from these facilities is likely to be an important consideration.

Applicant's Assessment

2.9.15 The applicant should include an assessment of noise and vibration impacts, following the advice in EN-1 and including the specific issues outlined above, where they are relevant. The applicant should set out any mitigation measures proposed.

IPC Decision Making

2.9.16 In making a decision, the IPC should follow the considerations, steps and processes as noted within EN-1.

Mitigation

2.9.17 Noise mitigation measures for gas and oil pipelines, in particular their associated above-ground installations, include screening or enclosure of compressors and pumps. Other measures could include the use of sound attenuators on ventilation systems, acoustic lagging on pipework, multi-stage (inherently quiet) control valves, high performance gas turbine exhaust silencers, and high efficiency low speed cooler fans, depending on the specific issues.

Gas and Oil Pipelines Impacts: Landscape and Visual

Introduction

2.9.18 Section 4.24 of EN-1 sets out the general principles that should be applied in the assessment of landscape and visual impacts. Additional considerations apply during the construction of a pipeline. These comprise the effect upon specific landscape elements within and adjacent to the pipeline route, such as grasslands, field boundaries (hedgerows, hedgebanks, drystone walls, fences), trees, woodlands, and watercourses. There will also be temporary visual impacts caused by the need to remove flora and soil from a pipeline "working width" (typically about 30 metres).

2.9.19 Long term impacts upon the landscape for pipelines are likely to be negligible, as once operational the main infrastructure is usually buried. They are likely to be limited to:

- limitations on the ability to replant landscape features such as hedgerows or deep-rooted trees over or adjacent to the pipeline; and
- small structures and indication points necessary to identify the pipeline route and provide it with service access.

Applicant's Assessment

2.9.20 The applicant should describe, in the ES accompanying the application, the impact on landscape, both temporary and permanent, of the proposed route and of the main alternative routes considered.

2.9.21 The application should also include proposals for reinstatement of the pipeline route as close to its original state as possible. Where it is unlikely to be possible to restore landscape to its original state, the applicant should set out measures to avoid, mitigate or compensate for any adverse effect on the landscape.

IPC Decision Making

2.9.22 The IPC should expect that where possible the proposed route will avoid any long-term impacts on nationally designated landscapes such as AONBs or National Parks. Exceptionally the IPC may grant consent to development in these areas, where it is in the public interest. In non-designated areas, the character of the landscape, of whatever type or quality, should be taken into account and given due weight. It should be satisfied that long-term harm to the landscape is minimised, including by reasonable mitigation measures to restore the landscape.

2.9.23 Where the permanent landscape features are small structures and marker posts only, the IPC should give them limited weight in assessing the landscape impact.

Mitigation

2.9.24 Where feasible, the IPC should reduce the working width required for the installation of the pipeline in order to reduce the impact on the landscape where it will not be possible to fully reinstate the route.

2.9.25 In circumstances where the habitat to be crossed contains ancient woodland, trees subject to a Tree Preservation Order, or hedgerows subject to the Hedgerows Regulations 1997, the IPC should consider whether it would be feasible to use horizontal direct drilling under the ancient woodland or thrust bore under the protected tree or hedgerow.

Gas and Oil Pipelines Impacts: Water Quality and Resources

Introduction

2.9.26 EN-1 (Section 4.30) sets out generic advice on the protection of the water environment during the construction, operation and decommissioning of a project. Section 4.10 of EN-1 sets out guidance on the pollution control framework. EN-1 emphasises the need for good design and planning to ensure the efficient use of water, including water recycling.

2.9.27 Constructing pipelines creates corridors of surface clearance and excavation that can potentially affect watercourses, aquifers, water abstraction and discharge points and areas prone to flooding. Pipeline impacts could include inadequate or excessive drainage, different flow direction, flooding, disturbance to water ecology or pollution due to silt from construction. Impacts during construction should be avoided through route selection wherever possible or mitigated if unavoidable and ground reinstated after construction.

Applicant's Assessment

2.9.28 Where the project is likely to have effects on water resources, for example impacts on groundwater recharge or on existing water abstraction points in rivers, the applicant should provide an assessment of the impacts. Mitigation measures will be required to achieve acceptable residual impacts on hydrology, water ecology and water quality.

2.9.29 Where the project is likely to give rise to effects on water quality, for example through siltation or spillages, the applicant should provide an assessment of the impacts.

IPC Decision Making

2.9.30 Potential impacts of the proposed development need to be considered in relation to policy and regulation related to protecting groundwater and surface water resources. The primary mechanism for protecting groundwater and surface water resources is the use of an abstraction licensing system and the designation of source protection zones around major groundwater abstractions. The IPC should liaise with the EA over the potential for the new development to result in loss or reduction of supply to any licensed abstraction or other unlicensed groundwater abstraction.

2.9.31 Where the EA advises that the pipeline development will cause risks of contaminating water supplies or unacceptable impacts on abstraction, the IPC will need to consider what appropriate conditions should be attached to any grant of consent to avoid or mitigate these effects. If the IPC is satisfied that adverse effects can be controlled, or will be acceptable, water quality is unlikely to prevent the IPC from consenting the project. Where there are potential adverse effects which would prevent compliance with the Water Framework Directive, the IPC should follow the advice in EN-1.

Mitigation

2.9.32 Mitigation measures will be required to achieve acceptable residual impacts on water resources and quality. These may include techniques for crossing rivers and managing surface water after construction, including restoring vegetation to control runoff.

2.9.33 Mitigation measures to protect water quality may include:

- working methods to prevent spillage of fuels and lubricants;
- minimisation of impacts on water bodies;
- careful storage of excavated material away from watercourses;
- facilities for disposal of sewage and waste;
- careful reinstatement of riverbanks and reed beds;
- ongoing monitoring of water quality; and
- use of horizontal directional drilling techniques where these are appropriate and suited to the environmental conditions.

Gas and Oil Pipelines Impacts: Soil Geology

Introduction

2.9.34 New pipelines will be installed in a variety of geological conditions. It will be important for applicants to understand the soil types and the nature of the underlying strata. Underground cavities and unstable ground conditions may present particular risks to pipeline projects. Impacts could include sterilisation of mineral resources or loss of soil quality.

Applicant's Assessment

2.9.35 Applicants should assess the stability of the ground conditions associated with the pipeline route and incorporate the findings of that assessment in the ES as appropriate. Desktop studies, which include known geology, and previous borehole data can form the basis of the applicant's assessment. The applicant may find it necessary to sink new boreholes along the preferred route to better understand the ground conditions present.

2.9.36 In circumstances where an applicant proposes to use horizontal directional drilling (HDD) as the means of installing a pipeline under a National or European Site, the applicant should demonstrate that sufficient bore holes have been sunk in order to properly assess that the geological conditions are conducive to HDD. The applicant should provide an alternative means for installing the pipeline in the event that HDD fails. Such alternative means could include open cut, micro-tunnelling and tunnelling.

2.9.37 When considering any application where the pipeline goes under a designated area of geological or geomorphological interest, the applicant should submit details of alternative routes, which either bypass the designated area or reduce its length through the designated area to the minimum possible, and the reasons why they were discounted.

2.9.38 The ES should set out any proposed mitigation measures where these are necessary to prevent, reduce or offset impacts depending on their severity.

IPC Decision Making

2.9.39 The IPC should take into account the impact on geology and soils when considering a pipeline project. Providing suitable mitigation measures have been implemented, residual impacts at the surface should be minor, for example, some degree of differential vegetation growth in the short term.

2.9.40 In the event that the applicant discounts a particular route on the ground that the soil was unstable and susceptible to landslip then the IPC should consult the HSE for their views on the suitability of the geology and soil and its impact on the integrity of the pipeline. The two key determinates are whether the applicant has proposed a route and mitigation measures (if applicable) that suitably mitigate any adverse impacts and that any alternative route does not affect the integrity of the pipeline, for example, by increasing the instance for fracture or impact on areas of high population.

2.9.41 Providing the proposed development adequately mitigates any adverse impacts on geology and soils, the IPC should not refuse consent on these grounds.

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