

Chapter 11: Major Accidents and Disasters

Environmental Impact Assessment
Report for:

Westfield Substation Extension

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11. Major Accidents and Disasters

11.1 Introduction

- 11.1.1 This Chapter has been prepared by Stantec UK. It provides an assessment of the likely significant effects on the environment arising from the vulnerability of the Proposed Development to risks of Major Accidents and / or Disasters (MA&D). It reviews the relevant policy framework, proposes mitigation measures where necessary and presents the significance of the residual effects for MA&D hazards relevant to the Proposed Development.

11.2 The Scope of Assessment and Consultation

Scope of Assessment

- 11.2.1 This assessment has been carried out in line with the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 (the EIA Regulations) which require:

"A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned" (Schedule 4, Paragraph 8)".

- 11.2.2 This Chapter, therefore, considers whether:

- The Proposed Development would be vulnerable to MA&D;
- The Proposed Development would be a source of hazard that could result in a major accident or would interact with an external source of hazard; and
- The presence of the Proposed Development could be expected to increase the risk of serious harm to people or the environment, in the event of an external disaster or accident.

Consultation

- 11.2.3 Under the EIA Regulations a request for a Scoping Opinion was submitted to Fife Council (FC) in July 2024, and a Scoping Opinion provided by FC in September 2024.

- 11.2.4 Comments from consultees, specifically the Health and Safety Executive (HSE), received by FC in relation to MA&D indicated that consideration of the following should be scoped into the assessment:

- Requirement to include an assessment of the risk of two major accident pipelines:
 - 6776 - Shell Expro St Fergus to Mossmorran NGL Pipeline operated by Shell UK Exploration and Production; and
 - 8109_2368 - Westfield / Mossmorran (F12) operation by Scotland Gas Network Ltd.

Definitions

- 11.25 Reference is made throughout this Chapter to Institute of Sustainability and Environmental Professionals (ISEP)s 'Major Accidents and Disasters in EIA: A Primer' (hereafter referred to as 'the Primer') which provides guidance for impact assessment practitioners undertaking a MA&D assessment. The Primer is structured around a typical assessment approach that offers a proportionate method for considering MA&D through screening, scoping and assessment.
- 11.26 Key terms defined in the IEMA Primer and used in this Chapter are listed in **Table 11.1** below.

Table 11.1: Key Terms for MA&D defined by the IEMA Primer

Key Term	IEMA Primer Definition
As low as reasonably practicable (ALARP)	Involves weighing a risk against the trouble, time and money needed to control it. Thus, ALARP describes the level to which we expect to see risks controlled.
Disaster	May be a natural hazard (e.g. earthquake) or a man-made/external hazard (e.g. act of terrorism) with the potential to cause an event or situation that meets the definition of a major accident.
Reasonable worst-case scenario	A challenging manifestation of the scenario after highly implausible scenarios are excluded.
Major Accident	Events that threaten immediate or delayed serious environmental effects to human health, welfare and/or the environment and require the use of resources beyond those of the client or its appointed representatives to manage. Whilst malicious intent is not accidental, the outcome (e.g. train derailment) may be the same and therefore many mitigation measures will apply to both deliberate and accidental events.
Receptor	The specific component of the environment that could be adversely affected if the source reaches it. Environmental receptor is specifically defined as: features of the environment that are subject to assessment under Article 3 of the EIA Directive, namely population and human health, biodiversity, land, soil, water, air and climate, material assets, cultural heritage and landscape.
Significant environmental effect (in relation to a major accidents and/or disasters assessment)	Could include the loss of life, permanent injury and temporary or permanent destruction of an environmental receptor which cannot be restored through minor clean-up and restoration.
Source-pathway-receptor linkage	For a risk to arise there must be hazard that consists of a 'source' (e.g. high rainfall); a 'receptor' (e.g. people, property, environment); and a pathway between the source and the receptor (e.g. flood routes).

11.3 Assessment Methodology and Significance Criteria

- 11.3.1 The assessment has been undertaken in accordance with the following.

Study Area

- 11.32 The Study Area for this assessment is defined as the Red Line Boundary (RLB) of the Proposed Development as detailed in **Chapter 3** of this EIAR, and a wider surrounding area within which external hazards could influence the vulnerability of the Proposed Development.
- 11.33 This includes, where relevant, existing infrastructure (e.g. pipelines, utilities), transport routes, and natural hazard sources that could give rise to major accidents or disasters affecting the Proposed Development.

Assessment

- 11.34 This MA&D assessment identifies the reasonably foreseeable worst-case environmental consequence of a hazard (i.e. the likely significant effect) on human health and the environment and the basis of its potential severity of harm and duration. However, by definition, all MA&D hazards could result in some form of serious damage and therefore, the assessment then considers the likelihood of a significant hazard or threat occurring. MA&D focuses on low-likelihood/high consequence events, as shown in **Figure 11.1**.

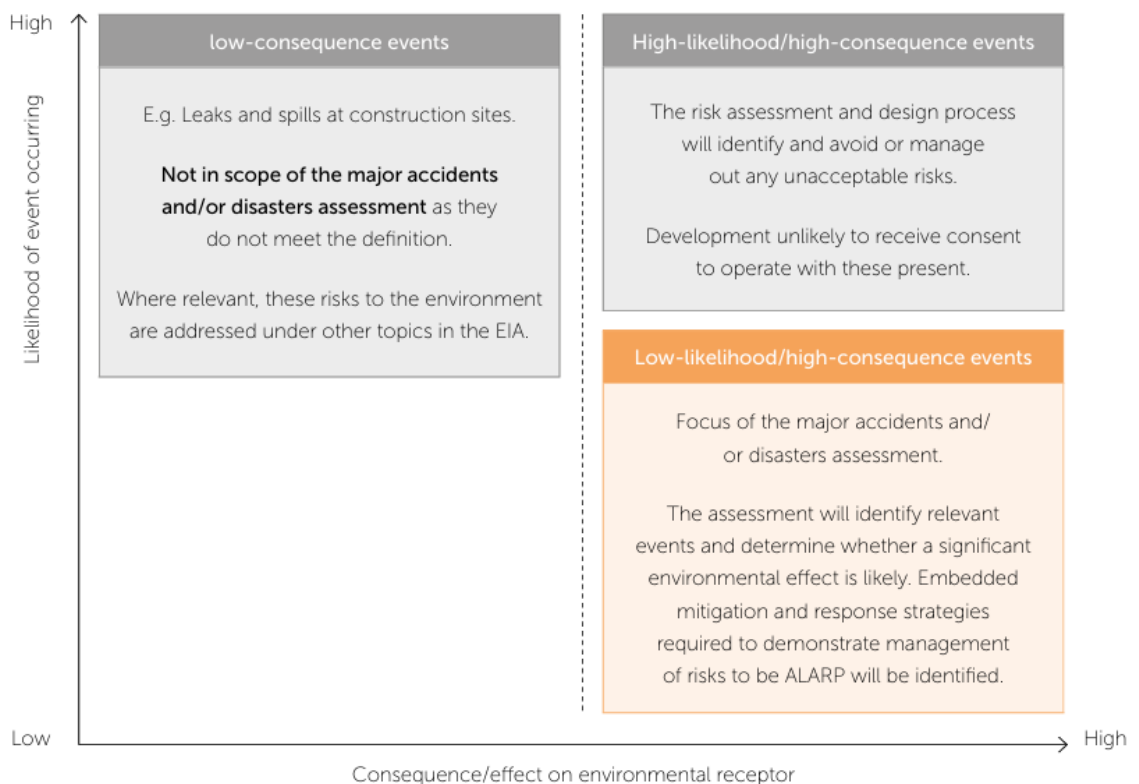


Figure 11.1 Summary of scope in MA&D (from the ISEP Primer)

- 11.35 The assessment follows the standard industry guidance set out in the ISEP Primer:
- The baseline has been established by:
 - Identifying hazards and threats (noting that hazards can be grouped into high-level 'risk events' which have the same potential consequences); and
 - Identifying receptors relevant to the identified hazards/risk events.

- Identifying the reasonable worst-case impacts on receptors resulting from the hazards/risk events by:
 - Reviewing the hazards/risks events to establish how they could impact the receptors; and
 - Noting where risk events are screened out on the basis that there is no source-to-receptor pathway, and/or the consequence of the hazard/risk events do not meet the criteria of a significant effect.
- Describing the primary and tertiary (embedded and best practice) mitigation for the risk events, plus any secondary (additional) mitigation measures proposed, noting whether the mitigation measures eliminate, reduce, isolate and/or control the risk events:
 - For MA&D risk management options comprise:
 - Elimination (or avoidance) - eliminate the source or receptor;
 - Reduction - adapt processes to reduce the likelihood;
 - Isolation - physical measures to isolate a risk such that there is no pathway;
 - Control - appropriate control measures to manage a risk should it occur; and
 - Exploitation - exploit the risk if it presents potential benefits or new opportunities e.g. moving an existing asset to which a development relates further from a potential source of hazard.

11.3.6 The assessment follows the above structure for each of the risk topics assessed to ensure that a robust assessment is presented. For completeness, a review of wider hazards has also been undertaken.

Significance

11.3.7 In this assessment, effects are considered to be 'significant' or 'not significant', there are no varying degrees of significance identified.

11.3.8 The ISEP Primer defines significant effects in relation to MA&D as *'The loss of life, permanent injury and temporary or permanent destruction of an environmental receptor which cannot be restored through minor clean-up and restoration'*.

11.3.9 As above, hazards identified in the baseline conditions which have no credible source-pathway-receptor linkage are removed from further consideration and source-pathway-receptor linkages are considered in the assessment of likely significant effects i.e. significant effects will be ruled out where there are no credible source-pathway-receptor linkages.

11.3.10 In accordance with the ISEP Primer, factors such as the geographic extent, duration, severity, and sensitivity are considered in determining the significance of effects.

11.3.11 Key to the assessment of residual effects is to demonstrate how mitigation reduces the likelihood and significance of the reasonable worst-case impact to an acceptable level. As Low as Reasonably Practicable (ALARP) describes the level to which MA&D are expected to be mitigated.

Assessment Scenarios

- 11.3.12 The MA&D assessment for the Proposed Development will consider the following three assessment scenarios:
- Construction;
 - Decommissioning of existing 275kV substation; and
 - Operation.
- 11.3.13 Construction and Decommissioning phases are assessed separately due to differences in their spatial extent and the receptors potentially affected. While the nature of activities may be similar, the decommissioning works relate to a different part of the Proposed Development and may therefore give rise to distinct risk pathways and potential major accident scenarios. The construction phase is anticipated to represent a worst-case scenario for Major Accident Hazard Pipelines due to navigating ground sensitivities.
- 11.3.14 Whilst exact details of the construction methods to be used cannot be determined with absolute certainty at this time, a number of assumptions and parameters have been fixed for the purpose of this assessment and are described within **Chapter 3: Description of Development**. Construction is expected to last approximately 4 years.
- 11.3.15 Operation will be considered under a separate assessment scenario as it involves different activities and impacts, particularly those associated with the substation itself. By separating these phases into separate scenarios, the evaluation can be more targeted and effective, ensuring that all potential risks and impacts are comprehensively addressed.

Assessment Limitations and Assumptions

- 11.3.16 The following assumptions have been applied to the risk identification exercise when considering risk events:
- No modelling or detailed calculations have been undertaken; a qualitative assessment approach has been adopted (this is an accepted approach in the ISEP Primer);
 - The assessment is limited by the availability of historical evidence and data on the likelihood and environmental consequences of MA&D events;
 - Where information is not available (such as historical evidence on the likelihood and the environmental consequence of an event), professional judgement has been used to reach a conclusion;
 - Each hazard or threat has been considered on an individual basis;
 - No surveys beyond those undertaken to inform other EIA topics and planning documents have been completed to establish the baseline for the MA&D assessment; and
 - The assessment assumes that all embedded and best practice mitigation measures described in the EIAR will be implemented as proposed.

11.4 Legislation and Policy Context

11.4.1 This section summaries the legislation and policy context that has informed the assessment of likely significant effects on the risks of MA&D.

National Policy and Legislation

11.4.2 MA&D was introduced as a topic into the EIA Regulations as a result of EU Directive 2014/52/EU (the EIA Directive). The EIA Regulations require '*a description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned*' (Schedule 4, para 8). The underlying objective to the assessment is to ensure that appropriate precautionary actions are taken for those developments which '*...because of their vulnerability to major accidents and/or natural disasters...are likely to have significant adverse effects on the environment*' (para 15 of Directive 2014/52/EU).

11.4.3 **Table 11.2** below lists other legislation relevant to the assessment of MA&D. The design, construction, and operation of the Proposed Development and decommissioning of the existing substation is required to take health and safety measures into account, and improve safety through design and operation, in accordance with these regulations.

Table 11.2: Legislation Relevant to MA&D

Legislation	Description
Electricity at Work regulations 1989	The purpose of these regulations is to prevent injury and death caused by electrical hazards in the workplace.
Health and Safety at Work Act 1974 (HSWA)	Sets out requirements for employers' staff in control of premises, manufactures and employees, and sets out the framework for the regulation of industrial health and safety in the UK.
The Management of Health and Safety at Work Regulations 1999	These regulations contain more specific details about employers' health and safety duties under the HSWA.
The Civil Contingencies Act 2004	Sets out the roles and responsibilities for responding to a major accident and disaster at a local level. Local planning authorities and primary responders such as the emergency services are required to have emergency plans and business continuity management arrangements. They must assess the risk of emergencies occurring and make information available to the public. They also form 'local resilience partnerships' who publish Community Risk Registers, and co-ordinate and cooperate between responders.
Construction (Design and Management) Regulations 2015	These Regulations aim to improve health, safety and welfare in construction projects. They place legal duties on all parties involved in construction to plan, manage and monitor work from the design stage through to completion.

Legislation	Description
Control of Major Accidents and Hazards (COMAH) Regulations 2015	The COMAH Regulations aim to prevent and mitigate the effects of major accidents involving dangerous substances which can cause serious damage/harm to people and/or the environment. COMAH treats risks to the environment as seriously as those to people.

National Planning Framework (adopted 2023)

- 11.4.4 From 13 February 2023, Scotland's fourth National Planning Framework (NPF4) forms part of the statutory Development Plan. NPF4 must be read as a whole, and its 33 policies are to be used as a guide to decision making. Where there is a conflict between NPF4 and the Local Development Plan policy, whichever of them is the later in date is to prevail.

FIFEplan (adopted 2017)

- 11.4.5 FIFEplan supports development that contributes to a low-carbon economy and sustainable growth, subject to compliance with development principles relating to siting, design, landscape and visual impact, amenity, and environmental protection. The proposed substation is considered to align with these policy objectives by providing essential grid infrastructure, with potential impacts capable of being appropriately mitigated through design, landscaping, and environmental controls consistent with MA&D requirements.

11.5 Baseline Conditions

- 11.5.1 A description of the Site and its context is provided in Chapter 3. Key points of relevance to MA&D, specifically when considering possible receptors, include:
- The Site is within close proximity to a number of commercial and industrial land uses, including a historic quarry being developed as the Fife Energy Park over 1 km to the north-east, and the residential settlement of Ballingry located 800 m to the west;
 - The Fife Pilgrim Way Long Distance Walking Route (LDWR), which connects West Fife and East Fife via routes used by medieval pilgrims is located to the south of the Site;
 - There are a number of Core Paths (CP) in proximity to the Site, including the abandoned railway route to the north-west;
 - To the north-west of the Site is the Loch Leven National Nature Reserve, Site of Special Scientific Interest (SSSI), Special Protection Area (SPA) and Ramsar Wetland Designation;
 - Man made drainage ditches in the south of the Site drain to a larger field drain on the southern boundary;
 - The HSE website and COMAH Search tool found no COMAH establishments within 3 miles of the Site; and
 - A small portion of the western part of the Site is located within HSE's land-use-planning consultation zones for two major accident hazard pipelines.

Future Baseline

- 11.52 In addition to the current baseline, consideration has been given to how baseline conditions may evolve over the lifetime of the Proposed Development.
- 11.53 The future baseline is not anticipated to differ significantly from the current baseline with regard to the vulnerability of the Proposed Development to the risk of MA&D. This is because no substantial changes to the surrounding land uses or the nature of the natural and man-made hazards identified within the current baseline are anticipated over the lifetime of the Proposed Development. Any changes in climate and associated extreme weather events will be considered through the design and resilience measures incorporated into the Proposed Development.

Likely Significant Effects

- 11.54 The likely significant effects considered for the Proposed Development, which are of "*low-likelihood but potentially high-consequence*" as noted in the Primer, are set out in **Table 11.3** below.
- 11.55 This takes account of the data sources noted above, the type of development in question (a substation and decommissioning of existing substation) and its location.

Table 11.3: Potential Effects

Group	Effect	Characteristic of Impact / Reasonable Worse Case Scenario	Mitigation / Discussion	Further consideration required?
Natural risks	Meteorological Hazards	Extreme storms, temperatures, drought, heatwaves, lightning etc, can have significant adverse effects on structural, human, and environmental receptors.	It is anticipated that weather warnings issued by the Met Office National Severe Weather Warning Service and the Scottish Environmental Protection Agency (SEPA) Flood Warning Service for forecasts on extreme adverse weather conditions, will be considered during all phases of the development. The Proposed Development will be designed in accordance with relevant engineering and environmental standards, taking account of climatic conditions, including appropriate drainage design and structural resilience. In addition, established warning systems, such as those provided by the Met Office and SEPA, will enable proactive management of extreme weather events, thereby reducing the likelihood of significant effects occurring.	No – not significant
	Seismic Hazards	Based on available information published by the British Geological Survey (BSG) the Site is not located in an area of seismic hazard risk at Grid Reference X 319040 Y 697600 (British Geological Survey, no date).	Not required.	No – not significant
	Flooding	According to the Flood Risk Assessment (FRA) completed by Fairhurst for the Proposed Development (Fairhurst, 2025), the primary source of	Substation raised above ground level on concrete substructures that fulfils the flood	No - not significant

Group	Effect	Characteristic of Impact / Reasonable Worse Case Scenario	Mitigation / Discussion	Further consideration required?
		flood risk to the Site is fluvial flows from two unnamed watercourses located in the vicinity of the Site, the proposed substation platform is located entirely outwith the area at risk of flooding in a 1 in 200 year + Climate Change (CC) event. Therefore, this effect is not anticipated to be significant and the risk during all phases of the development is considered low. Further impact of surface water flooding is considered in the Flood Risk Assessment (FRA) provided as part of this planning application.	mitigation requirements in SPENs Substation Flood Resilience Policy. Drainage systems to fulfil the requirements of SUB-03-034 including, minimum self-cleansing velocity and max velocity and SuDS requirements. Details in FRA which has been submitted as a standalone document in support of the Planning Application.	
	Wildfire	Wildfires can cause significant environmental damage and damage to infrastructure and property.	The area surrounding the Proposed Development does not contain woodland or vulnerable grassland and therefore the risk of wildfires has been scoped out.	No – not significant
Man-made Hazards	UXO	Possibility of encountering UXO, inadvertent detonations pose a serious risk to life.	A review of unexploded ordinance (UXO) risk has been undertaken as part of the Phase 1 Desk Study (RSK, 2024). A UXO bomb risk map obtained from Zetica UXO (included within Appendix E of RSK Phase 1 Desk Study) identifies the Site as being located within a Low-Risk area for potential unexploded bombs associated with WWII aerial bombardment. A low-risk classification corresponds to areas with a bombing density of 15 bombs per 1000 acres or fewer. The report confirms that, in such areas, works can proceed without the requirement for special precautions.	No – not significant

Group	Effect	Characteristic of Impact / Reasonable Worse Case Scenario	Mitigation / Discussion	Further consideration required?
			On this basis, the likelihood of encountering UXO at the Site is considered low and the risk of a major accident associated with UXO is negligible.	
	Failure of the National Electricity Transmission System (NETS)	Potential to cause a nationwide loss of power, disrupting utilities, public services, domestic households and businesses.	This is considered a low probability event with limited impact on the Proposed Development. If the national grid failed, the substation would automatically isolate and de energise, in accordance with fail safe design principles. These protective measures ensure that faults are detected and safely managed, minimising any risk to substation infrastructure or the wider electricity network. As a result, significant adverse effects associated with outages are unlikely.	No - not significant
	Regional failure of the electricity network	This could cause a regional loss of power, disrupting some utilities, public services, domestic households and businesses.	Regional failure of electricity network is considered a low-probability event with limited potential impact on the proposed substation. The substation would be designed with appropriate protection, control and isolation systems to ensure safer operation during abnormal network conditions. These measures allow the substation to respond effectively to network disturbances, thereby reducing the likelihood of significant adverse effects arising.	No – not significant
	Major Fire	There is a potential risk of fire associated with substation infrastructure, primarily related to electrical faults. Toxic gases and/or firewater could have major adverse impacts on population and	Substations are designed to include fault detection, automatic isolation, and fire suppression measures, which limit the likelihood and extent of fire related impacts.	No- not significant

Group	Effect	Characteristic of Impact / Reasonable Worse Case Scenario	Mitigation / Discussion	Further consideration required?
		human health, air quality, ecology, and water resources.		
	Air Quality	Surges in poor air quality are primarily due to weather conditions preventing pollution from dispersing. A prolonged period of elevated ground level ozone or fine particulate matter could cause significant health risks associated with respiratory and cardiovascular conditions.	The Proposed Development does not create any emissions during operation. Air Quality has been scoped into the EIAR to assess construction phase dust impacts and construction phase road traffic impacts and appropriate dust and air quality management measures will be implemented as seen in Technical Appendix 3.1: Outline Construction Environmental Management Plan (CEMP) .	No – not significant
	Land and Water Contamination	Potential release of harmful chemicals to the environment.	Embedded mitigation measures form part of the Proposed Development design, including the installation of impermeable concrete bunding around equipment containing potentially hazardous substances, designed to contain any leaks or spills. In addition, the substation compound has been located away from nearby watercourses, reducing potential for any contaminants to reach sensitive receptors. During construction of the Proposed Development and decommissioning of the existing substation, measures through SPEN's Policies, Procedures and Specification Documentation¹ will be	No – not significant

¹ [Policies, Procedures and Specifications: Documentation - SP Energy Networks](#)

Group	Effect	Characteristic of Impact / Reasonable Worse Case Scenario	Mitigation / Discussion	Further consideration required?
			implemented, including appropriate storage, handling and spill response procedures.	
	Major Road Traffic Accidents	Increased traffic is expected during the construction and decommissioning phases of the Proposed Development; this is discussed in full in Chapter 8: Transport. Once operational, it is anticipated that the Site will only be visited for maintenance.	The measures to mitigate the risk of any major accident during all phases of the Proposed Development will be included within management plans such as the Construction Traffic Management Plan (CTMP).	No - not significant
	Vandalism	Risk of vandalism/arson leading to damage of infrastructure and potential fires.	Mitigated through security measures embedded into the design of the Proposed Development such as perimeter & security fencing and CCTV. Outlined in Chapter 3, which will reduce the likelihood of unauthorised access and intentional damage. The design and operation of the infrastructure will comply with relevant safety standards, limiting the potential for any such incidents to escalate into major accidents. The types and quantities of potentially hazardous or flammable materials present are limited and managed in accordance with SPEN's Policies, Procedures and Specifications Documentation.	No – not significant
	Electrocution	A significant hazard associated with substations is the risk of electrocution caused by electrical faults and factors such as failure to properly isolate equipment before maintenance and unauthorised access to the substation.	Mitigated through security measures embedded into the design of the Proposed Development such as perimeter & security fencing and CCTV. Outlined in Chapter 3.	No – no significant

Group	Effect	Characteristic of Impact / Reasonable Worse Case Scenario	Mitigation / Discussion	Further consideration required?
			Implementing robust security measures and strict interlock/isolation procedures is essential to prevent personnel from being exposed to live high-voltage equipment.	
	Major Accident Hazard Pipelines	Potential to include fires and explosion, with associated risk to human health, property, and local environment. Effects would be localised and primarily associated with the immediate pipeline consultation zones.	Although the likelihood of the Proposed Development contributing to a high consequence event, including fires or explosions is considered low, particularly with the implementation of embedded mitigation measures (including consultation with pipeline operators, adherence to defined consultation zones, and the use of Permit to Dig procedures), the potential consequences of a pipeline failure are severe and may extend beyond the immediate site boundary. The risk associated with pipeline infrastructure is not fully within the control of the Proposed Development, as it depends on the integrity and operation of third-party assets. During the construction phase, ground disturbance activities represent a potential interaction with buried infrastructure.	Yes – Scoped in

11.6 Mitigation

Primary and Tertiary Mitigation

11.6.1 As detailed in **Chapter 3**, a range of mitigation measures have been identified through the iterative design process and have been incorporated into the design of the Proposed Development or have been taken into consideration through SPEN's Policies, Procedures and Specifications Documentation.

Primary Mitigation

11.6.2 A number of measures have been embedded into the Proposed Development to avoid or reduce environmental effects. These form part of the design to be assessed and include:

- The results of utility searches, which show where different utilities are located within the red line boundary have been used to inform the site layout;
- Transformers will be located within an impermeable concrete bunded area to contain any potential oil spill from equipment;
- Bunds will be fitted with a suitable Class 1 oil water separator system, with clean water to drain to soakaway, designed to meet the requirements of BS EN 858-1;
- Improvement works will be undertaken to increase the visibility at the existing access onto the B9097 to facilitate safe access and egress by all vehicles and to allow for delivery of Super Grid Transformers on larger vehicles as an Abnormal Indivisible Load (AIL);
- Construction compounds have been sited to avoid sensitive areas and minimise environmental impact;
- A permanent SuDS feature, comprising two interlinked basins will be provided, located to the south-east of the substation platform, with access for maintenance;
- Landscape bunds, with a maximum of 2 m, in addition to low height tree and shrub planting to assist filtering views of the Proposed Development;
- Security fencing and approximately 20 CCTV columns along the perimeter security fence line and within the substation compound at a height of 6.5 m; and
- Vegetation around substation compound to be well managed to avoid spread of fire and habitat loss.

Tertiary Mitigation

11.6.3 Tertiary mitigation includes measures required through legislative requirements and/or SPEN's Policies, Procedures and Specification Documentation.

11.6.4 Best practice procedures and guidance will be followed during the construction, operation and decommissioning phases. Examples include:

- A CEMP to set out general environmental control measures during construction (e.g. pollution/silt control, hours of operation, storage areas), to be secured by an appropriately worded planning condition;
- Security for substation that will include 24-hour remote site monitoring with the capability to remotely shut down substation equipment if unsafe conditions are detected;
- Competence and training for all installation and maintenance personnel;
- CTMP to control impacts on local traffic during construction and decommissioning, to be secured by an appropriately worded planning condition;
- Emergency Response Plan that outlines the procedures for dealing with various types of accidents or disasters, to be secured by an appropriately worded planning condition;
- Code of Construction Practice (CoCP) which sets out the best practice procedures for construction, to be secured by an appropriately worded planning condition; and
- Landscape Ecological Management Plan (LEMP), to be secured by an appropriately worded planning condition.

11.7 Assessment of Likely Significant Effects

11.7.1 This section presents the findings of the MA&D assessment for the construction and operation of the Proposed Development and decommissioning of the existing 275kV substation. It identifies and evaluates potential risks and impacts associated with each phase of the project, establishing appropriate mitigation measures that are in place to minimise any adverse effects on the environment and public safety.

Assessment of Significant Likely Effects for Major Accident Hazard Pipelines

11.7.2 This section sets out an assessment of MA&D in relation to Major Hazard Pipelines and identifies the reasonable worst-case environmental impact.

11.7.3 A small area of the western part of the Site lies within the HSE land-use-planning consultation zone associated with two major accident hazard pipelines, which can be seen in **Figure 11.2** below. These comprise the Shell Expro St Fergus to Mossmorran Natural Gas Liquids (NGL) Pipeline operated by Shell UK Exploration & Production and the Westfield / Mossmorran (F12) Pipeline operated by Scotland Gas Networks Ltd.

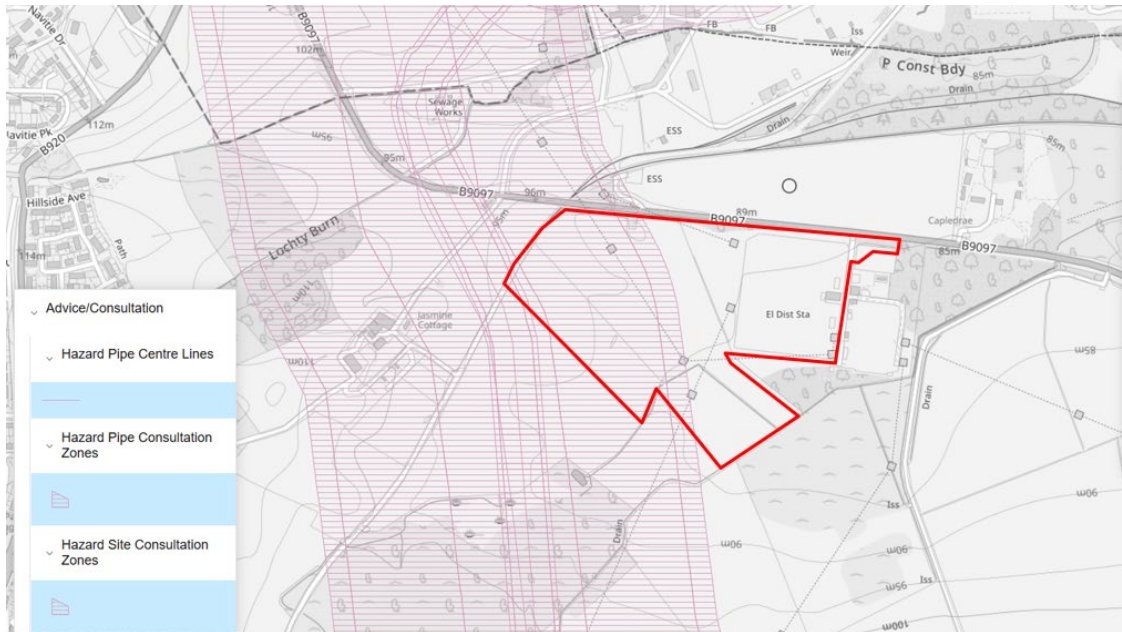


Figure 11.2: Hazard Pipe Centre Lines and Consultation Zones

- 11.7.4 In the unlikely event of a failure or external damage to a major accident hazard pipeline, potential effects could include fire, explosions and thermal radiation, which may pose risks to human health and nearby infrastructure. Depending on the nature of the release, there is also potential for short-term effects on air quality from combustion products, and localised contamination of land in the immediate vicinity of the pipeline. These effects are expected to be largely confined within the established consultation zones and would be managed through emergency response procedures implemented by the operator of the pipeline.
- 11.7.5 Elements of the Proposed Development are located within the pipeline consultation zone, as shown on Figure 3.1. Development within this zone includes the decommissioning of the existing substation and the construction of a new Substation and associated infrastructure and has been subject to consideration in consultation with relevant pipeline operators.
- 11.7.6 In addition to the substation infrastructure, the Proposed Development includes the installation of a 33 kV underground cable connection through a separate planning application. Construction of the underground cable will require excavation and trenching works along the proposed route. Where the cable route is located within, crosses, or is in proximity to utility infrastructure or Major Accident Hazard Pipeline consultation zones, works will be undertaken in accordance with agreed protection measures, including utility searches, consultation with relevant asset owners, permit-to-dig procedures and any crossing agreements required by the infrastructure operators. These measures will minimise the potential for accidental damage to buried assets and ensure risks remain As Low As Reasonably Practicable (ALARP).
- 11.7.7 The Applicant has consulted with the relevant pipeline operators in relation to the Proposed Development, and the operators are aware of the proposals, as confirmed by the Pipeline Operator Correspondence received (available on request). The design and proposed construction approaches have been confirmed as acceptable, subject to adherence to standard protection measures to maintain pipeline integrity.

- 11.7.8 The potential for a major accident originating from the pipelines, independent of the Proposed Development, has also been considered. In the unlikely event of a pipeline failure resulting in a fire or explosion, the Proposed Development and associated receptors within the vicinity of the pipeline could be exposed to thermal radiation, overpressure and combustion products. The potential consequences would depend on the nature and scale of the incident and the location of the release relative to the Proposed Development. The relevant pipeline consultation zones identify areas where development has the potential to be affected by a major accident and therefore provide an appropriate basis for considering these risks.
- 11.7.9 Although elements of the Proposed Development are located within the pipeline consultation zone, appropriate mitigation measures, including, consultation with the pipeline operators, stand-off distances and the implementation of standard safeguards, the severity of any residual impact is substantially reduced, with minimal risk to receptors. The residual risk is therefore considered ALARP and acceptable within national guidance and planning policy. The risk associated with Major Accident Hazard Pipelines is therefore **Not Significant**.

Secondary Mitigation Measures

- 11.7.10 No secondary mitigation measures are required. The primary and tertiary mitigation discussed above is considered sufficient.

Summary of Residual Significant Effects

- 11.7.11 There are no significant effects anticipated with embedded mitigation in place and therefore no secondary mitigation measures identified. The risk of MA&D for Major Accident Hazard Pipelines remains **Not Significant**.

11.8 Summary of Residual Effects

- 11.8.1 Overall, adverse effects associated with the construction, operation and decommissioning of the Proposed Development would be avoided, contained, or reduced ALARP through the application of inherent design mitigation and adherence to industry standard methodologies.

11.9 Monitoring

- 11.9.1 As no significant residual effects have been identified in relation to MA&D, no formal monitoring measures are considered necessary.
- 11.9.2 However, standard construction phase monitoring and compliance checks, such as those set out in the CEMP, will be implemented to establish that mitigation measures are properly implemented and remain effective throughout the lifecycle of the Proposed Development.

11.10 Conclusions

- 11.10.1 This assessment considered the potential for MA&D associated with the Proposed Development, focusing on Major Accident Hazard Pipelines. The assessment followed relevant planning policy

and guidance, using a precautionary approach to identify hazards, assess potential impacts, and recommend mitigation.

- 11.10.2 Baseline conditions were informed by known site characteristics, historical land use, and industry experience. The assessment has focused on the risks associated with the Proposed Development and Major Accident Hazard Pipelines. Other relevant MA&D have also been discussed such as meteorological hazards.
- 11.10.3 It is concluded that there are no significant MA&D effects for interactions with Major Accident Hazard Pipelines during construction and operation with embedded mitigation in place.