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16. Major Accidents and Disasters

16.1 Introduction

16.2.1 This chapter of the Environmental Statement (ES) presents an assessment of the Major Accidents and Disasters (MA&D) that have the potential to arise during the construction, operation and decommissioning of the Proposed Phillips 66 Development and the Proposed VPI Development (together the 'Proposed Developments'). This includes an assessment of the reasonably foreseeable worst-case environmental consequences (i.e. the potential significant effects), the measures envisaged to prevent or mitigate adverse effects of such events on the environment, and details of the preparedness for and proposed response to MA&D hazards and threats relevant to the construction, operation and decommissioning of the Proposed Developments.

16.2.2 The underlying objective of this assessment is to identify appropriate precautionary actions, to prevent or mitigate potentially significant risks associated with MA&D.

16.2 Legislation and Planning Policy Context

National Legislation

16.2.3 The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended) ('the EIA Regulations') implement the requirements of Directive 2014/52/EU of the European Parliament (European Commission (EC), 2014) and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment ('EIA Directive') which introduced the requirement for MA&D to be considered as part of the EIA process.

16.2.4 Regulation 4, Part 4 of the EIA Regulations states that:

> "*The significant effects to be identified, described and assessed under Paragraph (2) include the expected significant effects arising from the vulnerability of the proposed development to major accidents or disasters that are relevant to that development*."

16.2.5 Schedule 4, paragraph 8 requires an ES to provide:

> "*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*."

16.2.6 An assessment of the risk of MA&D relevant to the Proposed Developments is therefore required, together with the measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.

16.2.7 The Construction (Design and Management) (CDM) Regulations 2015 ('the CDM Regulations') and accompanying guidance place particular duties on clients, designers and contractors, to ensure that health and safety is considered throughout the lifecycle of projects, from inception, design, construction, operation and into subsequent demolition and removal, where appropriate. Under the CDM Regulations, designers must avoid foreseeable risks, as far as reasonably practicable.

16.2.8 During its operation, depending on the volumes of hazardous materials stored on either of the Proposed Developments' Sites ('the Sites'), a Hazardous Substances Consent (HSC) may be necessary under the Planning (Hazardous Substances) Regulations 2015 and the Proposed Developments could be subject to the Control of Major Accident Hazards (COMAH) Regulations 2015 ('the COMAH Regulations') which implement Directives 96/82/EC and 2003/105/EC on the control of major accident hazards involving dangerous substances.

16.2.9 The aim of the COMAH Regulations is the prevention of major accidents and limitation of their consequences for people and the environment. The competent authorities for the purposes of the COMAH Regulations in England is the Health and Safety Executive (HSE) and the Environment Agency.

16.2.10 If either or both of the Proposed Developments fall within the COMAH Regulations, the Applicant(s) will be required to:

- take all measures necessary to prevent major accidents and limit their consequences for persons and the environment;
- prepare an on-Site emergency plan;
- demonstrate to the competent authority that all measures necessary to comply with the COMAH Regulations are in place; and
- notify any major accidents to the competent authorities.

16.2.11 The Humber Refinery, where the Proposed Phillips 66 Development will be located, is already regulated under the COMAH Regulations, as an Upper Tier COMAH site. The VPI Combined Heat and Power (CHP) Power Station is a Lower Tier COMAH site.

16.2.12 The Proposed Developments will operate under Environmental Permits (as variations to the existing Permits for the Humber Refinery and the VPI Immingham Combined Heat and Power (CHP) Plant) in accordance with the Environmental Permitting Regulations (EPR) 2016 ('Environmental Permitting Regulations') (as amended).

National Policy

16.2.13 The National Planning Policy Framework (NPPF) (Ministry of Housing, Communities and Local Government (MHCLG), 2021) provides relevant considerations for MA&D assessment. Paragraph 45 requires that: *"Local planning authorities should consult the appropriate bodies when considering applications for the siting of, or changes to, major hazard sites, installations or pipelines, or for development around them".* Paragraph 97 notes that planning policies and decisions *"should promote public safety and take into account wider security and defence requirements by … anticipating and addressing possible malicious threats and natural hazards, especially in locations where large numbers of people are expected to congregate…this includes appropriate and proportionate steps that can be taken to reduce vulnerability, increase resilience and ensure public safety and security."*

Local Policy

16.2.14 The North Lincolnshire Local Plan (saved September 2007) saved policies DS9: Development of Land in the Vicinity of Established Hazardous Installations and Pipelines and DS10 - New Hazardous Installations and Pipelines are relevant to the MA&D assessment. Policy DS9 is a relevant consideration, noting that *"In the significant risk area surrounding a hazardous installation or pipeline planning permission will only be granted for housing or any commercial, industrial, retail or recreational use which introduces a significant number of people into the risk area, where it can be demonstrated that the associated hazards and risks identified with locating in proximity to the installation are acceptable or can be overcome through the imposition of appropriate planning conditions".*

16.2.15 Policy DS10 notes "*Planning permission for development which involves the storage of materials or the carrying out of processes that are toxic, highly reactive, explosive or highly flammable will only be granted if the applicant can demonstrate that the proposal will impose no significant development restrictions upon surrounding land users; will not put at risk surrounding residential properties; or prove a risk to other premises in the locality where significant numbers of people regularly congregate*".

Other Guidance

16.2.16 The Institute of Environmental Management and Assessment (IEMA, September 2020) has recently developed a guidance document 'Major Accidents and Disasters in EIA: A Primer' (IEMA, 2020) to increase awareness of MA&D within EIA and its application. The guidance

outlines an assessment methodology based on known current practice within the UK to date, and key terminology that can be used in MA&D assessments. This guidance, in particular the assessment methodology and terminology, has been considered within this assessment.

16.2.17 There is also a considerable amount of information and guidance available to developers on the identification and control of major hazards associated with the storage and use of chemicals. The HSE publishes a number of applicable guidance notes on their website relating to these assets, including:

- Emergency Planning for Major Accidents: Control of Major Accident Hazards Regulations 1999 (COMAH) (HSE, 1999a); and
- The Control of Substances Hazardous to Health Regulations.

16.2.18 As a regulator, the HSE uses the principles of 'as low as reasonably practicable' ('ALARP') in risk management (HSE, 2020a). In a practical sense, ALARP involves *"weighing a risk against the trouble, time and money needed to control it"* so that 'ALARP' describes "*the level to which we expect to see risks controlled*" (IEMA, 2020). For the purposes of this assessment, ALARP has been used.

16.2.19 Carbon dioxide (CO_2) is toxic to human health at much lower concentrations than those which cause suffocation from a lack of oxygen. HSE studies have identified that an excess of CO_2 in the blood stream could lead to a loss of consciousness. CO_2 is not flammable and will not support combustion. Compared with many other materials conveyed via major pipelines in the UK, such as natural gas and ethylene, the risks to human health and the environment from events such as explosion are relatively low. However, as the concentration of CO_2 in ambient air or water rises, the hazardous effects on people and the environment increases. The key risk relates to its potential to act as an asphyxiant gas at low-lying locations, should it displace air from these locations due to its higher density. High levels of dissolved CO_2 in water can also result in impacts from acidification and subsequent effects on shell-forming species. However, the HSE studies have concluded that CO_2 data indicates it does not meet the criteria for classification as a dangerous substance.

16.2.20 Guidance and best practice information for Post-Combustion Carbon Capture (PCC) technology and carbon dioxide transport via pipeline is available from the HSE, who have published a number of guidance documents including:

- guidance on conveying carbon dioxide in pipelines in connection with carbon capture and storage projects (HSE, 2020b); and
- CO_2 Pipelines Good Practice Guidelines – Technical Report (HSE, 2013).

16.2.21 The HSE does not currently provide Land Use Planning advice for CO_2 capture, transport or storage, and the status of the Proposed Developments relating to the COMAH Regulations has not been confirmed. However, as noted in NLC Local Plan Policy DS10, the HSE is typically consulted on all planning applications, such as the Proposed Developments, which store hazardous materials or carry out hazardous industrial processes including within HSE specified consultation zones. Therefore consultation with the HSE will be ongoing throughout the design and planning process.

16.2.22 Other guidance that is of relevance to the assessment of MA&D includes:

- Chemicals and Downstream Oil Industries Forum Guidelines, Environmental Risk Tolerability for COMAH Establishments (CDOIF, 2017);
- Guidelines for Environmental Risk Assessment and Management (Defra, 2011);
- ISO 31000:2018 Risk Management principles and guidelines (The International Standards Organization, 2018);
- Chapter 4 of the Cabinet Office's Emergency Preparedness guidance on part 1 of the Civil Contingencies Act 2004 (hereafter referred to as the 'CCA risk assessment framework') (HM Government, 2012) to allow for consistency with future emergency planning at a local level; and
- Reducing Risks, Protecting People: HSE's decision making process (HSE, 1999b).

16.2.23 Additionally, the following guidance has been considered in the identification of all potential major accidents and disasters:

- The National Risk Register (HM Government, 2020 Edition); and
- The National Security Strategy – A Strong Britain in an Age of Uncertainty: the National Security Strategy (HM Government, 2010).

16.3 Assessment Methodology and Significance Criteria

Impact Assessment and Significance Criteria

Definitions

16.3.1 A hazard or a threat is defined as an event which has the potential to cause harm. Hazards for the purposes of the MA&D assessment are defined as non-malicious events. Threats for the purposes of the MA&D assessment are defined as malicious attacks.

16.3.2 Major accidents are defined as:

> "*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.*" (IEMA, 2020).

16.3.3 Disasters can be natural hazards, such as earthquakes, landslides and flooding or can be man-made hazards (e.g. caused by accidental loss of containment) or external hazards (e.g. act of terrorism) which result in consequences for people or the environment.

16.3.4 The environmental impact of major accidents and/ or disasters can be significant, with the potential to impact people both on and off-site, assets and property on and off-site, and the surrounding environment.

Approach to the Assessment

16.3.5 As discussed above, the MA&D assessment approach differs from typical EIA methodology in which assessments broadly consider the magnitude of impacts and value/ sensitivity of resources/ receptors that could be affected to classify effects. The purpose of the chapter is to demonstrate how the Proposed Developments' vulnerability to MA&D is to be adequately managed to prevent or reduce potential significant adverse effects to receptors.

16.3.6 The MA&D assessment identifies the reasonably foreseeable worst-case consequence (i.e. the potential significant effect) of a hazard or a threat (a risk event) on human health and the environment to identify a severity of harm and duration for each consequence. The assessment then considers the probability of such a consequence arising following the implementation of embedded mitigation measures to assign a tolerability of the risk (i.e. the significance of effect).

16.3.7 In identifying the potential for the Proposed Developments to create or alter the existing baseline MA&D risks for receptors, the assessment is conducted using a staged approach:

- identification of receptors;
- identification of hazards and threats based on the concept design work completed to date and in accordance with industry standard approaches to hazard identification;
- screening of hazards and threats, including the potential for potential significant effects;
- identification of prevention, minimisation and/ or mitigation measures; and
- determination of whether risk has been mitigated to ALARP and identification of any residual risks and their significance.

16.3.8 MA&D assessment considers effects that may occur in the event of a major accident at the Sites, which may cause consequences for nearby sites. It also considers the vulnerability of the Sites to major accident hazards at nearby sites that could result in a major accident at the Proposed Development Sites (known as the 'domino effect'). For the purposes of this assessment, each hazard or threat has been considered on an individual basis.

16.3.9 The vulnerability of the Proposed Development to natural disasters is assessed, using findings of other assessments including Chapter 9: Water Resources and Flood Risk and Chapter 14: Climate Change and Carbon (ES Volume I); both of these chapters address future climate change scenarios and resilience measures required for the Proposed Developments.

Identification of Receptors

16.3.10 Receptors considered in this assessment include:

- population, considering the health of members of the public, nearby local communities and nearby workers at other facilities, if relevant;
- biodiversity, with particular attention to species and habitats protected under The Conservation of Habitats and Species Regulations 2017 (the Habitats Regulations) (transposing the EU Council Directives on Birds and Habitats (Council Directive 92/43/EEC));
- land, soil, water, air and climate; and
- property and material assets, cultural heritage and the landscape.

16.3.11 It is recognised that potential effects of the Proposed Developments on the Applicants' employees and/ or contractors and suppliers (e.g. construction, operational and maintenance staff) are managed through compliance with other health and safety legislation, as described in Section 16.2. Through compliance with health and safety legislation, risks to employees will be mitigated to ALARP and no further mitigation will be available. However, for completeness, risks to employees and/ or contractors – including those at neighbouring facilities - are included within the assessment results presented in Section 16.6.

16.3.12 The Applicants propose to adopt appropriate measures to provide secure boundaries for the Proposed Developments which will reduce the likelihood of trespass to ALARP. As no further mitigation will be available, effects on these receptors groups will be mitigated to ALARP. For completeness, potential risks related to vandalism/ terrorism are included within the assessment results presented in Section 16.6.

Assessment Criteria

16.3.13 An approach that has been commonly adopted in MA&D assessments in other recent planning applications considers the Chemical and Downstream Oil Industries Forum Guidelines on Environment Risk Tolerability for COMAH Establishment (CDOIF, 2017). These guidelines characterise hazards and threats against the following categories in order to assign a tolerability and a risk classification to each hazard or threat (a 'risk event'):

- severity of harm;
- duration;
- consequence; and
- probability.

16.3.14 When determining the severity of harm, duration, and the consequence of a risk event, each of the factors defined within IEMA's 2020 Guidance is considered. In addition, the IEMA 2020 Guidance considers other relevant documentation, including the Cabinet Office's National Risk Register of Civil Emergencies (HM Government, 2020).

16.3.15 Severity of harm, duration, and the consequence of a risk event are determined on the basis of a reasonably foreseeable worst-case environmental effect of the risk event, in the absence of mitigation. The probability and magnitude of the risk event occurring is determined by considering the proposed embedded mitigation, and whether the proposed embedded mitigation measures require further adaption. This is because embedded mitigation would

reduce the likelihood of the maximum severity of harm, duration, consequence and/ or frequency of a risk event occurring.

16.3.16 As outlined in the CDOIF, 2017 Guidelines on Environment Risk Tolerability for COMAH Establishment, for COMAH sites, environmental risk can be assessed within the ALARP framework and residual risk can be evaluated to be either 'intolerable', 'tolerable if ALARP' or 'broadly acceptable' classifications are defined in the COMAH Competent Authority 'All Measures Necessary'. Environmental Aspects guidance (HSE, 2016) is summarised below:

- intolerable: if the risk is in this classification, then ALARP cannot be demonstrated and action must be taken to reduce the risk almost irrespective of cost;
- tolerable if ALARP: if the risk falls within this region then a case specific ALARP demonstration is required. Relevant good practice is expected to be applied. Further risk reduction measures must be taken so far as is reasonably practicable (i.e. upgrade required unless the steps are not practicable at the site or their cost would be grossly disproportionate to the benefits); and
- broadly acceptable: if the risk is in this classification then it is regarded as adequately controlled through incorporation of good practice or equivalent risk reduction measures.

16.3.17 The tolerability of the residual risk is determined by combining the reasonably foreseeable worst-case consequence and probability categories.

16.3.18 As a general rule, for the purposes of the assessment presented in this chapter:

- 'Tolerable if ALARP' and 'broadly acceptable' risks are considered as 'not significant'; and
- 'Intolerable' risks are considered as 'significant'.

16.3.19 For comparison and to allow for consistency with future emergency planning at a local level, high and very high risks under the CCA risk assessment framework would fall under the 'intolerable' risk classification as they are 'primary or critical risks'.

16.3.20 Depending on materials and volumes on-Site, risks categorised as 'tolerable if ALARP' would generally require further approval of the details of proposed mitigation by an appropriate regulatory body such as the HSE or the Environment Agency.

16.3.21 Significance has been considered for each identified receptor in conjunction with the appropriate environmental topics for this EIA. Taking into account IEMA 2020 Guidance, factors that are considered in this chapter in determining whether potential adverse effects are significant include:

- the geographic extent of the effects. – effects beyond the Sites' boundaries are more likely to be considered significant;
- the duration of the effects – effects that are permanent (i.e. irreversible) or long lasting are considered significant;
- the severity of the effects in terms of number, degree of harm to those affected and the response effort required – effects that trigger the mobilisation of substantial civil emergency response effort are likely to be considered significant;
- the sensitivity of the identified receptors; and
- the effort required to restore the affected environment – effects requiring substantial clean-up or restoration efforts are likely to be considered significant.

Scenarios

16.3.22 The scope of this assessment addresses potential unplanned events or situations that have been determined as relevant to the two Proposed Developments, with a potential to result in significant adverse effects on the environment. The assessment of potential MA&D associated with the Proposed Developments is structured around the following scenarios:

- construction phase of the Proposed Developments; and
- operation phase of the Proposed Developments.

16.3.23 MA&D effects arising during the decommissioning phase of the Proposed Developments are considered comparable to those that would be experienced during the construction period. At that stage, a Decommissioning Environmental Management Plan (DEMP) would be submitted to the relevant planning authority and/ or HSE, depending on COMAH status, for approval. Appropriate best practice mitigation measures will be applied during any decommissioning works and documented in a DEMP.

Matters Covered by Other Regulatory Regimes

16.3.24 This assessment is based on the current engineering design information. This assessment does not seek to duplicate the assessment of matters covered by other regulatory regimes such as the COMAH Regulations or the Environmental Permitting Regulations; instead it provides a summary of the types of MA&D hazards and threats anticipated to be covered by these regimes, the potential worst-case environmental consequences these could pose and any required mitigation. Further hazard and risk analysis will be undertaken throughout the Proposed Developments' lifecycles, in accordance with the requirements of Environmental Permitting and COMAH Regulations.

Use of Rochdale Envelope

16.3.25 This assessment has applied Rochdale Envelope principles, which assesses credible, worst-case MA&D risks and consequences associated with the Proposed Developments. This conservative methodology establishes the worst-case scenarios, the risk of which should be reduced to a level that is ALARP during the detailed design, construction planning and operation of the Proposed Developments. At this stage in the project, safety and control systems have not yet been designed for the Proposed Developments. However, standard industry approaches to managing risk will be used. In addition, equipment such as process monitoring and safeguarding systems and embedded mitigation such as fire and gas detection, and appropriate industry standard fire prevention measures will be installed as required.

Study Area

16.3.26 The study area for individual identified risk events has been considered based on the potential impact pathways, distances to receptors, the scale of potential worst-case environmental consequence from case-study incidents, or on professional judgement if no information on previous events is available.

16.3.27 In considering the geographical scope, external features/ sites that may present a hazard to the Proposed Developments, including those beyond the Sites' boundaries, have been considered where there is a potential for these to interact with the Proposed Developments.

Sources of Information/ Data

16.3.28 MA&D 'risk events', to which the Proposed Developments could be considered vulnerable were identified in the EIA Scoping Report (refer to Appendix 1A ES Volume II), through undertaking preliminary screening assessments and determining whether there could be a potential interaction with an 'in-scope' receptor. The results were used to provide a 'short-list' of MA&D that would be given further consideration in the ES. This short-list is provided in Table 6-13 of the EIA Scoping Report.

16.3.29 For each of the short-listed MA&D events, information sources for identifying these source-pathway-receptor linkages for MA&D hazards have included review of the following:

- potential natural hazards using data reported in a Landmark EnviroCheck Report (Landmark Information Group, 2022) for the Proposed Development Site, augmented by desk based research published by British Geological Society (BGS, 2022);
- meteorological hazards based on data reported in Section 14.4 of Chapter 14: Climate Change and Carbon (ES Volume I);
- existing major accident hazard sources within the Sites or off-site within the study area based upon data presented on the HSE website (COMAH sites) and within the Landmark EnviroCheck Report (HSC sites);

- other hazards and threats identified within the UK National Risk Register (HM Government, 2020); and
- sensitive environmental receptors within the study area at risk of MA&D hazards, identified within Chapter 2: The Site and Site Surroundings.

16.3.30 In addition to the above, the baseline presented within the MA&D assessment has utilised baseline information presented within other technical assessments of the ES, where relevant including receptors identified in Chapters 6 – 17 of this ES.

Consultation

16.3.31 The consultation undertaken with statutory consultees to inform this assessment, including a summary of comments raised via the formal EIA Scoping Opinion (Appendix 1B, ES Volume II) and in response to public consultation and other pre-application engagement, is summarised in Table 16.1 below.

Table 16.1: Key issues raised in relation to major accidents and disasters during consultation

Consultee or Organisation	Date and Nature of Consultation	Summary of Response	How have comments been addressed in this chapter
North Lincolnshire Council (NLC)	11 March 2022 (Scoping Opinion)	Having considered this section of the report, NLC do not have any objections to the approach set out within the Environmental Impact Assessment Screening Report at this stage. However, it should be noted that NLC does not have the expertise in some of the methods used in the study.	Noted. The chapter has been produced in accordance with the methods set out in the EIA Scoping Report (see Appendix 1A, ES Volume II).
Environment Agency	22 February 2022 (Scoping Opinion)	Comments regarding flood risk and advising the use of the Environment Agency's Hazard Mapping. It is also noted that the operators will need to apply for a permit variation to include the changes to their processes and operating techniques.	See Table 16.2 (C2) and Table 16.3 (Op3) of this chapter where the impacts of flooding on the Proposed Developments and the impact of the Proposed Developments on exacerbating flooding have been considered.
Network Rail	23 February 2022 (Scoping Opinion)	Network Rail outline that the EIA should consider impacts of the scheme on railway infrastructure and upon operational railway safety.	See Table 16.6 (Op15) of this chapter.

16.4Baseline Conditions

Introduction

16.4.1 This section presents a description of the baseline environmental characteristics within the study area. The baseline relevant to this topic comprises:

- a description of potential natural hazards which may impact the Sites, including meteorological hazards, geological hazards and other types of hazards;
- existing major accident hazard sources that may impact the Sites; and
- sensitive environmental receptors within the study area at risk of MA&D hazards associated with the Proposed Developments.

Natural Hazards

Meteorological Hazards

16.4.2 Hazards resulting from severe weather events which could impact the Proposed Developments have been derived considering the baseline information reported in Chapter 14: Climate Change and Carbon and Appendix 9A: Flood Risk Assessment (ES Volume II) and are considered to include:

- all potential sources of flooding to the Sites, including tidal, fluvial, groundwater, land drainage, overland flow, artificial sources, and sewer drainage arrangements;
- extreme temperatures (heat);
- extreme temperatures (cold);
- extreme rainfall;
- sea level rise;
- increase storm intensity;
- windstorms;
- drought; and
- wildfires.

16.4.3 The potential for climate change to impact upon the frequency and severity of these meteorological hazards in future years is discussed in Chapter 14: Climate Change and Carbon.

Geological and Ground Related Hazards

16.4.4 Appendix 10A: Phase 1 Geo-Environmental and Geotechnical Desk Study (ES Volume II) presents the geology underlying the Sites and considers the potential for natural deposits to present ground related hazards.

16.4.5 The potential for collapsible, compressible, landslide, running sand and shrinking or swelling clay ground stability hazards on-Site has been considered based upon data from Envirocheck Reports for the VPI Site and Phillips 66 Site.

16.4.6 For the VPI Site ground subsidence and stability risks are generally considered to be very low or low with the following exceptions where up to ‘moderate’ hazards are noted in the Envirocheck Report:

- the hazards associated with compressible ground are considered to be ‘no hazard’ to moderate, which corresponds to areas of the site that are underlain by the Tidal Flat Deposits (Clay and Silt); and
- areas of the site with a moderate hazard of running sand also correspond to areas underlain by the Tidal Flat Deposits (Clay and Silt).

16.4.7 Similar ground stability hazards are anticipated at the Phillips 66 Site compared to the VPI Site. The small area of the Phillips 66 Site in the north-east where Tidal Flat Deposits (Clay and Silt) underlie the Phillips 66 Site is associated with the greatest risks. Other hazards noted in the Envirocheck Report for the Phillips 66 Site include:

- running sand hazards are rated as very low to moderate; and
- compressible ground hazards range between no hazard and moderate.

16.4.8 At both Sites, collapsible ground stability hazards range from 'no hazard' to very low indicating that the ground is suitable for development, which is also indicated by the presence of the existing developments across the Sites.

16.4.9 The risk of striking unexploded ordnance (UXO) is classified as low bomb risk at both Sites.

Existing Major Accident Hazards

16.4.10 Industrial sites that could be the source of, or increase the risk or consequences of, a major accident and/ or are susceptible to a MA&D risk introduced by the Proposed Developments have been identified. Existing major accident hazard sources include industrial sites (such as those operated under the COMAH Regulations and HSC) and other notable local industrial sites identified by desk-based research.

16.4.11 Desk based searches have been undertaken in order to determine the proximity of such sites to the Sites. Appendix 10A: Phase 1 Desk Study (ES Volume II) adopts a land contamination study area that extends 250 m from the boundaries of the Sites. To provide a conservative screening distance for MA&D, sites within the following study areas have been identified:

- relevant COMAH sites located within 1 km of the Sites; and
- HSC sites located within 500 m of the Sites.

16.4.12 According to the HSE website (HSE, 2022), there are five COMAH sites located within 1 km of the Sites[1]. These include:

- Humber Refinery (upper tier), operated by Phillips 66 Limited, which the majority of the Phillips 66 Site is located within;
- Prax Lindsey Oil Refinery (upper tier), operated by Prax Lindsey Oil Refinery Limited, located approximately 140 m north of the Phillips 66 Site;
- Humber LPG Terminal (upper tier), operated by Phillips 66 Limited, located approximately 710 m north-east of the VPI Site;
- Rosper Road (lower tier), operated by VPI Immingham LLP, located approximately, located approximately 890 m north of the VPI Site; and
- Killingholme PSD (upper tier), operated by Exolum Pipeline System Limited, located approximately 995 m north-east of the VPI Site.

16.4.13 The principal aim of regulation of these sites under COMAH is to prevent major accidents from occurring via control measures, and in the instance accidents do occur, to mitigate the potential outcomes. Under the requirements of COMAH, these facilities are required to have management plans in place that are reviewed and updated to comply with regulations, and in the event of any incidents. The COMAH sites all identify relevant major accident hazards related to accidental release of dangerous substances, explosion and/ or fire. As five COMAH sites are within the 1 km screening distance considered for the Proposed Developments, they will be considered within the assessment.

Other Potential Major Accident Hazards

16.4.14 The existing Phillips 66 Humber Refinery and VPI Immingham CHP Plant could present a risk of MA&D that require consideration, particularly given their inherent proximity to the Proposed Developments (which are to decarbonise elements of those existing operations).

16.4.15 It is noted that the Applicants each operate Environmental Management Systems (EMS) which are integrated within Safety, Health and Environmental (SHE) Management Systems, accredited to ISO14001:2015 standard. The SHE Management Systems are underpinned by safety and health policies which includes major accident prevention policies and environment and climate change policies and broadly cover:

- systematic identification of hazards and risk assessment;

[1] Using a search by site address/postcode

- plant integrity and maintenance;
- safe systems of work;
- controls for the safe operation of processes; and
- emergency planning including preparedness and response.

16.4.16 Implementation of this SHE Management Systems to minimise the risk of MA&D hazards for the Proposed Developments is implicit within this assessment.

16.4.17 Humberside Airport is located approximately 8 km south-west of the Phillips 66 Site. An assessment of impacts on aviation, including the consideration of any required mitigation measures, is provided in this chapter.

16.4.18 The Sites both contain a number of utilities including overhead electrical lines, substations and high pressure gas infrastructure which may pose a risk to the Proposed Developments. Risks associated with on-site facilities have been inherently considered in the design of the Proposed Developments, and where applicable, to minimise future risks.

16.4.19 The Brocklesby and Immingham Branch railway line intersects the VPI Immingham CHP Plant and Phillips 66 Humber Refinery. This line is used for freight services only and has a speed limit of 20 mph. The Barton-On-Humber Branch is the closest passenger railway line, located approximately 3.4 km to the east of the Phillips 66 Site which connects to the Brocklesby and Immingham Branch at Ulceby North Junction enabling the movement of freight trains on the wider national rail network. The captured and compressed CO_2 from the Proposed Phillips 66 Development is required to cross the Brocklesby and Immingham Branch railway line to tie into a CO_2 transport and storage (T&S) network for transport to offshore storage. It is proposed that the CO_2 pipeline crossing will use the existing pipe bridge over the railway.

16.4.20 Abnormal Indivisible Loads (AIL) will be required for the construction of the Proposed Developments, to deliver materials and equipment to the Sites. Chapter 8: Traffic and Transport and Appendix 8A: Transport Assessment (ES Volume II) provide further information on the baseline conditions of the road and rail transport network.

Societal Risks

16.4.21 Existing societal risks include pandemics, which may cause civil emergencies and large numbers of people to fall ill. Risk of terrorist attack on infrastructure is also included in Section 16.6.

Sensitive Environmental Receptors

16.4.22 Chapter 2: Site and Site Surroundings explains that the two Sites are situated in a heavily industrialised area with limited residential receptors nearby in the villages of South Killingholme (0.5 km from the proposed Phillips 66 Site) and North Killingholme (approximately 0.8 km north-west of the Phillips 66 Site). The closest residential receptors to the Sites are 0.5 km west of the Phillips 66 Site (in Sough Killingholme) and 0.3 km east of the Phillips 66 Site and the VPI Site (on Marsh Lane). According to published maps (rowmaps, 2022) there are several bridleways and footpaths in close proximity to the Sites which may also be used by members of the public. Figure 2.2 (ES Volume III) illustrates the locations of urban areas and other environmental designations surrounding the Proposed Developments where members of the public are likely to be present.

16.4.23 The Humber Estuary Site of Special Scientific Interest (SSSI), Special Area of Conservation (SAC), Special Protection Area (SPA) and Ramsar site is located 1.7 km east of the VPI Site, whilst the Phillips 66 Site is located approximately 2.2 km to the west of the Humber Estuary SSSI, SAC, SPA and Ramsar site. The location of this sensitive ecological receptor is shown on Figure 2.2 (ES Volume III).

16.4.24 The location of designated and non-designated heritage assets in proximity to the Sites are set out in Chapter 12: Cultural Heritage. No physical remains associated with listed buildings, registered parks and gardens or scheduled monuments exist within the Sites or their immediate surroundings (i.e. 250 m). No further consideration of heritage assets in relation to MA&D risks is therefore necessary.

Future Baseline

16.4.25 Chapter 18: Cumulative and Combined Effects identifies developments that either have consent (and so may be constructed and/ or have commenced operation) or are in the consenting process. The initial long-list was subject to consultation with the local planning authority during the Scoping Opinion to seek to agree the list of developments to be taken forward (shortlisted) into the cumulative assessment.

16.4.26 For the purposes of this chapter, the developments detailed in Chapter 18: Cumulative and Combined Effects (ES Volume I) will be considered as part of the future baseline, as they will be assumed to have been constructed before or during the construction of the Proposed Developments.

16.4.27 This chapter specifically identifies sites which are licenced under the Control of Major Accident Hazard (COMAH) Regulations (or have the potential to be, given previous hazardous substances consent status), and considers potential effects of other projects and developments; in particular domino effects, to provide a conservative assessment.

16.4.28 The potential for climate change to impact upon the frequency and severity of meteorological hazards in future years is inherent within the assessment and discussed in Chapter 14: Climate Change and Carbon.

16.5 Development Design and Impact Avoidance

Introduction

16.5.1 The following impact avoidance measures will either be incorporated into the designs of the Proposed Developments or are standard construction or operational measures. These measures have therefore been considered during the impact assessment process described in Section 16.3 of this chapter.

Design

16.5.2 Health and Safety Plans covering the construction works, commissioning and operation of the Proposed Developments will be prepared by each Applicant. For design and construction, competent staff will be appointed as required under the CDM Regulations. The Applicants will monitor that their own staff, designers and contractors follow the Approved Code of Practice (ACoP) under the CDM Regulations.

16.5.3 Written procedures clearly describing responsibilities, actions and communication channels will be available for operational personnel dealing with emergencies. Procedures will be externally audited, and contingency plans written in preparation for any unexpected complications.

16.5.4 The Proposed Developments are using ‘safety in design’ principles to take into consideration safety issues and risks within the ongoing design, to reduce risks from the installation to be ALARP. As part of the layout evolution for each of the Proposed Developments, the following safety in design mitigation hierarchy has been adopted:

- eliminate a hazard; in preference to;
- control the hazard; in preference to; and
- provide personal protective equipment (PPE).

16.5.5 Design mitigation at the current concept design stage includes consideration of potential CO_2 releases and includes (but is not limited to):

- careful equipment and material selection;
- siting of high-pressure CO_2 equipment considering areas of potential exposure and prevailing wind direction;
- incorporation of gas leak detection systems; and

- consideration of venting arrangements.

16.5.6 The design engineers will prepare several philosophies with regard to process safety and safeguarding, isolation, emergency shutdown and if required, depressurisation. The design engineers will also give due consideration both to the on-Site location of facilities as well as the off-site receptors in defining the Proposed Developments' layouts.

16.5.7 Surface water management systems for each of the Proposed Developments will be designed to attenuate up to and including a 1 in 100 year storm event with an allowance for climate change. Appropriate filtration/ separation devices, such as silt traps and oil interceptors, and measures to separate potentially contaminated surface water from process areas, will be installed where appropriate on each of the Sites.

16.5.8 As the design of the Proposed Developments progress, further consideration will continue to confirm whether design mitigation is considered ALARP for each of the installations (i.e. future site users and general public). A design hazard management plan/ ALARP report is being or will be prepared for each of the Proposed Developments and a number of hazard identification and evaluation assessments (including Hazard Identification (HAZID) and Hazard and Operability (HAZOP) reviews, Environmental Aspects Identification and Layers of Protection Analysis) are being or will be carried out on the Proposed Developments during the design process. This is a standard approach for the identification of hazards and the development of risk mitigation measures for preventing or otherwise minimising hazardous scenarios through appropriate design during the Front End Engineering Design (FEED)/ Front End Loading (FEL) studies that are being progressed.

16.5.9 Major accident assessments and studies will be prepared over the course of the design development and a Major Accident Prevention Plan (MAPP) will be prepared to meet COMAH requirements for the operational facilities, if required.

16.5.10 The advice provided for high hazard sites relating to security measures (National Counter Terrorism Security Office and Association of Chief Police Officers (NaCTSO, 2014)) to prevent trespassers will be considered in the detailed design of the Proposed Developments.

16.5.11 The Proposed Developments will be within an area where similar facilities such as the existing Humber Refinery and VPI Immingham CHP plant have been in operation for many years. Consequently, many of these hazards are well understood by the Applicants (who are the operators of those existing facilities) and controlled by the regulatory authorities. The Applicants will draw on this expertise of designing, building and operating these facilities, to reduce the risk of major accidents occurring to ALARP.

16.5.12 The engineering designs of the Proposed Developments will incorporate appropriate standards, proven design methods and control measures necessary to reduce the risks of such accidents to an acceptable level, i.e. ALARP, which is the standard expected by the regulatory authorities (HSE and the Environment Agency).

16.5.13 The Proposed Developments will require appropriate permissions to be in place for their operation including meeting COMAH requirements, if required. The Proposed Developments will be operated in accordance with Environmental Permits, issued and regulated by the Environment Agency. These regulatory controls will stipulate a number of requirements that must be demonstrated to prevent or minimise the effects of major accidents.

Construction Phase

16.5.14 The use of suitably experienced contractors, risk assessments, working method statements, operating procedures and personnel training will provide the basis for reducing the potential for accidental scenarios occurring during construction of the Proposed Developments.

16.5.15 An Outline Construction Environmental Management Plan (CEMP) has been prepared (Appendix 4A, ES Volume II) to set out how construction activities are to be managed and controlled in compliance with accredited health and safety and environmental management systems, relevant legislation and environmental permits, consents and licences. The final CEMPs for the Proposed Developments will control potential impacts upon people, businesses and the natural and historic environment.

16.5.16 A Construction Travel Management Plan (CTMP) (Appendix 8B, ES Volume II) has been prepared to assess the implications of construction traffic routing to and from the Proposed Developments from the highway network via the A160, Humber Road and the proposed site accesses on Rosper Road and Eastfield Road. One of the key objectives of the CTMP is to ensure the movements of people, plant and materials are achieved in a safe, efficient, timely and sustainable manner. Traffic management methods would be used to enhance safety conditions on the strategic and local road networks.

16.5.17 In relation to the risk of flooding, as described in Chapter 9: Water Environment and Flood Risk and Appendix 9A: Flood Risk Assessment (ES Volume II) the final CEMPs for each of the Proposed Development will incorporate measures aimed at preventing an increase in flood risk during construction works, as far as reasonably practicable. This will include:

- adequate containment of storage areas, to ensure that material does not wash away and cause pollution and damage to infrastructure;
- inclusion into existing emergency response procedures;
- implementation of a Surface Water Management Strategy; ; and
- the Contractors would be required to produce a Flood Risk Management Action Plan/ Method Statement which would provide details of the response to an impending flood and include:
  - a 24 hour availability and ability to mobilise staff in the event of a flood warning;
  - the removal of all plant, machinery and material capable of being mobilised in a flood for the duration of any holiday close down period;
  - details of the evacuation and site closedown procedures; and
  - arrangements for removing any potentially hazardous material and anything capable of becoming entrained in floodwaters, from the temporary works area.

16.5.18 For areas that are within Flood Zone 2 and 3, flood risk management measures will include:

- topsoil and other construction materials will be stored outside of the 1 in 100 year floodplain extent. If areas located within Flood Zone 2 are to be utilised for the storage of construction materials, then a permit will be obtained from the Environment Agency;
- connectivity will be maintained between the floodplain and the River Humber, with no changes in ground levels within the floodplain as far as practicable; and
- the construction site offices and supervisors will be notified of any potential flood occurring by use of the Floodline Warnings Direct service.

16.5.19 The Proposed Phillips 66 Development falls largely within the existing Humber Refinery site, meaning there are already existing 24/7 security systems in place. As required, additional site security and lighting will be installed within the Proposed Phillips 66 Site.

16.5.20 The Proposed VPI Development is located on undeveloped land. Site security and lighting (to be used during hours of darkness) would be installed and would operate 24 hours a day 7 days a week. This would include the provision of fencing and security arrangements which would be monitored on-Site, including CCTV and controlled personnel / emergency accesses.

Operational Phase

16.5.21 As outlined previously, the Proposed Developments are likely to be regulated by the HSE under the COMAH Regulations, alongside Environmental Permits from the Environment Agency for the operation of the Proposed Developments. It is assumed that the Proposed Phillips 66 Development would be regulated as part of the existing Upper Tier Humber Refinery site, and the Proposed VPI Development would be regulated as part of the existing Lower Tier VPI Immingham CHP Plant site, pending finalisation of which hazardous substances will be handled on-site and the inventories involved. Both require a number of stipulations and requirements to be fulfilled to the satisfaction of the regulators including use of appropriate control and monitoring procedures, risk assessments, management systems and control measures to minimise the risk of major accidents occurring and to minimise the effects of any such major accidents on off-site receptors as well as the operational workforce.

The Permits require the approach to managing accidents and emergencies to be in accordance with the use of Best Available Techniques (BAT).

16.5.22 To reduce the risks of contamination to processes and surface water, all liquid chemicals stored on-Site will be kept in bunded controlled areas with a volume of 110% of storage capacity and be appropriately segregated.

16.5.23 Design and operational controls will be in place to manage the risks associated with the smaller inventories of hazardous substances including use of dedicated bunded above ground storage areas, segregation of incompatible materials, dedicated filling points and management procedures for the handling, storage and use of the materials.

16.5.24 In relation to flooding, as described in Appendix 9A: Flood Risk Assessment (ES Volume II) the design of the developments levels will be designed to be flood resistant and resilient.

Decommissioning Phase

16.5.25 It is considered that the design and impact avoidance measures implemented during construction would be the same for decommissioning.

16.6 Potential Impacts and Effects of the Proposed Developments

Introduction

16.6.1 Several potential major accident scenarios could occur during the construction, operational and decommissioning phases of the Proposed Developments. These scenarios have been grouped into the following risk events:

- fire/ explosion and risk of release of harmful gas including CO_2;
- extreme weather (e.g. flooding, drought);
- spillage/ leak of chemicals or pollutants into groundwater/ surface water;
- vandalism (trespass)/ terrorism;
- ground excavation/ collapse (including UXO risk);
- major road traffic accident;
- aircraft/ drone impact;
- pandemic;
- domino effects from neighbouring facilities;
- rail accidents; and
- utilities strikes/ failures (gas, electricity, water, sewage, oil, communications).

16.6.2 For the purposes of this assessment, the two Proposed Developments have not been assessed separately due to the similar impact pathways likely to be experienced during the construction, operation and decommissioning phases. Where there are differences (e.g. operational differences) this is stated.

Construction Phase

16.6.3 A summary of identified potential construction MA&Ds are outlined within the relevant risk event groupings within Table 16.2.

Table 16.2: Potential major accident and/or disaster events during construction grouped by risk event

ID	Risk Event (High level)	Risk Description (including hazard sources and/ or pathways)	Reasonable Worst Case Consequence if Event did Occur	Embedded mitigation	Mitigated to ALARP?	Tolerability and Significance
C1	Fire/ explosion and risk of release of harmful gas.	Natural gas - disturbance of existing gas pipeline(s) during intrusive ground works (part of the Proposed VPI Development will be constructed above the existing natural gas supply pipeline into the CHP Plant). Disturbance of ground gases (methane, carbon dioxide and volatile gases) generated in Made Ground and through organic content within the underlying deposits beneath the Sites. Disturbance of historical landfills located on the Phillips 66 Site leading to risk of release of harmful gas, in particular the historic landfill site located 22 m north-west of the Phillips 66 Site.	Fire/ explosion affects neighbouring property, on-Site and off-Site workers and/ or members of the public and/or causes severe environmental damage.	Risk related to natural gas pipeline managed via consultation with appropriate utility providers and planning to manage interfaces, define appropriate responsibilities, and asset protection and control measures. According to Appendix 10A: Phase I Desk Study (ES Volume II) (Table 9.6), the risks of ground gas migration and explosion to construction workers is considered to be moderate/ low on the VPI Site and moderate on the Phillips 66 Site for construction workers. Such risks are described as 'tolerable' and will be managed by applying standard approach to assessing land contamination aligned with the Environment Agency's Land Contamination: Risk Management (LCRM) guidance using a tiered, risk-based approach. Where potential contaminant linkages (PCL) are identified, intrusive investigation prior to construction will be completed to provide data to inform a generic quantitative risk assessment (GQRA) and comparison of site data with Evaluation Criteria (EC) for human health and/ or controlled waters. Such EC represent limits that define acceptable risk (ALARP). Only if necessary, following this stage (Tier 2), would any further more detailed quantitative risk assessment (DQRA) be	Yes	Tolerable if ALARP (**not significant**)

ID	Risk Event (High level)	Risk Description (including hazard sources and/ or pathways)	Reasonable Worst Case Consequence if Event did Occur	Embedded mitigation	Mitigated to ALARP?	Tolerability and Significance
				undertaken to identify whether contamination identified above acceptable risk levels represents an unacceptable risk and therefore requires remediation (Tier 3). Control measures will be implemented via the CEMPs to prevent fires and emergency procedures will be prepared and implemented to respond to fires, in the event that they were to arise.		
C2	Extreme flooding events during construction of the Proposed Developments which would lead to increased risk for construction workers or release of stored construction related material, equipment and potential contaminants.	Construction activities lead to a worsening of the effects of extreme weather events such as flooding. Risk of uncontrolled mobilisation of construction materials/ equipment/ potential contaminants.	Worsened extreme weather impact leads to fatality/ injury to on-Site. Release of harmful contaminants onto land or waterbodies outside construction site causing an environmental incident.	Risk to be managed through provision of a Flood Warning and Evacuation Plan (FWEP) to reduce the risk to site occupants and infrastructure from flooding and detail the emergency evacuation procedures required in the event of a breach of the tidal flood defences. Appropriate storage of materials on the Sites to prevent pollution in the event of flooding.	Yes	Tolerable if ALARP (**not significant**)

ID	Risk Event (High level)	Risk Description (including hazard sources and/ or pathways)	Reasonable Worst Case Consequence if Event did Occur	Embedded mitigation	Mitigated to ALARP?	Tolerability and Significance
C3	Spillage/ leak of pollutants into groundwater / surface water during construction activities.	Made Ground, pipeline networks on-Site, off-site landfills and surrounding industrial land uses are considered to be sources of potential contamination on the Sites. Working over or adjacent to watercourse including IDB drains. Risk of contamination of water resources. Striking unidentified utilities/ tanks adjacent to a watercourse.	Damage to/ contamination of groundwater/ surface water.	A desk study has been undertaken to provide a summary of the ground and groundwater conditions expected. Additionally, a ground investigation has been undertaken at the VPI Site . A ground investigation will not be undertaken at the pre-planning stage at the Phillips 66 Site, but will be undertaken prior to construction. The results of the ground investigations will help to further define controls if required (see Chapter 10: Geology, Hydrogeology and Land Contamination (ES Volume I)). Prior to ground investigations, service providers will be contacted before mobilisation and known services marked out. The Sites will also be scanned using Cable Avoidance Tool (CAT) and Ground Penetrating Radar (GPR) before ground works, and hand dug investigation where necessary. In addition to this, drawings and information related to current and previous structures would be obtained to further reduce the risk of striking unidentified tanks. Impact avoidance measures related to leaks and spills are presented in Section 10.5 of Chapter 10: Geology, Hydrogeology and Land Contamination (ES Volume I). CEMPs will be implemented to manage storage of construction materials and potential environmental impacts of	Yes	Tolerable if ALARP (**not significant**)

ID	Risk Event (High level)	Risk Description (including hazard sources and/ or pathways)	Reasonable Worst Case Consequence if Event did Occur	Embedded mitigation	Mitigated to ALARP?	Tolerability and Significance
				construction works (Appendix 4A, ES Volume II). All piling and penetrative foundation works will be carried out in accordance with approved method statements to prevent contamination of the underlying soils and groundwater.		
C4	Vandalism (trespass)	Risk of vandalism/ arson leading to fires/ explosions.	Fatality/ injury to member of public off-Site from fire/ explosions; and/ or irreversible damage to environmental receptor (ecological site, watercourse etc.).	Appropriate security measures will be installed at the construction site, including site security and fencing to prevent trespassers (where required in addition to existing security fencing at the Sites) and mitigate this risk to ALARP. Measures will include compliance with existing security procedures; controlled vehicular accesses; perimeter fencing and CCTV.	Yes	Tolerable if ALARP (**not significant**)
C5	Ground / excavation collapse	Risk of construction resulting in disturbance of manmade or naturally occurring ground related hazards. Hazards associated with compressible ground on both Sites are considered to be 'no hazard' to moderate, and hazards posed by collapsible ground are classified as 'no hazard' to very low. The moderate risk corresponds to areas of the Sites that are underlain by the Tidal Flat Deposits (Clay and Silt).	Localised ground movement could lead to uncontrolled movement affecting objects/ people/ materials/ plant/ equipment which could cause injury/ fatality to persons on-Site and/ or lead to secondary impacts e.g. damage to utilities leading to explosion.	Appendix 10A: Phase 1 Desk Study (ES Volume II) summarises the ground related risks and proposed mitigation including ground investigations with appropriate testing to understand the compressibility of deposits. The ground investigations will inform the construction methods used. To reduce risks associated with ground instability, industry standard construction methods/ design features appropriate to the context of the Sites will be used, recognising that the existing VPI Immingham CHP Plant and Phillips 66	Yes	Tolerable if ALARP (**not significant**)

ID	Risk Event (High level)	Risk Description (including hazard sources and/ or pathways)	Reasonable Worst Case Consequence if Event did Occur	Embedded mitigation	Mitigated to ALARP?	Tolerability and Significance
				Humber Refinery have been successfully built and operated at the Sites for many years. Close or continuous support will be required for any manned entry to excavations.		
C6	Major road traffic accident	Construction adjacent to existing highway (Eastfield Road and Rosper Road). Movement of construction vehicles, including abnormal loads, on local roads leading to increased risk of road traffic accidents. Debris striking traffic or member of the public. Visual distraction of road users due to construction activity including abnormal loads.	Fatality/ injury to members of public including motorists/ pedestrians.	Controls will be implemented including a CTMP (Appendix 8B, ES Volume II). Risks to road safety have been assessed as negligible in Chapter 8: Traffic and Transportation and mitigation measures will include: • accesses from the public highways Rosper Road and Eastfield Road will use Banksmen where necessary to manage the movement of HGVs on and off the public highway; and • warning signage will be provided on the approaches to the access junctions.	Yes	Tolerable if ALARP (**not significant**)
C7	Aircraft/ drone impact	Risk of collision between aircraft and tall construction machinery, e.g. cranes. Construction lighting and tall structures have the potential to present a visual distraction to pilots, causing aircraft incident.	Aircraft incident results in fatality/ injury to member of public and/ or irreversible damage to environmental receptor (ecological site, watercourse etc.) or human receptor (on-Site or offsite workers).	The Sites are located in an area which does not have a high density of air traffic. It is expected that the Applicants would continue to consult with relevant airports (in particular Humberside Airport)/ Civil Aviation Authority (CAA) to manage interfaces and define appropriate control measures. The Applicants understand that they will be required to follow relevant guidance	Yes	Tolerable if ALARP (**not significant**)

ID	Risk Event (High level)	Risk Description (including hazard sources and/ or pathways)	Reasonable Worst Case Consequence if Event did Occur	Embedded mitigation	Mitigated to ALARP?	Tolerability and Significance
				in relation to cranes set out in Appendix B of CAP738: Safeguarding of Aerodromes (CAA, 2020) and related guidance in respect of notification procedures and aviation warning lighting and lighting to be fitted to tall construction machinery that exceeds relevant limits.		
C8	Pandemic	Risk of pandemic causing civil emergency.	Risk of pandemic occurring which may cause civil emergency and large numbers of people to fall ill, including construction workers and local residents. Risk of loss of control of construction site.	If a pandemic was to disrupt the construction of the Proposed Developments, measures would be adopted in line with current UK Government guidance and decisions regarding any site closure would be taken considering the need to safely close the construction site, if required and provide necessary security.	Yes	Broadly Acceptable (**not significant**)
C9	Increased risk associated with neighbouring on-Site hazardous facilities/ domino effects	The Proposed Developments are located in proximity to 3No. existing operational COMAH sites operated by the Applicants. These are: • Humber LPG Terminal – Phillips 66 Limited; • Humber Refinery – Phillips 66 Limited; and • Rosper Road VPI Immingham. The Proposed Developments' construction could present a source of hazard in the event that the COMAH sites' consultation zone(s) interact with the boundaries of the	Fatality/ injury or irreversible damage to environmental receptor	As the COMAH facilities and the Proposed Developments are within the control of the Applicants, any risks can be appropriately managed. Where relevant, early engagement with the emergency services would be undertaken to provide assurance regarding access for emergency services during construction.	Yes	Tolerable if ALARP (**not significant**)

ID	Risk Event (High level)	Risk Description (including hazard sources and/ or pathways)	Reasonable Worst Case Consequence if Event did Occur	Embedded mitigation	Mitigated to ALARP?	Tolerability and Significance
		Sites, in particular the Phillips 66 Site which is located within an upper tier COMAH site, in the event of any traffic delays or temporary access restrictions which may delay emergency response.				
C10	Increased risk associated with neighbouring off-site hazardous facilities/ domino effects	There are a number of COMAH facilities within 1 km of the Proposed Developments (listed in paragraph 16.4.12). Many of the facilities are associated with fuel storage and distribution, as well as petrochemical/ oil refineries and power generation, supply and distribution. As a result there are flammable liquids and gases, petroleum products and fuels and hazardous substances stored and used on these neighbouring facilities. The risk does not extend beyond risk to countries outside of the UK.	Fire/ explosion impact upon the construction of the Proposed Developments. Release of toxic substances, some of which may be cancerous, toxic to aquatic life or toxic to humans if swallowed, inhaled or contacts skin.	The Applicants will engage with the neighbouring facilities where considered necessary to understand the risks and control measures. It is assumed that existing safety precautions at neighbouring industrial sites, along with the implementation of CEMPs at the Sites, will mitigate the risk of domino effects occurring. In preparing to meet COMAH requirements, which would be undertaken prior to construction, the emergency plan will consider HSG 191 Guidance (HSE, 2009) 'Emergency Planning for Major Accidents' which requires consideration of the potential for domino effects and that operators involved 'exchange any information necessary'. This will inform the locations of hazardous sites/ assets and the mitigation required.	Yes	Tolerable if ALARP (**not significant**)
C11	Rail accidents	A railway line passes between the Humber Refinery and VPI Immingham CHP Plant. There is a risk that a rail incident could lead to other MA&D risks such as damage	Risk of fatality/ injury to rail personnel/ users. Risk of damage to rail assets.	The design of the crossing and construction methods will be agreed with Network Rail to ensure the crossing does not introduce any new risk to railway users or assets.	Yes	Tolerable if ALARP (**not significant**)

ID	Risk Event (High level)	Risk Description (including hazard sources and/ or pathways)	Reasonable Worst Case Consequence if Event did Occur	Embedded mitigation	Mitigated to ALARP?	Tolerability and Significance
		to infrastructure adjacent to the railway line. The Phillips 66 CO_2 export pipeline will cross the Phillips 66 railway sidings and Network Rail railway line via an existing pipe bridge. Construction works could result in damage to existing pipelines crossing the railway leading to explosions and damage to rail infrastructure or personnel. The proposed railway crossing has been discussed with Network Rail.				
C12	Utilities strikes/ failure (gas, electricity, water, oil, communications)	Utilities failure could impact the construction of the Proposed Developments. Unidentified utilities impacted by excavation, piling, cutting and drilling works.	Failure of equipment reliant on mains power/ gas/ water supply. Interruption of communications and services which may lead to other MA&D risks. Disruption to construction activity and the operational VPI Immingham CHP Plant and Phillips 66 Humber Refinery. Limited ability for an emergency response plan to be implemented, if reliant on mains	24/7 on-Site emergency response provision. The existing emergency plans in place at the Sites will be adhered to. Any additional emergency arrangements that are required will be written into the final CEMPs and implemented by the contractors. The CEMPs will set out requirements for emergency planning and response. Utilities connections will be protected at all times during the construction works. Inspection pits for buried utilities wil be performed and clearances clearly demarcated at each Site. Critical services may require back up power supply or batteries.	Yes	Tolerable if ALARP (**not significant**)

ID	Risk Event (High level)	Risk Description (including hazard sources and/ or pathways)	Reasonable Worst Case Consequence if Event did Occur	Embedded mitigation	Mitigated to ALARP?	Tolerability and Significance
			power, and delay to the emergency response. Limited ability to implement effective and safe security and environmental management systems.			

Operation Phase

16.6.4 A summary of identified potential operational risks are outlined within the relevant risk event groupings within Table 16.3.

16.6.5 In common with many types of refineries, thermal power stations and industrial facilities there will be hazardous and potentially harmful substances present at the Proposed Developments, in quantities that, if released, have the potential to cause a major accident.

16.6.6 In addition to CO_2, the hazardous substances required to be stored and used by the operational Proposed Developments are presented in Chapter 3: Proposed Developments Description, Needs and Alternatives and in summary will include:

- caustic;
- activated carbon;
- antifoam agent;
- amine (Shell CANSOLV solvent DC-103);
- sodium carbonate;
- hydrogen;
- silica gel;
- ammonia (for Phillips 66 only); and
- coagulant and flocculant.

16.6.7 Smaller quantities of other hazardous materials will also be present at the Proposed Developments. These substances would not be assumed to be able to initiate or exacerbate MA&D hazards but could be harmful in the event of a major accident that causes loss of containment (for example, if hazardous substances were released during a fire event, due to the failure of storage vessels, this could result in the hazardous substances being present in the firewater runoff). These hazardous materials, present in small quantities, may include traces of nitrosamines and nitramines (N-amines), which could be present within the CO_2 absorption/ regeneration system.

16.6.8 Design and operational controls for the Proposed Developments and existing infrastructure will be in place to manage the risks associated with the smaller inventories of the above hazardous substances including use of dedicated bunded above ground storage areas, segregation of incompatible materials, dedicated filling points and management procedures for the handling, storage and use of the materials.

16.6.9 Table 16.3 below lists the potential MA&D relevant to the operation of the Proposed Developments and the storage and handling of hazardous substances present.

Table 16.3: Potential major accident and/or disaster events during operation grouped by risk event

ID	Risk Event (High level)	Risk Description (including hazard sources and/ or pathways)	Reasonable Worst Case Consequence if Event did Occur	Embedded Mitigation	Mitigated to ALARP?	Tolerability and Significance
Op1	Fire/ explosion and risk of release of toxic/ asphyxiant gas release gas.	Accidental release of CO_2 at medium or high pressure from the Proposed Developments. CO_2 is toxic and an asphyxiant, depending on the concentration in air. It is also odourless and heavier than nitrogen and oxygen, which makes up the majority of the air humans and mammals breath. A release of CO_2 could be caused by mechanical failure or impact damage resulting in a loss of containment. A leak or rupture of a system containing high pressure (dense phase (on exit from the Site)) CO_2 will be noisy and will be observed with the naked eye due to the transition between the phases. There will be	The impact of the release on people and the environment depends on the pressure, temperature and mass of material that is lost, however there is the potential for a major accident resulting in significant harm and potential fatalities, both on-Site and off-site. Risk of high levels of CO_2 dissolved in water can lead to acidification and effects on shell-forming species.	Detailed standards and codes of practice written specifically for the design and operation of high pressure CO_2 plant and pipelines are still being developed, therefore industry codes and standards for gas and chemical pipelines will be applied where appropriate. Pressure monitoring and venting systems will prevent over pressurisation situations. Emergency shut down valves to be fitted on certain pipelines to mitigate risk of becoming over pressurised. Use of containment measures and barriers to prevent damage to pipelines and compliance with the Pressure Safety Regulations (2016). Detailed emergency plans will be produced for the operation in accordance with the Environmental Permits and all applicable Regulations. Suitable automatic leak detection systems, isolation valves and CO_2 monitoring to minimise inventory release to the atmosphere. For use during emergency scenarios a CO_2 venting system will be designed to collect and safely disperse abnormal CO_2 releases generated in the Proposed Developments and needing to be discharged for safety reasons, for example due to plant over-	Yes	Tolerable if ALARP (**not significant**)

		an associated large reduction in temperature from a high-pressure release		pressurisation situations or due to maintenance activities.		
Op2	Fire/ explosion and risk of release of harmful fluid.	Release of abnormal levels of amine from CO_2 absorption/ regeneration system. Amines used in the CO_2 absorption/ regeneration system are non-flammable, toxic solvents which are harmful to people and hazardous to the environment. An abnormal release of amines could occur from failure in process equipment, pipework, the offloading (road tanker import) system and storage vessels and could be caused by mechanical failure or impact damage. Chapter 6: Air Quality (ES Volume I) assesses amines and concludes that the emissions associated with the operation of the Proposed Developments are below the emission limit value and	Loss of amines into surface water drains could reach local watercourses and result in damage to environmental receptor (ecological site, watercourse etc.) as a result of the toxicity of amines, increase in the pH of the environment and reduction in dissolved oxygen concentrations.	Amine storage tank(s), process equipment and pipework design and construction to industry standards. Site process water to be segregated from surface water drains and routed to holding tanks or wastewater treatment plant for treatment and testing prior to discharge. Surface water drains and attenuation system to have isolation valves installed to be closed in the event of accidental spillage into the uncontaminated surface water drainage system. Design of site containment facilities and drainage systems to industry standards (e.g. CIRIA C736) (CIRIA, 2014) and operated in accordance with the Environmental Permit. The emissions will meet the ELVs as required under the IED and in accordance with use of BAT under the environmental permitting regime. A deluge system will be installed in areas where there is a risk of fire (e.g. transformer systems).	Yes	Tolerable if ALARP (**not significant**)

		considered negligible (not significant), under normal operation.				
Op3	Extreme flooding events during operation of the Proposed Developments which would lead to increased risk for operational workers, damage to the Proposed Developments or mobilisation of contamination.	<u>VPI</u> The Proposed VPI Development Site is located within Flood Zone 3 and is at a 'high' risk of flooding from tidal sources without flood defences in place during events that exceed a 0.5% AEP (1 in 200 chance) of flooding. Groundwater flooding is considered 'moderate' risk. All other potential sources of flooding are considered to be 'low' risk. <u>Phillips 66</u> The Proposed Phillips 66 Site is mainly located within Flood Zone 1. Groundwater flood risk is considered to be 'moderate'. All other potential flood risk is considered to be 'low' risk.	Worsened extreme weather impact leads to fatality/ injury to site operative and/ or in irreversible damage to environmental receptor (ecological site, watercourse etc.). The consequences of water flooding the Sites could include contamination with polluting substances, destabilising assets and compromising the integrity of plant and equipment.	The Flood Risk Assessment contained in Appendix 9A (ES Volume II) includes recommendations for measures within the ongoing design of the Proposed Developments to withstand predicted tidal flood levels and mitigate the residual risk/ impacts including: • flood resilient design; • emergency evacuation and planning; and • flood warnings and alerts. This will be used to inform the detailed design of the Proposed Developments in terms of surface water management and selection of finished floor levels. As detailed in Appendix 9A (ES Volume II), temporary refuge shelter will be installed on-Site to provide a safe place of refuge if such an event were to occur.	Yes	Tolerable if ALARP (**not significant**)

Op4	Natural disaster - Extreme weather (e.g. temperature)	Ambient temperature extremes, high windspeeds. The impact of climate change causing extremes of temperature and winds may affect process operation of the Proposed Developments such as the cooling systems and structural stability.	Change of temperature and windspeeds could potentially impact the operation and efficiency of the Proposed Developments.	The concept engineering design and future detailed design will take into account the predicted ambient temperatures over the operational lifecycle of the Proposed Developments. The designs will incorporate future climate resilience measures, if required to ensure use of suitable materials in the design of utility systems such as process water demands.	Yes	Tolerable if ALARP (**not significant**)
Op5	Natural disaster - Extreme weather (e.g. electrical storms)	Risk of lightning strike leading to asset damage, including electrical failure, and potential subsequent fires/ explosions.	A lightning strike could cause a major accident, harm to people on-Site and damage to site infrastructure. A lightning strike could also damage the distribution network, leading to damage to the national electricity transmission system. Lightning could also present a source of ignition to flammable materials. A subsequent major fire could harm people both on-Site and off-site.	The engineering design of the Proposed Developments will include appropriate electrical earthing and bonding systems. The design and maintenance of these systems will reduce the likelihood of a major accident being initiated by a lightning strike to a very low level.	Yes	Tolerable if ALARP (**not significant**)

Op6	Spillage/ leak of chemicals or hazardous materials	<u>Phillips 66 only</u> Release of aqueous ammonia solution (from the Proposed Phillips 66 Development) used in the flue gas pre-treatment using Selective Catalytic Reduction, through loss of containment (aqueous liquid loss) and ammonia vapours from the liquid. Aqueous ammonia solution is harmful to people, causing burns, eye damage and respiratory irritation. It is toxic to aquatic life in the environment. <u>Phillips 66 and VPI</u> Risk of spillage of hazardous waste (sludge containing metals and amine degradation products) from amine reclaimer. A release of these substances could occur from failure in process equipment, pipework, the offloading (road tanker import) system and storage vessels	Irreversible damage to environmental receptor (ecological site, aquatic environment, watercourse etc.) depending on concentrations/ duration of release. Harm to human receptors as a result of burns, respiratory irritation and eye damage.	All liquid chemicals stored on site will be kept in bunded controlled areas within a volume of 110% of storage capacity and be appropriately segregated, in order to reduce the risk of contamination. Ammonia storage tank(s) (on the Phillips 66 Site), process equipment and pipework design and construction will meet relevant industry standards. Ammonia will be delivered to Site using IBC's (although Phillips 66 are investigating the suitability of tanker deliveries) and stored in sealed tanks to avoid any nuisance odours. Minimising the storage volumes of high hazard materials. Use of an appropriately licenced and competent hazardous waste contractors. The Phillips 66 Site drainage philosophy will ensure that process water collected in the Refinery 'oily water sewer' is segregated from non-process water in the surface water sewer and routed to holding ponds or wastewater treatment plant for treatment and testing prior to discharge. The VPI Site drainage philosophy will ensure that effluent water will be segregated and drained to an appropriate drainage system, according to the level of contamination. Surface water drains and attenuation systems will have isolation valves installed to be closed in the event of accidental spillage into the uncontaminated surface water drainage system. Design of the Sites' containment facilities and drainage systems to industry standards	Yes	Tolerable if ALARP (**not significant**)

		and could be caused by mechanical failure or impact damage. There is a risk that on-Site chemical storage facilities could be used for longer than sized for, leading to leaks. Risk of spillage of substances and hazardous goods during transportation off-site.		(e.g. CIRIA C736) and operated in accordance with the Environmental Permit, in addition to Hazardous Substances Consents (where applicable), COMAH requirements (where applicable) and other required consents. Transportation of hazardous substances to and from Sites will be undertaken in accordance with The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009. All chemical storage will be regulated by the Environment Agency through the environmental permits that will be required for the operation of the Proposed Developments.		
Op7	Spillage/ leak of chemicals or hazardous materials	Risk of contamination of water resources/ damage or contamination of aquifer or borehole.	Risk of drainage system failure leading to damage to local environment due to accidental discharges of oil or other chemicals, e.g. fire-fighting foam.	In order to mitigate the risk of chemical spillages and leaks leading to water contamination, there will be segregation of clean water/ rainwater/ fire water drains/ process water through use of separate drainage solutions, holding tanks and treatment facilities. Each Site will have a dedicated drainage philosophy as detailed above to segregate effluent water.	Yes	Tolerable if ALARP (**not significant**)
Op8	Vandalism (trespass)/ terrorism/ arson	Risk of vandalism/ terrorism leading to fires/ explosions.	The worst-case risks and effects of this could be significant harm to site personnel, with potential for injuries/ fatalities. There is also potential for harm to people, buildings and	Security measures will be installed at the Sites, including site security, CCTV and fencing to prevent trespassers and cyber security measures to prevent hacking. Security advice for high hazard sites provided by the National Counter Terrorism Security Office and Association of Chief Police Officers (NaCTSO, 2014) will be considered during detailed design.	Yes	Tolerable if ALARP (**not significant**)

			other receptors off-Site due to radiant heat burns and impact injuries from explosions.			
Op9	Ground collapse	Risk of ground collapse resulting in damage to infrastructure. See C5 for the risk assessment relating to ground collapse for each Site.	Localised ground movement could lead to uncontrolled movement affecting objects/ people/ materials/ plant/ equipment which could cause injury/ fatality to persons on-Site and/ or lead to secondary impacts e.g. damage to utilities leading to explosion.	Appendix 10A: Phase 1 Desk Study (ES Volume II) summarises the ground related risks and proposed mitigation including a ground investigation with appropriate testing to understand the compressibility of deposits. To reduce risks associated with ground instability, there will be use of industry standard design features appropriate to the context of the Sites, recognising that the existing VPI CHP Plant and Phillips 66 Humber Refinery have been successfully built and operated at the Sites for many years.	Yes	Tolerable if ALARP (**not significant**)
Op10	Major road traffic accident	Risk of presence of operation/ maintenance vehicles on local roads leading to increased road traffic accidents due to additional traffic affecting members of public. Road traffic accident causes loss of containment of hazardous substances being transported.	Fatality/ injury to members of public. Irreversible damage to environmental receptor (ecological site, watercourse etc.)	Risks to road users has been assessed in Chapter 8: Traffic and Transportation and are not considered to be significant. Transportation of hazardous substances and goods will be undertaken in accordance with The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009.	Yes	Tolerable if ALARP (**not significant**)

Op11	Aircraft/ drone impact	Tall structures have the potential to present a visual distraction to pilots, causing aircraft incident. Risk of asset damage, potential subsequent fires, explosions	Aircraft incident results in fatality/ injury to member of public/ site staff and/ or irreversible damage to environmental receptor (ecological site, watercourse etc.).	The Proposed Developments are sited in an area which does not have a high density of air traffic. As detailed above, it is anticipated that the Applicants will continue to engage with the CAA and provide aviation warning lighting if required. The absorber stacks will be fitted with aviation warning lighting as required by the Civil Aviation Authority.	Yes	Tolerable if ALARP (**not significant**)
Op12	Pandemic	Risk of pandemic causing civil emergency.	Risk of pandemic occurring which may cause civil emergency and large numbers of people to fall ill, including site operatives.	In order to mitigate against a pandemic disrupting operation of the Proposed Developments, management plans will be implemented, and emergency protocols followed to ensure the critical infrastructure associated with the Proposed Developments is able to operate safely as necessary. If a pandemic was to disrupt the operation of the Proposed Developments, measures would be adopted in line with UK Government guidance at the time of the event.	Yes	Broadly Acceptable (**not significant**)
Op13	Domino effects from incidents at 'on-Site' facilities	The Proposed Developments are located at existing operational sites: the VPI Immingham CHP Plant and Phillips 66 Humber Refinery. The Phillips 66 Humber Refinery Site is listed as an Upper Tier COMAH Site.	Risk of injury/ fatality to Site personnel.	It is expected that existing safety precautions at the VPI Site and Phillips 66 Site will mitigate the risk of domino effects occurring. Permissions will be sought from the HSE and local planning authority under the COMAH and Hazardous Substance Consent regimes if the storage of hazardous material(s) exceeds relevant thresholds.	Yes	Tolerable if ALARP (**not significant**)

Op14	Domino effects from incidents at neighbouring facilities	There are a number of COMAH facilities within 1 km of the Sites (listed in paragraph 16.4.10). Many of the facilities are associated with fuel storage and distribution, as well as petrochemical/ oil refineries and power generation, supply and distribution. As a result there are flammable liquids and gases, petroleum products and fuels and hazardous substances stored and used on these neighbouring facilities. The risk does not extend beyond risk to countries outside of the UK.	Fire/ explosion impact upon the operation of the Proposed Developments. Release of toxic substances, some of which may be cancerous, toxic to aquatic life or toxic to humans if swallowed, inhaled or contacts skin.	The Applicants will engage with the neighbouring facilities where practicable to understand the risks and control measures. In preparing to meet COMAH requirements, which would be undertaken prior to construction, the emergency plan will consider HSG 191 Guidance (HSE, 2009) 'Emergency Planning for Major Accidents' which requires consideration of the potential for domino effects and that operators involved 'exchange any information necessary'. This will inform the locations of hazardous sites/ assets and the mitigation required.	Yes	Tolerable if ALARP (**not significant**)
Op15	Rail accidents	A railway line passes between the Humber Refinery and CHP Plant. There is a risk that a rail incident could lead to other MA&D risks such as damage to infrastructure adjacent to the railway line. The Phillips 66 CO_2 export pipeline will	Risk of fatality/ injury to rail personnel/ users. Risk of damage to rail assets.	The pipe will be continuously welded to avoid any risk of leakage. Emergency venting will also be used to ensure there is no unacceptable build up of pressure in the pipe. The design of the crossing will be undertaken in conjunction with Network Rail to ensure the crossing does not introduce any new risk to railway users or assets.	Yes	Tolerable if ALARP (**not significant**)

		cross the Phillips 66 railway sidings and Network Rail railway line via an existing pipe bridge. There is a risk of pipe failure or explosion leading to a rail accident. This crossing has been discussed with Network Rail.		Communications with Network Rail throughout the operational phase, as necessary.		
Op16	Utilities failure (gas, electricity, water, oil, communications)	Utilities failure as a result of meteorological conditions or due to flooding could impact the operation and efficiency of the Proposed Developments.	Failure of equipment reliant on mains power/ gas/ water supply. Limited ability for an emergency response plan to be implemented, if reliant on mains power, and delay to emergency response. Limited ability to implement effective and safety security and environmental management systems.	Safety measures embedded within the design. The existing emergency plans for the Sites will be adhered to. Any alterations to these plans as a result of the Proposed Developments will be established, and implemented for safe operation.	Yes	Tolerable if ALARP (**not significant**)

Decommissioning Phase

16.6.10 It is considered that the MA&D risks relevant to the decommissioning of the Proposed Development would be the same as those described within Table 16.2 for the construction phase. On this basis a separate assessment of the decommissioning phase of the Proposed Development is not provided.

16.7 Mitigation and Enhancement Measures

16.7.1 Following the implementation of the embedded mitigation measures described in Tables 16.2 and 16.3 above, the engineering design of the Proposed Development will incorporate the appropriate standards, proven design methods and control measures necessary to control the identified MA&D risks to be 'tolerable if ALARP' and therefore the effects are considered as 'not significant' for construction, operation and decommissioning.

16.7.2 No additional mitigation measures (i.e. beyond those embedded mitigation measures required either for legal compliance or best practice during construction and operation of the Proposed Developments (outlined within Section 16.6 and Tables 16.2 and 16.3 above)) have been identified as being required to further mitigate any significant effects for MA&D at this stage.

16.7.3 Risks during the decommissioning phase are anticipated to be similar to those addressed within the construction phase. Any mitigation measures specific to the decommissioning phase will be outlined within a DEMP, secured by a planning condition.

16.7.4 The emergency plans produced for the installations will follow relevant guidance provided under the COMAH Regulations 2015 (if required) and/ or Environmental Permitting Regulations 2016.

16.8 Limitations

16.8.1 This assessment is based on the preliminary design of the Proposed Developments and early appraisal of potential hazards that will be refined and reappraised as the project and design develops through the processes regulated and controlled by other legislative frameworks.

16.9 Residual Effects and Conclusions

16.9.1 No potential significant residual effects have been identified within the MA&D assessment for the Proposed Development.

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