

18 VULNERABILITY TO MAJOR ACCIDENTS AND DISASTERS

18.1 Background

18.1.1 The changes to the Town & Country Planning (Environmental Impact Assessment (EIA)) Regulations introduced in 2017 established a requirement for EIA to include consideration of the potential significant effects that might arise as a result of the vulnerability of a proposed development to ‘major accidents or disasters’. Within the EU Directive (2014/52/EU, point (7) of the introductory text) notes that the risks of accidents and disasters *“have become more important in policy making. They should, therefore, also constitute important elements in assessment and decision-making processes”*.

18.1.2 This chapter considers the scope for the proposed development to be at risk from major accidents and disasters, and whether the consequences of any such events would be significant.

18.1.3 The preceding chapters of this Environmental Statement (ES) have assessed construction and operational effects of the proposed development on the environment and people of the area (including chapters 7 and 6, respectively, in terms of effects of construction noise, operational noise and construction air quality (dust)) and mitigation measures are proposed to reduce any identified effects. This information is, therefore, not repeated here in any detail.

18.2 Sources of Information

18.2.1 Sources of information to enable this assessment comprise the following:

- Chapter N Risks & Accidents of the 2018 IAMP ONE ES;
- Chapter 14 Vulnerability to Major Accidents & Disasters of the 2021 AESC Plant 2 ES; and
- Authorship of chapters addressing vulnerability to major accidents and disasters, in the other chapters of this ES.

18.3 Consultation and Scope of Assessment

18.3.1 Following the previous informal consultation with Sunderland City Council (SCC), consideration has been given to the potential risk of accidents during construction and that there could be a low risk of the presence of unexploded ordnance within the site (based on the findings of the IAMP ONE EIA).

18.3.2 It is anticipated that similar conclusions can be drawn in relation to this site and its

vulnerability to major accidents and disasters, as have been identified for the IAMP ONE (planning ref. no. 18/00092/HE4) and AESC Plant 2 (planning ref. no. 21/01764/HE4¹) sites. As such, significant adverse effects in relation to this aspect were considered unlikely to arise and it was proposed that this aspect would not be considered in detail as part of the EIA, but that a short chapter would be prepared providing cross-references to the findings of the IAMP ONE ES and the AESC Plant 2 ES for this topic. To date, this approach is acceptable to SCC. The proposed site plan (Appendix 3.1) has been used to inform this assessment.

18.4 Control of Major Accident Hazards

18.4.1 This detailed application includes the storage and use of hazardous substances so the site will be likely to be controlled by the Control of Major Accident Hazards, (2015) regulations (COMAH). Owing to the large volume of a Schedule 1 Part 1 material being processed as a key component of the manufactured batteries, this site will be classed as an Upper Tier COMAH site.

18.4.2 This means that a pre-construction and pre-operation safety report will have to be submitted prior to each stage and maintained throughout the lifetime of the plant. These are extensive documents that review the safety of the proposed site that require in depth analysis of the site hazards.

18.4.3 As part of the preparation of the reports, the following is planned:

- Review of design decisions and justification;
- Review of design standards for processing equipment;
- Major Accident Hazard Identification (MAHAZID);
- Preparation of a Major Accident Prevention Policies (MAPP) document; and
- Environmental Risk Tolerability Assessment (CDOIF Assessment).

18.4.4 In addition to the above, a selection of the following (not extensive) may be used to understand the risks and how to mitigate them:

- Dangerous Substances Explosive Atmosphere Regulations (DSEAR) Review;
- Hazard Identification (HAZID) and Hazard and Operability (HAZOP) studies;
- Layer of Protection Analysis (LOPA);

¹ Section 73 planning ref. no. 23/01542/VA4).

- Major Hazard Consequence Modelling; and
- Quantitative Risk Assessment (QRA) and analysis.

18.4.5 AESC UK is aware of its responsibilities and will ensure that that the plant will use Best Available Techniques (BAT) and the As Low as Reasonably Practical (ALARP) principle to ensure the safety of the site. The use of BAT and ALARP will be demonstrated through the safety report for the factory and will be maintained throughout the plant's operational lifetime.

18.4.6 Interpretation and application of the COMAH Regulations in respect of the proposed AESC Plant 3 development will adhere to the same principles adopted for the AESC Plant 2 development.

18.5 Environmental Permitting Regulations

18.5.1 The large-scale use of solvents in the manufacturing processes to be operated in the proposed battery factory will result in the proposed development being subject to regulation under the Environmental Permitting (EP) Regulations (2016, as amended). A permit will be required under these regulations before the factory can commence operation.

18.5.2 The factory will be likely to be regulated as a Part A activity under the regulations, which means that the full range of impacts that the factory may have on the environment will need to be considered before the permit can be issued, including:

- Air quality impact;
- Water quality impact;
- Global warming potential;
- Waste production;
- Resource efficiency;
- Accident risk; and
- Noise and vibration impact.

18.5.3 AESC UK is aware of its responsibilities and will ensure that that the plant will use BAT to minimise the factory's environmental impact in each of these areas. The use of BAT will be demonstrated as part of the permit application for the factory and will be maintained throughout the plant's operational lifetime.

18.5.4 Interpretation and application of the Environmental Permitting Regulations in respect

of the proposed AESC Plant 3 development will adhere to the same principles adopted for the AESC Plant 2 development.

18.6 Methodology

18.6.1 There is no set methodology for the assessment of the vulnerability of a proposed development to major accidents and disasters and a risk-based assessment can be used. This assessment has considered the scope for the proposed development to be vulnerable to any existing, albeit low-likelihood, environmental hazards that would introduce (or increase) the risk of adverse effects on sensitive receptors (people and the environment). Construction and operational effects are considered separately as the types of risks are different in each case.

18.7 Baseline Environment

18.7.1 The baseline environment of the area comprises the existing industrial development within the Nissan site and adjacent areas to the south of the A1290, the ongoing development of the AESC Plant 2 and the IAMP TWO sites, the development of the ELMA within the Green Belt, together with the small area of housing, public house and museum to the east. Within the wider area are the residential and industrial areas on the eastern edges of Washington New Town and on the western edge of north Sunderland, and areas of agricultural land to the north.

18.8 Impact Assessment

During Construction of the Development Units

18.8.1 As noted in the 2018 IAMP ONE ES and the 2021 AESC Plant 2 ES, any vulnerability of construction phase activities to potential hazards that might result in major accidents or disasters can expect to be controlled via the adoption and implementation of a Construction Environmental Management Plan (CEMP).

18.8.2 There is a low potential for the presence of unexploded ordnance (UXO) within the development plots, which would be considered as part of the CEMP for the site. In the absence of proposed mitigation, it is considered that the likelihood of any risk to construction from the presence of UXO is not significant.

During the Operational Phase of the Development

18.8.3 The operational phase of the development will comprise the operation of the automotive and advanced manufacturing plant within the site (and across the wider IAMP area). The potential environmental or man-made hazards that might present a

risk to the proposed development may include the following:

- *Natural hazards*
- Geophysical hazard (e.g. mine collapse);
- Industrial hazards;
- Structural or mechanical failure from vehicle / plant collision or other human error;
- Failure of storage tanks / bunds;
- Leaks or spillage of fuel (e.g. diesel) from vehicles;
- Fire resulting in damage to infrastructure and buildings, plus any secondary effects on air quality and human health from emissions to air; or
- Catastrophic failure of plant or machinery resulting in damage to infrastructure or buildings.

18.8.4 Table N4 in 'Chapter N' of the 2018 ES sets out the assessment of the potential for adverse effects on the environment from the above hazards, and the aspects of the environment at risk from these occurring. The chapter concludes that, where mitigation for and management of accidents and disasters falls outside the scope of primary controls (such as the use of CEMPs, SWMPs or Surface Water Management Strategy), additional measures will be put in place at the detailed design stage once the end use of a building is known. These measures should comprise:

- Development of an Operational Management Plan, setting out the maintenance and monitoring regimes to be used at individual development units, in order to reduce the risk of hazards occurring; and
- The use of Emergency Response and Preparedness Plans, setting out the way each business will prepare for and respond to the hazards identified above (and any others), to minimise risks to the wider environment.²

18.8.5 A brief update on the likely effects from potential natural and industrial hazards, in relation to the AESC Plant 3 site is set out, below.

Geophysical hazards

18.8.6 Chapter J of the 2018 IAMP ONE ES ruled out the scope for mine-related accidents, with Section J4.4 of the ES noting that the IAMP area is some distance from coal seams, shallow mine workings, surface mining or mine entries (all at least 2 km distant),

² Chapter N, section N6.0 identified that this could be secured as a planning condition.

although the site is underlain by deep underground workings. Section J5.3 of the ES determined that the risk of sink holes resulting from underground mine collapse is very low. This aspect can, therefore, be ruled out of consideration as part of this assessment. Site investigations (SI) as part of any ongoing works would also be able to be used to inform the risk to development.

Flooding

- 18.8.7 A Flood Risk Assessment (FRA) has been undertaken for the proposed development (see Appendix 10.1) that concludes that, with mitigation in place, the risk of flooding (whether fluvial, surface water, groundwater or from sewers) ranges from negligible to low and very low. As such, the likelihood of flooding resulting in a major event at the site is considered to be low.

Extremes of weather

- 18.8.8 Extremes of weather have the potential to result in environmental damage, including the potential for damage to containment or storage structures (for instance, from falling objects) resulting in the release of potential contaminants. However, it is anticipated that buildings, site layouts and installations (such as containment tanks and the like) would be designed to withstand extreme weather events and to limit the risk of damage from external agencies. As such, the likelihood of such an event is considered to be very low.

Lightning strikes

- 18.8.9 Lightning strike has the potential to give rise to fire or other damage to structures and infrastructure, including electrical systems. The likelihood of lightning strikes increases with increased temperatures, but buildings and infrastructure can be protected (using BS EN 62305) so as to reduce the risk of damage in order to ensure electrical currents from lightning strikes are safely carried to earth. Providing that such protection is installed at the buildings onsite, the likelihood of damage from lightning strikes can be considered to be very low.

Structural or mechanical failure or Human error

- 18.8.10 It is unlikely to be feasible to entirely rule out the possibility of human errors and unforeseeable failures in mechanical systems occurring, but the scope for these can be considerably limited via the use of work plans, method statements, risk assessments, regular maintenance and checking, and other good practices. As such, whilst the consequences of any such events could be considerable in terms of

potential damage to the environment, the likelihood of these events, providing that these systems are in place, will be very low.

Failure of storage tanks / bunds

- 18.8.11 Any failure of storage tanks and bunds risks the release of contaminants into the environment. As above, however, provided that regular checks on these are conducted, the risk of such failures occurring can be reduced to very low to negligible.

Leaks / spillage of fuel

- 18.8.12 This could also result in the release of potential contaminants to the environment, either during refuelling or from poorly maintained vehicles. As with other aspects with the potential to harm the environment, the use of method statements and risk assessments, and the provision of containment measures to control accidental spillages (whether during construction or operation) will limit the risk of such events occurring to very low.

Fire – damaging buildings and resulting in emissions to air

- 18.8.13 Fire within industrial buildings may result from a range of factors, including human error, incorrect use of equipment or from machinery overheating. As with other aspects, providing that measures are in place to limit the risk of this (including regular maintenance, provision of fire extinguishers, and the like), the likelihood of harm to the environment will be low.

Catastrophic failure of plant or machinery damaging structures and infrastructure

- 18.8.14 Catastrophic failures of any equipment should be preventable given good maintenance and checking regimes, and the use of risk assessments to understand how potential combinations of factors (e.g. plant failure combined with operator error or injury) could give rise to such events. Health checks of personnel, in addition to equipment checks, will ensure such combinations are unlikely to occur.
- 18.8.15 From the above, it can be seen that all likely hazards (natural and industrial) with the potential to result in harm to the environment can have their risk levels reduced to minimal with the implementation of plans and procedures addressing these. These would encompass regular maintenance of plant and equipment, plus development of and adherence to method statements, and the installation of protection systems (e.g. against fire, lightning strikes and so on) and the like. Overall, the vulnerability of the proposed development to major accidents and disasters, during both the construction and operational phases, can be considered to be very low.

18.9 Mitigation Measures

18.9.1 Mitigation measures to address potential adverse effects have been identified within the relevant chapters of this ES and are embedded into the design of the proposed development. This includes the development of a CEMP, SWMP, Surface Water Management Strategy and other such documents. Once the buildings developed on the site are occupied, their ongoing operation would include measures to reduce and remove the risks of hazards to the environment, including operational management plans and emergency response and preparedness plans. As such, it is considered that these and the aspects noted above would be effective in addressing the potential risk from and vulnerability to major accidents and disasters and no further mitigation is required.

18.10 Residual Effects

18.10.1 With the mitigation measures as proposed above in place, no significant effects are anticipated.

18.11 Cumulative Effects

18.11.1 The assessment of the vulnerability of the proposed development to major accidents and disasters has of itself considered the interaction between the various aspects of the environment and the proposed development. This concluded that the vulnerability of the project to this is low. Accordingly, no further assessment of intra-cumulative effects is required.

18.11.2 In considering the potential for the proposed development, in combination with the development of the wider IAMP site, to give rise to an increased risk of major accidents and disasters, it is assumed that the findings of the 2018 IAMP ONE ES and 2021 AESC Plant 2 ES will be applicable to the proposed development.

18.11.3 As noted above, the potential for UXO within the site is considered to be low and would be considered within the CEMP developed for the onsite construction works. The IAMP ONE 2018 ES identified the potential for up to moderate effects on the vulnerability of the development to both natural and industrial hazards, but that these hazards would be addressed through the preparation of operational management plans and emergency preparedness and response plans. As such, any residual effects would be not significant.

18.11.4 Given the proposed mitigation, the combination of the site into the wider IAMP ONE and AESC Plant 2 development areas is not considered to result in any significant



adverse inter-cumulative effects with regard to the vulnerability of the development to major accidents and disasters.

18.11.5 In relation to the potential inter-cumulative risks of the proposed development with other consented or in-planning projects, these would typically be at sufficient distance from the proposed development that any such cumulative risks are not considered likely to increase the scope for major accidents or disasters, either from or to the proposed development. Therefore, no inter-cumulative effects have been assessed.

18.12 Limitations to the Assessment

18.12.1 No limitations to the assessment have been identified.

18.13 Conclusions

18.13.1 From the above assessment, it can be concluded that, with the appropriate measures to control aspects such as dust dispersion, and flood risk, the vulnerability of the proposed development to major accidents and disasters, including cumulatively with other developments, can be considered to be **very low and Not Significant**.