



UNIVERSAL DESTINATIONS & EXPERIENCES UK PROJECT

Former Kempston Hardwick Brickworks
and adjoining land, Bedford

Environmental Statement Volume 1

Chapter 16 - Major Accidents and Disasters

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16. MAJOR ACCIDENTS AND DISASTERS

16.1. INTRODUCTION

- 16.1.1. This chapter has been prepared in support of the planning proposal for the Proposed Development as described in **Chapter 2: Description of the Proposed Development (Volume 1)**. This reports the outcome of the assessment of the vulnerability of the Proposed Development to Major Accidents and Disasters (MA&D) during construction and operation.

SUPPORTING DOCUMENTATION

- 16.1.2. This chapter is intended to be read in conjunction with the following supporting appendices (Environmental Statement (ES) Volume 3):

- **Appendix 16.1: Major Accidents and Disasters Long List (Volume 3); and**
- **Appendix 16.2: Major Accidents and Disasters Risk Record (Volume 3).**

- 16.1.3. This chapter is intended to be read as part of the wider ES, with particular reference to:

- **Chapter 5: Traffic and Transport (Volume 1);**
- **Chapter 6: Ecology and Nature Conservation (Volume 1);**
- **Chapter 8: Air Quality (Volume 1);**
- **Chapter 11: Ground Conditions, Soils and Agricultural Land (Volume 1);**
- **Chapter 12: Water Resources (Volume 1);**
- **Chapter 13: Socio-Economics (Volume 1); and**
- **Chapter 15: Climate Resilience (Volume 1).**

LEGISLATIVE FRAMEWORK, POLICY, AND GUIDANCE

- 16.1.4. The relevant legislation, policy, and guidance to the assessment of the vulnerability of the Proposed Development to MA&D are detailed in **Appendix 3.1: Legislation, Policy and Guidance for all ES Technical Topics (Volume 3)**.

16.2. ASSUMPTIONS USED TO INFORM ASSESSMENT

- 16.2.1. The assessment presented in this chapter has been based on the Proposed Development as described in **Chapter 2: Description of the Proposed Development (Volume 1)**. This chapter has also used the following assumptions to build on the information in **Chapter 2: Description of the Proposed Development (Volume 1)** to support undertaking an assessment of a cautious worst case (where the phrase “*cautious worst case*” is used it means “*a cautious worst case that provides a robust assessment of likely significant effects*”):

- The works to the new A421 Junction will be managed/undertaken by the relevant undertaker¹;

¹ The persons (corporate or otherwise) who are permitted to carry out the Proposed Development (including their contractors and other persons appointed by them in connection with the carrying out of the Proposed Development).

- The works associated with the proposed railway stations and expansion to Wixams Station will be managed/undertaken by the relevant undertaker; and
- Connections into the existing utilities infrastructure (e.g. electricity, natural gas, water and sewage) would be managed/undertaken by the relevant undertaker.

16.3. ENGAGEMENT, SCOPE, AND STUDY AREA

ENGAGEMENT

16.3.1. **Table 16-1** provides a summary of the engagement activities undertaken in support of the preparation of this assessment.

Table 16-1 - Summary of Engagement Undertaken

Body/Organisation	Individual/Stat Body/Organisation	Meeting Dates and other Forms of Engagement	Summary of Outcome of Discussions
Health and Safety Executive (HSE)	Head of Major Hazard Risk Assessment Head of Onshore Chemicals Management, Improvement and Development	10 April 2024 Teleconference between UDX and HSE to discuss roles and responsibilities of HSE and introduce the Proposed Development.	Advised that the HSE consultation zone is associated with a Liquefied Natural Gas (LNG) storage facility located at the Asda chilled distribution centre.
	Head of Major Hazard Risk Assessment HSE Inspector in Land Use Planning Advise Team	09 May 2024 Teleconference between UDX and HSE to discuss the consultation zones within the Site boundary.	Discussed the output of the application of the Land Use Planning Tool assessment methodology and the types of development which would be allowed within each of the consultation zones.
		01 May 2025 Teleconference between UDX and HSE to discuss: <ul style="list-style-type: none"> ▪ Restrictions relating to consultation zones within the Site boundary and in the wider area. ▪ Storage requirements in relation to fireworks and pyrotechnics. ▪ COMAH zone thresholds relating to fuelling stations. 	UDX and HSE reviewed the application of the Land Use Planning Tool assessment methodology and agreed the types of development which would be restricted within each of the consultation zones associated with the ASDA LNG facility. UDX and HSE also agreed with regards to the application of <i>the Explosive Regulations 2014 (Ref.16.30)</i> in relation to the Proposed Development.

Body/Organisation	Individual/Stat Body/Organisation	Meeting Dates and other Forms of Engagement	Summary of Outcome of Discussions
			A document setting out the Summary of Agreed Position between the two parties is submitted as Appendix 4 of the Planning Statement (Document Reference 6.1.0) .
Civil Aviation Authority (CAA)	Off Route Airspace	21 March 2024 E-mail request for aerodrome safeguarding maps/plans for Meppershall Airfield and Sandy Airfield.	Response from the General Enquiries team: <i>"We do not have copies of safeguarding charts for individual aerodromes. You will need to contact the aerodromes directly to request these. It is possible the local planning authority will also have a copy."</i> Therefore, neither of these aerodromes are licensed or officially safeguarded, the Site doesn't fall within the aerodrome's general safeguarding boundary, the Proposed Development is unlikely to give rise to bird hazard given the distance and nature of each aerodrome, and neither airfield has sought a voluntary safeguarding protocol with Bedford BC that says otherwise.
	Airspace Regulation and Safety	24/04/2024 Teleconference between UDX and the CAA to discuss the Proposed Development.	The CAA confirmed that the two licenced aerodromes which may be affected and therefore require further engagement are Cranfield Airport and Old Warden Aerodrome. The CAA also highlighted the requirement to notify them in the event of an airspace change, either temporary or permanent.

Body/Organisation	Individual/Stat Body/Organisation	Meeting Dates and other Forms of Engagement	Summary of Outcome of Discussions
Bedford Borough Council (Bedford BC)	Priority Project Manager Manager for the Bedford Town Deal	Request for aerodrome safeguarding maps/plans for Cranfield Airport, Bedford Aerodrome, Meppershall Airfield and Sandy Airfield.	Contact details provided for CAA, Cranfield, and Bedford Aerodromes.
Bedford Aerodrome	Terence O'Rourke Ltd	21/03/2024 and 18/04/2024 E-mail request for aerodrome safeguarding maps/plans for Bedford Aerodrome.	Email received 12/05/2025 confirming that the aerodrome is not currently operational.
Cranfield Airport	Cranfield Airport Safeguarding	21/03/2024 and 18/04/2024 E-mail request for aerodrome safeguarding maps/plans for Cranfield Airport.	Contact details provided for Lead Development advisor for the airport.
	Lead Development Advisor	29/04/2024 Teleconference between UDX and Cranfield Airport to discuss the Proposed Development.	Cranfield Airport confirmed that the three areas which need to be considered are: safeguarding; glint and glare; and crantage. A copy of the safeguarding map was provided.
	Cranfield University Vice Chancellor	07/05/2025 A site tour was provided of Cranfield University campus and its aviation, research and residential/training facilities, including the airstrip and adjacent training centre Both parties discussed the potential for future collaboration. UDX confirmed that they will comply with relevant aviation regulations regarding notification of use of cranes, drones, and fireworks.	UDX and Cranfield Airport confirmed that the Proposed Development sits outside the Cranfield Airport safeguarded area and that aircraft approaching from the north to land at the airport do not currently fly over the Site. Cranfield Airport confirmed that aircraft on approach/departure from the airport to/from the north would not overfly the Site and therefore the Proposed Development would unlikely give rise to glint and glare impact.

Body/Organisation	Individual/Stat Body/Organisation	Meeting Dates and other Forms of Engagement	Summary of Outcome of Discussions
			<p>UDX confirmed that they would comply with aviation regulations including notification requirements relating to cranes, drones, and fireworks.</p> <p>A document setting out the Summary of Agreed Position between the two parties is submitted as Appendix 4 of the Planning Statement (Document Reference 6.1.0).</p>
Old Warden Aerodrome	enquiries@shuttleworth.org (Shuttleworth Museum email enquiry inbox)	07/05/2024 E-mail request for aerodrome safeguarding maps/plans.	<p>Old Warden Aerodrome confirmed that they do not have any concerns with regards to the construction phase. However, they would like further information about the use of drones and/or light and laser shows during the Operational Phase. A copy of the safeguarding map was provided.</p>
	Chief Engineer Marketing Manager	<p>08/05/2024</p> <p>Old Warden Aerodrome team members explained that the Aerodrome is the site of the Shuttleworth Museum, introduced the business and provided information regarding Old Warden Aerodrome flight rhythms and routes into their airfield.</p> <p>UDX provided updates on the Proposed Development, timescales, and proposed mitigation relating to airspace users.</p>	<p>UDX and Old Warden confirmed that the Proposed Development sits outside the Old Warden safeguarded area.</p> <p>UDX confirmed that they would comply with aviation regulations including notification requirements relating to cranes, drones, light shows, and fireworks.</p> <p>A document setting out the Summary of Agreed Position between the two parties is submitted as Appendix 4 of the Planning Statement (Document Reference 6.1.0).</p>

STUDY AREA AND SCOPE OF THE ASSESSMENT

Extent of the Study Area

16.3.2. MA&D types, both within and outside the Site, have been assessed, along with potential internal and external influencing factors. The following factors and associated distances from the Site boundary were adopted for setting the study area:

- Manmade features:
 - Aerodromes (including airports and airfields) within approximately 15km (the extent of the aerodrome safeguarding for licensed airports in the UK, including assessment of obstacles and bird attractants);
 - Control of Major Accident Hazards (COMAH) facilities within approximately 5km (distance to furthest COMAH installation centre point whose Consultation Zone (CZ) overlaps the Proposed Development);
 - Major Accident Hazard pipelines (MAHP) within approximately 1km (distance to furthest MAHP whose CZ overlaps the Proposed Development);
 - Nuclear installations within approximately 3km (distance to the Land Use Planning Outer CZ);
 - Bulk fuel storage facilities (including LNG, Liquefied Petroleum Gas) within approximately 500m;
 - Rail infrastructure within approximately 100m; and
 - Transmission lines (gas, electrical, oil/fuels) within the Site.
- Natural features with the potential to create risks within:
 - 3km (chiefly hydrological and geological, for example dam failure and seismic activity respectively); and
 - 1km (chiefly hydrological and geological, for example flood risk and unstable ground conditions respectively).

Scope of the Assessment

- 16.3.3. The internal and external influencing factors, which may have high adverse consequences on the Proposed Development, were reviewed for the varying distances identified above. As presented in **Appendix 16.1: Major Accidents and Disasters Long List (Volume 3)**, it was identified that the key factors were within a 0.2km radius around the Proposed Development other than the aerodromes which were within a 15km radius around the Proposed Development. Therefore, the extent of the study area used for the MA&D ES assessment is 15km.
- 16.3.4. A formal Environmental Impact Assessment (EIA) scoping process has not been undertaken in support of the preparation of this assessment. However, this assessment has been undertaken in line with best practice guidance, engagement with statutory bodies and using professional judgement.

- 16.3.5. This assessment has considered the vulnerability of the Proposed Development during the Construction and Operational Phases. Where appropriate, this chapter includes the further mitigation measures required to prevent, reduce or offset any significant adverse effects, the preparedness for and proposed response to emergencies, and the expected residual effects after these measures have been adopted. A long list of possible MA&D groups, categories and types has been prepared in **Appendix 16.1: Major Accidents and Disasters Long List (Volume 3)**. This has been reviewed to rule out any potential MA&D that are considered highly unlikely to occur due to: the location of the Proposed Development; baseline information; and information provided for the technical topics relevant to MA&D.
- 16.3.6. Those MA&D types that could not be scoped out have been taken forward for detailed assessment in this ES.
- 16.3.7. **Table 1: Elements Scoped In or Out of Further Assessment** in **Appendix 16.1: Major Accidents and Disasters Long List (Volume 3)** shows the potential vulnerability of the Proposed Development to the risk of a MA&D by type (e.g. earthquakes, flooding, major accident hazard chemical sites). A determination on whether the MA&D type is to be scoped in or out of the assessment is provided.
- 16.3.8. The MA&D event types shown in **Table 16-2** are considered to have the potential to give rise to likely significant effects during Construction Phase and/or Operational Phase of the Proposed Development and have therefore been considered within this assessment:

Table 16-2 – MA&D Event Types Scoped into the Assessment

MA&D Event Type Scoped In	Construction Phase	Operational Phase
Major accident hazard chemical sites	✓	✓
Transport accidents – aviation	✓	✓
Utilities failure - electricity		✓
Malicious attacks – crowded places		✓
Malicious attacks – cyber		✓

MA&D Event Types Scoped Out of the Assessment

- 16.3.9. **Table 16-3** presents the MA&D event types (the MA&D categories are included in brackets) to which the Proposed Development is considered unlikely to be vulnerable and therefore have not been considered further in this assessment.

Table 16-3 – MA&D Event Types Scoped out of the Assessment

MA&D Event Types Scoped Out	Justification
Earthquakes (geophysical)	Detailed justification for scoping out these MA&D event types is provided in the Major Accidents and Disasters Long List presented in Appendix 16.1: Major Accidents and Disasters Long List (Volume 3) .
Volcanic activity (geophysical)	
Landslides (geophysical)	
Sinkholes (geophysical)	
Tsunamis (hydrological)	
Coastal flooding (hydrological)	
Fluvial flooding (hydrological)	
Pluvial flooding (hydrological)	
Groundwater flooding (hydrological)	
Avalanches (hydrological)	
Cyclones, hurricanes, typhoons, storms and gales (climatological and meteorological)	
Thunderstorms (climatological and meteorological)	
Wave surges (climatological and meteorological)	
Extreme temperatures: <ul style="list-style-type: none"> Heatwaves; and Low (sub-zero) temperatures and heavy snow. (climatological and meteorological)	
Droughts (climatological and meteorological)	
Severe Space Weather: <ul style="list-style-type: none"> Solar Flares. (climatological and meteorological)	
Severe Space Weather: <ul style="list-style-type: none"> Solar Energetic Particles. (climatological and meteorological)	
Severe Space Weather: <ul style="list-style-type: none"> Coronal Mass Ejections. (climatological and meteorological)	

MA&D Event Types Scoped Out	Justification
Fog (climatological and meteorological)	
Wildfires: <ul style="list-style-type: none"> Forest fire, Bush/brush, pasture. (climatological and meteorological)	
Poor Air Quality (climatological and meteorological)	
Disease epidemics: <ul style="list-style-type: none"> Viral; Bacterial; Parasitic; Fungal; and Prion. (biological)	
Animal Diseases: <ul style="list-style-type: none"> Avian influenza; West Nile virus; Rabies; Foot and mouth; and Swine fever. (biological)	
Plants (biological)	
Extensive public demonstrations which could lead to violence and loss of life (societal)	
Widespread damage to societies and economies (societal)	
The need for large-scale multi-faceted humanitarian assistance (societal)	
The hindrance or prevention of humanitarian assistance by political and military constraints (societal)	
Significant security risks for humanitarian relief workers in some areas (societal)	
Famine (societal)	
Displaced population (societal)	
Major accident hazard pipelines (industrial and urban accidents)	

MA&D Event Types Scoped Out	Justification
Nuclear (industrial and urban accidents)	
Fuel storage (industrial and urban accidents)	
Dam breaches (industrial and urban accidents)	
Mines and storage caverns (industrial and urban accidents)	
Fires (industrial and urban accidents)	
Road (transport accidents)	
Rail (transport accidents)	
Waterways (transport accidents)	
Air (pollution accidents)	
Land (pollution accidents)	
Water (pollution accidents)	
Gas (utilities failure)	
Water supply (utilities failure)	
Sewage system (utilities failure)	
Unexploded Ordnance (malicious attacks)	
Attacks: <ul style="list-style-type: none"> Chemical; Biological; Radiological; and Nuclear. (malicious attacks)	
Transport systems (malicious attacks)	
Infrastructure (malicious attacks)	
Bridge failure (engineering accidents and failures)	
Flood defence failure (engineering accidents and failures)	
Mast and tower collapse (engineering accidents and failures)	
Property or bridge demolition accidents (engineering accidents and failures)	
Tunnel failure/fire (engineering accidents and failures)	

16.4. METHODOLOGY

METHOD OF BASELINE DATA COLLATION

Desk Study

- 16.4.1. A desk-based data collection exercise has been undertaken, including review of available information, to determine the baseline conditions.
- 16.4.2. The key sources of information used to determine the baseline for MA&D are:
- National Risk Register of Civil Emergencies (**Ref. 16.1**);
 - British Geological Survey (BGS) GeoIndex Onshore (**Ref. 16.2**);
 - Tsunamis Hazard Map (**Ref. 16.3**);
 - International Disaster Database (**Ref. 16.4**);
 - HSE's Planning Advice Web App (**Ref. 16.5**);
 - HSE's COMAH 2015 Public Information Search (**Ref. 16.6**);
 - Line search before you dig (**Ref. 16.7**);
 - Google aerial and street view maps (**Ref. 16.8**);
 - Aerodrome safeguarding maps; and
 - Technical chapters (**Chapter 5: Traffic and Transport (Volume 1)** to **Chapter 15: Climate Resilience (Volume 1)**).

Site Visit and Surveys

- 16.4.3. No site visit was required for the assessment of MA&D.

ASSESSMENT METHODOLOGY

- 16.4.4. To date, there is no regulatory guidance on how to consider MA&D within the context of EIA. However, the assessment takes account of emerging EIA good practice (**Ref. 16.9**, **Ref. 16.10**, and **Ref. 16.11**) which refers to other relevant documentation, including the Cabinet Office's National Risk Register (**Ref. 16.1**).
- 16.4.5. The assessment of MA&D has been achieved through a review of available documentation and regulatory requirements. The assessment does not involve assessment from 'first principles' as it is recognised that existing legislation and health and safety requirements already identify risks and help to protect human beings and the environment.
- 16.4.6. The assessment presents any identified risks along with whether these are managed to be As Low As Reasonably Practicable (ALARP) or require further precautionary mitigation actions beyond those already integrated into the design and execution of the Proposed Development.
- 16.4.7. The potential for identified relevant MA&D to result in a significant adverse environmental effect have been evaluated using a risk-based approach. The approach has considered the environmental consequences of a MA&D, the likelihood of these consequences occurring, considering planned design and embedded mitigation, and the acceptability of the subsequent risk to the relevant receptor. The following process has been applied to each of the MA&D categories included for assessment:

- identifying risks;
- screening these risks;
- defining the impact;
- assessing the risk; and
- appraising risk management options.

16.4.8. The Major Accidents and Disasters Long List presented in **Appendix 16.1: Major Accidents and Disasters Long List (Volume 3)** provides the justification for whether Risk Event types are considered within the assessment.

Identify Risks

16.4.9. The assessed MA&D are considered to be rare events.

16.4.10. Low consequence events, whatever their likelihood, do not meet the definition of MA&D as defined in the Institute of Environmental Management and Assessment (IEMA) Primer (**Ref. 16.12**). For example, minor spills which may occur during construction, but will be limited in area and volume and temporary in nature, do not meet the definition of a major accident. Such minor events will be dealt with by the measures, such as spill response procedures, included in the Outline Construction Environmental Management Plan (OCEMP) (**Appendix 2.3: Outline Construction Environmental Management Plan (OCEMP) (Volume 3)**) and do not fall within the scope of this assessment.

16.4.11. High likelihood and high consequence events also do not meet the definition of MA&D as the risk assessment and design process will identify and avoid or design out such risks in accordance with the HSE's Fairgrounds and amusement parks: Guidance on safe practice (**Ref. 16.13**). In addition, activities which fall into this category are highly regulated to minimise the risk to be ALARP.

16.4.12. The main legislation covering the various hazards and work activities found within entertainment resort complexes are as follows:

- *Health and Safety at Work etc Act 1974 (Ref. 16.14);*
- *Management of Health and Safety at Work Regulations 1999 (Ref. 16.15);*
- *Provision and Use of Work Equipment Regulations 1998 (Ref. 16.16);*
- *Lifting Operations and Lifting Equipment Regulations 1998 (Ref. 16.17);*
- *Work at Height Regulations 2005 (Ref. 16.18);*
- *Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (Ref. 16.19);*
- *Control of Noise at Work Regulations 2005 (Ref. 16.20);*
- *Electricity at Work Regulations 1989 (Ref. 16.21);*
- *Health and Safety (Enforcing Authority) Regulations 1998 (Ref. 16.22);*
- *Equality Act 2010 (Ref. 16.23); and*
- *Construction (Design and Management) Regulations 2015 (Ref. 16.24).*

- 16.4.13. Low likelihood events are defined, for the purposes of this assessment, as those which may occur during the lifetime of the Proposed Development: no more than once in 10 years for the Construction Phase; and no more than once in 100 years for the Operational Phase. This is an upper boundary for low likelihood.
- 16.4.14. Very low likelihood events are also included in the assessment, which may only occur at most once in every 1,000 years. Mitigation measures will reflect what is reasonable for such rare events, considering their potential consequence, within the guiding principle of risks being ALARP.
- 16.4.15. High consequence events are considered to lead to a significant adverse effect.
- 16.4.16. The risk identification process has used existing sources of information (including the **Security and Emergency Management Plan (Document Reference 6.4.2.0)**, wherever possible, or Risk Events identified within the UK's current National Risk Register (**Ref. 16.1**). No additional risk assessments have been undertaken and the risk identification activity has focused on collating and reviewing the existing sources of information prepared specifically for the Proposed Development.
- 16.4.17. To identify whether a Risk Event has the potential to be a MA&D event, which also has the potential to have a significant adverse effect on an environmental receptor, three components need to be present: a source, a pathway (between source and receptor) and a receptor. As such, and as recommended by Department of Environment, Food and Rural Affairs (DEFRA) (**Ref. 16.25**), the assessment uses the following conceptual model:
- The source is the original cause of the hazard, which has the potential to cause harm;
 - The pathway is the route by which the source can reach the receptor; and
 - The receptor is the specific component of the environment that could be adversely affected, if the source reaches it.
- 16.4.18. Risk Events which do not have all three components have been screened out from the assessment.

Screen Risks

- 16.4.19. The following MA&D screening process has been used to identify those Risk Events that will require further consideration within the assessment:
- Is there a potential source, and/or pathway and/or receptor? If not, no further assessment required;
 - Is there a relevant environmental receptor present in the locations where the Risk Event could occur, and a pathway whereby the source of harm can reach the receptor? If not, no further assessment required; and
 - Does the potential impact on the environmental receptor meet the definition of a significant adverse effect? If not, no further assessment required.
- 16.4.20. For those Risk Events which are not screened out during the three-step process, the following assessment methodology has been used. The assessment forms the basis for recommending additional mitigation measures, as appropriate.

Define Impact

16.4.21. Several mechanisms are in place to reduce the vulnerability of the Proposed Development to MA&D or to mitigate significant effects on the environment should they occur. All measures to manage and reduce the risk of significant adverse effects occurring due to the vulnerability of the Proposed Development to MA&D are considered to be embedded mitigation measures for the purposes of the assessment. It has been assumed that:

- The construction stage(s) of the Proposed Development will be managed through the implementation of a Construction Phase Plan (required under *The Construction (Design and Management) (CDM) Regulations 2015 (Ref. 16.24)*) and the OCEMP (**Appendix 2.3: OCEMP (Volume 3)**); and
- The design, installation, commissioning, operation and maintenance of plant, buildings, drainage systems, equipment, and machinery, including associated systems, will consider Good Engineering Practice and the HSE's Fairgrounds and amusement parks: Guidance on safe practice (**Ref. 16.13**).

16.4.22. The measures of relevance to the assessment are described in the relevant chapters.

16.4.23. A cautious worst case environmental impact(s) has been identified for each Risk Event included for assessment. Impacts have been identified in engagement with relevant disciplines for each environmental factor assessed within this ES. The environmental impacts are identified through a qualitative process that seeks to answer the question 'could this event constitute a major accident or disaster in terms of the definitions provided?'. Where relevant, specific sensitive receptors around the Proposed Development are considered. The Risk Record (**Appendix 16.2: Major Accidents and Disasters Risk Record (Volume 3)**) records the outcome of this process.

Assess Risk

16.4.24. The likelihood of the cautious worst case environmental effect(s) occurring has been evaluated considering the following:

- The likelihood of the Risk Event occurring considering the measures already embedded into the design and execution of the Proposed Development; and
- The likelihood that an environmental receptor is affected by the Risk Event.

16.4.25. Likelihood assessments evaluate whether the effect (for example, loss of life) is a possible outcome of the Risk Event.

16.4.26. This evaluation refers to existing risk assessments as well as engagement with relevant discipline specialists.

16.4.27. The assessment of the risk has been carried out in line with the IEMA Primer (**Ref. 16.12**). Where likely significant adverse effects are identified, mitigation measures must be in place, commensurate with the likelihood of the event occurring. The assessment considers, in engagement with relevant environmental topics, whether the risk to the environmental receptor is managed to be ALARP with the embedded mitigation measures. If gaps are identified, where the embedded mitigation measures do not represent management of risks to an environmental receptor to be ALARP, then additional measures will be required. The Risk Record presented in **Appendix 16.2: Major Accidents and Disasters Risk Record (Volume 3)** records the outcome of the assessment.

Appraise Risk Management Options

16.4.28. Risk management options fall into the following categories:

- Eliminate (or 'avoid') the risk by adopting alternative processes to eradicate the source of the hazard or remove the receptor;
- Reduce the risk by adapting proposed processes such that either the likelihood or the impact of the Risk Event can be decreased;
- Isolate the risk by using physical measures to make sure that should the Risk Event occur, it can be effectively isolated such that there is no pathway;
- Control the risk by ensuring that appropriate measures are in place (for example emergency response) so that should a Risk Event occur, it can be controlled and managed appropriately. The mitigation hierarchy of repair and compensate any significant damage to environmental receptors may then apply following a control measure; and
- Exploit the risk if it presents potential benefits or new opportunities.

16.4.29. As safety risks will be required to be adequately addressed within the regulatory framework (e.g. *Health and Safety at Work etc. Act 1974* (**Ref. 16.14**), *The Management of Health and Safety at Work Regulations 1999* (**Ref. 16.15**), *The Workplace (Health, Safety and Welfare) Regulations 1992* (**Ref. 16.26**) and *The Construction (Design and Management) Regulations 2015* (**Ref. 16.24**)) for the Proposed Development, it is not anticipated that significant residual effects, in terms of safety risks, will be identified as an output of the assessment.

SIGNIFICANCE CRITERIA

Significance of Effect

16.4.30. By definition, a MA&D would have a major Significant effect on the environment (including human health, welfare and/or the environment). Accordingly, any risks that could result in a major event without suitable mitigation, management or regulatory controls in place will be assessed as Significant in the context of EIA. Details are provided in **Appendix 3.2: Significance Criteria for all ES Technical Topics (Volume 3)**.

16.5. BASELINE CONDITIONS

16.5.1. The baseline conditions relevant to MA&D comprises:

- Features external to the Proposed Development that contribute a potential source of hazard to the Proposed Development (e.g. major accident hazard facilities);
- Sensitive environmental receptors at risk of significant effect as detailed in **Paragraphs 16.5.7 - 16.5.9** below; and
- Current (without the Proposed Development) MA&D risks for the existing locality.

16.5.2. There is one lower tier COMAH site within a 5km radius of the Proposed Development: Veolia ES (UK) Limited (hazardous waste transfer station). This site is located approximately 1.1km southwest from the closest point of the Site boundary.

- 16.5.3. The HSE's Land Use Planning tool (**Ref. 16.5**) also indicates that there is a Consultation Zone associated with a chilled distribution centre which overlaps the Site boundary in the northwest of the Lake Zone.
- 16.5.4. There are four working aerodromes within 15km of the Site boundary. Of the identified aerodromes, the CAA recommended that engagement was undertaken with Cranfield Airport and Old Warden Aerodrome as these two aerodromes could potentially be affected by the Proposed Development. Site specific safeguarding measures were not considered for Meppershall and Sandy Airfields on the basis that neither of these aerodromes are licensed or officially safeguarded, the Site doesn't fall within the aerodrome's general safeguarding boundary, the Proposed Development is unlikely to give rise to bird hazard given the distance and nature of each aerodrome, and they have not sought a voluntary safeguarding protocol with Bedford BC that says otherwise.
- 16.5.5. Baseline information from the following technical chapters has also been used to inform the MA&D assessment:
- **Chapter 5: Traffic and Transport (Volume 1);**
 - **Chapter 6: Ecology and Nature Conservation (Volume 1);**
 - **Chapter 8: Air Quality (Volume 1);**
 - **Chapter 11: Ground Conditions, Soils and Agricultural Land (Volume 1);**
 - **Chapter 12: Water Resources (Volume 1);**
 - **Chapter 13: Socio-Economics (Volume 1); and**
 - **Chapter 15: Climate Resilience (Volume 1).**

FUTURE BASELINE

- 16.5.6. The future baseline is not anticipated to differ significantly from the current baseline with regard to the vulnerability of the Proposed Development to the risk of MA&D.

SENSITIVE RECEPTORS

- 16.5.7. Schedule 4 of the *EIA Regulations* (**Ref. 16.27**) sets out the information that should be included in an ES where that information is relevant to the specific characteristics of the development. As such, this chapter has considered the following receptors:
- Members of the public and local communities;
 - Infrastructure and the built environment;
 - The natural environment, including ecosystems, land and soil quality, air quality, surface and groundwater resources and landscape;
 - The historic environment, including archaeology and built heritage; and
 - The interaction between the factors above.
- 16.5.8. The specific potential receptors of effects resulting from MA&D are reported in the relevant other technical chapters as described in **Section 16.1**.
- 16.5.9. Certain receptors have been excluded from the assessment, for the reasons described in **Table 16-4**.

Table 16-4 – Excluded Receptors

Receptor	Justification
Staff of the relevant Undertaker ² and/or their suppliers, whether during the Construction or Operational Phase of the Proposed Development.	Employer's commitment and obligations to manage risks to employees are addressed in the <i>Health and Safety At Work etc. Act 1974 (Ref. 16.14)</i> .
Members of the public who are wilfully trespassing, for example, a breach of the Proposed Development's perimeter fencing.	Outside the occupier's legal requirements under the <i>Occupiers' Liability Act 1984 (Ref. 16.28)</i> .

16.6. ASSESSMENT OF VULNERABILITY TO THE RISK OF MAJOR ACCIDENTS AND DISASTERS AND MITIGATION

MITIGATION MEASURES

- 16.6.1. This section sets out the embedded design and mitigation measures in place to address the vulnerability of the Proposed Development to the risk of MA&D events.
- 16.6.2. The relevant Undertaker has committed to constructing and managing the Proposed Development in accordance with the following non-exclusive list of standards and systems:
- Programme of hazard identification studies to produce an inherently safe design and to make sure residual risks are managed to be ALARP, as required by legislative drivers outlined in **Paragraph 16.4.13** and **Paragraph 16.4.30** ;
 - Environmental, Health and Safety Management systems;
 - CDM Health and Safety Plan (relevant to construction phase only);
 - Supplier management environmental, health and safety standards (e.g., Construction Skills Certification Scheme);
 - OCEMP (**Appendix 2.3: OCEMP (Volume 3)**) for Construction Phase environmental mitigation (to include, for example, appropriate containment measures to prevent releases of potential pollutants); and
 - **Security and Emergency Management Plan (Document Reference 6.4.2.0)** for Operational Phase emergency preparedness and response planning (to include, for example, malicious attacks, loss of containment from the adjacent LNG facility).
- 16.6.3. Additional mitigation measures have been identified for each potential MA&D Event and are presented in **Appendix 16.2: Major Accidents and Disasters Risk Record (Volume 3)**.

POTENTIAL MAJOR ACCIDENT AND DISASTER EVENTS

- 16.6.4. This section details the output of the assessment of the vulnerability of the Proposed Development to the risk of MA&D during both the Construction and Operational Phases, taking into account the embedded design and mitigation measures detailed above.

² The organisation that is responsible for managing the H&S of employees during construction and operation.

- 16.6.5. Based on the information known at this stage of the Proposed Development, MA&D Events to which the Proposed Development may be vulnerable during Construction and Operational Phases are summarised below. For each of the MA&D Events, a cautious worst case has been identified. It should be noted that these events in their nature are high consequence rare events.
- 16.6.6. By definition, a MA&D would have a major Significant effect on the environment (including human health, welfare and/or the environment).

CONSTRUCTION PHASE

- 16.6.7. One MA&D Event has been identified to which the Proposed Development may be vulnerable during the Construction Phase as detailed in **Table 16-5** below. All events that have been considered are set out in **Appendix 16.2: Major Accidents and Disasters Risk Record (Volume 3)**.

Table 16-5 – Potential MA&D Events Grouped by High Level Risk Event (Construction Phase)

Risk Record Entry Number	MA&D Category	Risk Description	Receptor	Description of the Effect/Cautious Worst Case	Significance of Effect with Embedded Mitigation	Additional Design, Mitigation or Enhancement Measure	Residual Effects
6	Technological or Manmade Hazards: Transport accidents.	Aircraft impacting crane.	Members of the public.	Damage to aircraft and/or collapse of crane causing harm to people.	This risk could constitute a MA&D as it could cause loss of life or permanent injury which requires ongoing disability support.	<p>UDX has engaged with Cranfield Airport and Old Warden Aerodrome, the two licensed aerodromes within a 15km radius of the Site boundary. Information shared by Old Warden Aerodrome on 7 May 2024 explained that the CAA has granted Old Warden Aerodrome with a “display area” for annual flying displays which must be kept clear of persons and vehicles during a flying display – the area expands to 2,000ft above the aerodrome to a distance of no more than 1km for the end of the airfield runway.</p> <p>A radius of 3.7.km from the aerodrome which incorporates the Approach and Departure slopes and the Air Traffic Zone for the aerodrome, an area which requires strict control of all objects from ground level to</p>	Considered to be ALARP if all mitigation measures outlined are correctly implemented. Due to the nature of a MA&D, if this MA&D Event occurred it would have a major Significant effect on the environment.

Risk Record Entry Number	MA&D Category	Risk Description	Receptor	Description of the Effect/Cautious Worst Case	Significance of Effect with Embedded Mitigation	Additional Design, Mitigation or Enhancement Measure	Residual Effects
						<p>2,000ft above aerodrome level.</p> <p>The Proposed Development is over 10km from the aerodrome and therefore outwith the Approach and Departure slopes, and the Air Traffic Zone and therefore outside an area where strict control on objects is required. It is also outside the display area – as shown in Figure 1: Old Warden Aerodrome Safeguarding Map of Appendix 16.2: Major Accidents and Disasters Risk Record (Volume 3).</p> <p>The safeguarding map for Cranfield airfield was provided on 29 April 2024. As illustrated in Figure 2: Cranfield Airport Safeguarding Map of Appendix 16.2: Major Accidents and Disasters Risk Record (Volume 3), the Site is located outside Cranfield Aerodrome's declared safeguarding zone.</p>	

Risk Record Entry Number	MA&D Category	Risk Description	Receptor	Description of the Effect/Cautious Worst Case	Significance of Effect with Embedded Mitigation	Additional Design, Mitigation or Enhancement Measure	Residual Effects
						<p>Engagement has also been undertaken with the CAA to understand restrictions and notification requirements relating to aviation safety. These are measures controlled via the civil aviation regime, based upon UK legislation and non-legislative regulatory material, which is governed by the CAA in its capacity as UK aviation regulator.</p> <p>The CDM Risk Register will identify potential risks associated with the presence of these aerodromes and the requirement to notify as appropriate.</p>	

16.6.8. Based on the assumptions and mitigation measures identified, it is considered that the potential MA&D event identified in **Table 16-5** would be managed to be ALARP.

OPERATIONAL PHASE

- 16.6.9. Four MA&D Events have been identified to which the Proposed Development may be vulnerable during the Operational Phase as detailed in **Table 16-6**. All events that have been considered are set out in **Appendix 16.2: Major Accidents and Disasters Risk Record (Volume 3)**.

Table 16-6 – Potential MA&D Events Grouped by High Level Risk Event (Operational Phase)

Risk Record Entry Number	MA&D Category	Risk Description	Receptor	Description of the Effect / Cautious Worst Case	Significance of Effect with Embedded Mitigation	Additional Design, Mitigation or Enhancement Measure	Residual Effects
5	Technological or Manmade Hazards: Industrial and Urban Accidents.	Large scale release of LNG resulting from a loss of containment event at the adjacent LNG storage facility.	Members of the public.	Natural gas toxicity hazard affects neighbouring properties and/or those people in the immediate area.	This risk could constitute a MA&D as it could cause loss of life or permanent injury which requires ongoing disability support.	<p>The type, size and intensity of buildings in the Lake Zone shall comply with the HSE's Land Use Planning Methodology to ensure that the risks associated with the existing LNG facility at ASDA, Marsh Leys Cottages Farm, Woburn Road, Kempston, Bedford MK43 9AB is appropriately considered as set out in Design Standard LZ2.1 (Document Reference 6.3.0).</p> <p>Engage with the operators of the LNG storage facility to agree emergency procedures as set out in the Security and Emergency Management Plan</p>	Considered to be ALARP if all mitigation measures outlined are correctly implemented. Due to the nature of a MA&D, if this MA&D Event occurred it would have a major Significant effect on the environment.

Risk Record Entry Number	MA&D Category	Risk Description	Receptor	Description of the Effect / Cautious Worst Case	Significance of Effect with Embedded Mitigation	Additional Design, Mitigation or Enhancement Measure	Residual Effects
						(Document Reference 6.4.2.0). The Security and Emergency Management Plan (Document Reference 6.4.2.0) will outline the actions to be taken in the event of a release of LNG.	
7	Technological or Manmade Hazards: Transport accidents.	Aircraft impacting tall structure.	Members of the public.	Damage to aircraft and/or collapse of structure(s) causing harm to people.	This risk could constitute a MA&D as it could cause loss of life or permanent injury which requires ongoing disability support.	UDX has engaged with Cranfield Airport and Old Warden Aerodrome, the two licensed aerodromes within a 15km radius of the Site boundary. Information shared by Old Warden Aerodrome on 7 May 2024 explained that the CAA has granted Old Warden Aerodrome with a “display area” for annual flying displays which must be kept clear of persons and vehicles during a flying display – the area	Considered to be ALARP if all mitigation measures outlined are correctly implemented. Due to the nature of a MA&D, if this MA&D Event occurred it would have a major Significant effect on the environment.

Risk Record Entry Number	MA&D Category	Risk Description	Receptor	Description of the Effect / Cautious Worst Case	Significance of Effect with Embedded Mitigation	Additional Design, Mitigation or Enhancement Measure	Residual Effects
						<p>expands to 2,000ft above the aerodrome to a distance of no more than 1km for the end of the airfield runway.</p> <p>A radius of 3.7.km from the aerodrome which incorporates the Approach and Departure slopes and the Air Traffic Zone for the aerodrome, an area which requires strict control of all objects from ground level to 2,000ft above aerodrome level.</p> <p>The Proposed Development is over 10km from the aerodrome and therefore outwith the Approach and Departure slopes, and the Air Traffic Zone and therefore outside an area where strict control on objects is required. It is also</p>	

Risk Record Entry Number	MA&D Category	Risk Description	Receptor	Description of the Effect / Cautious Worst Case	Significance of Effect with Embedded Mitigation	Additional Design, Mitigation or Enhancement Measure	Residual Effects
						<p>outside the display area – as shown in Figure 1: Old Warden Aerodrome Safeguarding Map of Appendix 16.2: Major Accidents and Disasters Risk Record (Volume 3).</p> <p>The safeguarding map for Cranfield airfield was provided on 29 April 2024. As illustrated in Figure 2: Cranfield Airport Safeguarding Map of Appendix 16.2: Major Accidents and Disasters Risk Record (Volume 3), the Site is located outside Cranfield Aerodrome's declared safeguarding zone.</p> <p>Engagement has also been undertaken with the CAA to understand restrictions and notification requirements relating</p>	

Risk Record Entry Number	MA&D Category	Risk Description	Receptor	Description of the Effect / Cautious Worst Case	Significance of Effect with Embedded Mitigation	Additional Design, Mitigation or Enhancement Measure	Residual Effects
						to aviation safety. These are measures controlled via the civil aviation regime, based upon UK legislation and non-legislative regulatory material, which is governed by the CAA in its capacity as UK aviation regulator. .	
8	Technological or Manmade Hazards: Transport accidents.	Aircraft colliding with drone swarm.	Members of the public.	Damage to aircraft causing harm to people.	This risk could constitute a MA&D as it could cause loss of life or permanent injury which requires ongoing disability support.	UDX has engaged with Cranfield Airport and Old Warden Aerodrome, the two licensed aerodromes within a 15km radius of the Site boundary. Information shared by Old Warden Aerodrome on 7 May 2024 explained that the CAA has granted Old Warden aerodrome with a “display area” for annual flying displays which must be kept clear of persons and vehicles during a flying	Considered to be ALARP if all mitigation measures outlined are correctly implemented. Due to the nature of a MA&D, if this MA&D Event occurred it would have a Major Significant effect on the environment.

Risk Record Entry Number	MA&D Category	Risk Description	Receptor	Description of the Effect / Cautious Worst Case	Significance of Effect with Embedded Mitigation	Additional Design, Mitigation or Enhancement Measure	Residual Effects
						<p>display – the area expands to 2,000ft above the aerodrome to a distance of no more than 1km for the end of the airfield runway.</p> <p>A radius of 3.7.km from the aerodrome which incorporates the Approach and Departure slopes and the Air Traffic Zone for the aerodrome, an area which requires strict control of all objects from ground level to 2,000ft above aerodrome level.</p> <p>The Proposed Development is over 10km from the aerodrome and therefore outwith the Approach and Departure slopes, and the Air Traffic Zone and therefore outside an area where strict control on objects is</p>	

Risk Record Entry Number	MA&D Category	Risk Description	Receptor	Description of the Effect / Cautious Worst Case	Significance of Effect with Embedded Mitigation	Additional Design, Mitigation or Enhancement Measure	Residual Effects
						<p>required. It is also outside the display area – as shown in Figure 1: Old Warden Aerodrome Safeguarding Map of Appendix 16.2: Major Accidents and Disasters Risk Record (Volume 3).</p> <p>The safeguarding map for Cranfield airfield was provided on 29 April 2024. As illustrated in Figure 2: Cranfield Airport Safeguarding Map of Appendix 16.2: Major Accidents and Disasters Risk Record (Volume 3), the Site is located outside Cranfield Aerodrome's declared safeguarding zone.</p> <p>Engagement has also been undertaken with the CAA to understand restrictions and notification</p>	

Risk Record Entry Number	MA&D Category	Risk Description	Receptor	Description of the Effect / Cautious Worst Case	Significance of Effect with Embedded Mitigation	Additional Design, Mitigation or Enhancement Measure	Residual Effects
						requirements relating to aviation safety. These are measures controlled via the civil aviation regime, based upon UK legislation and non-legislative regulatory material, which is governed by the CAA in its capacity as UK aviation regulator. .	
12	Technological or Manmade Hazards: Malicious Attacks	Crowding of people.	Members of the public.	Fatality and/or injury to members of the public.	This risk could constitute a MA&D as it could cause loss of life or permanent injury which requires ongoing disability support.	The Proposed Development will be designed and constructed in accordance with relevant standards, including consideration of the requirements of the <i>Terrorism (Protection of Premises) Act 2025 (Martyn's Law)</i> (Ref. 16.29). Public Road A is to include design to mitigate against hostile vehicle attack. Development and implementation of a	Considered to be ALARP if all mitigation measures outlined are correctly implemented. Due to the nature of a MA&D, if this MA&D Event occurred it would have a major Significant effect on the environment.

Risk Record Entry Number	MA&D Category	Risk Description	Receptor	Description of the Effect / Cautious Worst Case	Significance of Effect with Embedded Mitigation	Additional Design, Mitigation or Enhancement Measure	Residual Effects
						Security and Emergency Management Plan (Document Reference 6.4.2.0) that ensures a unified approach is taken to managing, mitigating and controlling potential hostile situations as required by <i>Martyn's Law</i> (Ref. 16.29). Presence of trained security personnel. CCTV monitoring. Security checks prior to entering the park.	

16.6.10. Based on the assumptions and mitigation measures identified, it is considered that the potential MA&D events identified in **Table 16-6** would all be managed to be ALARP.

CUMULATIVE EFFECTS

- 16.6.11. The MA&D assessment has, by its very nature, implicitly considered interactions with external factors such as other proposed developments which may impact on the Study Area. The assessment approach for MA&D, which considers the vulnerability of the Proposed Development to MA&D events, does not assess potential cumulative effects on sensitive receptors as a MA&D event, is a rare, isolated event, which does not have on-going impacts.
- 16.6.12. As per **Chapter: 3 Approach to EIA (Volume 1)**, more details on cumulative effects can be found in **Chapter 18: Cumulative Effects (Volume 1)**.

16.7. DIFFICULTIES AND UNCERTAINTIES

- 16.7.1. The following difficulties and uncertainties have been identified for the MA&D assessment:
- As the land use in the northwest of the Lake Zone (where the HSE consultation zone overlaps the Site boundary) has not currently been defined, an assumption, based on professional judgement, of the cautious worst case associated with a fire and/or loss of containment event from the LNG storage facility has been made.

16.8. SUMMARY OF LIKELY SIGNIFICANT EFFECTS AND PROPOSED MITIGATION

- 16.8.1. For the potential MA&D events identified, with the implementation of the identified mitigation measures, it is considered that the risks will be managed to be ALARP.

16.9. REFERENCES

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