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14 VULNERABILITY TO MAJOR ACCIDENTS AND DISASTERS

14.1 Background

14.1.1 The changes to the Environmental Impact Assessment (EIA) Regulations that were introduced in 2017 established a requirement for an EIA to include consideration of the potential significant effects that might arise as a result of the vulnerability of a development to major accidents and / or disasters.

14.1.2 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*'. This chapter, therefore, 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'.

14.1.3 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 within Chapters 7 and 6, respectively, the effects of construction / operational noise and construction air quality) and mitigation measures are proposed to reduce any significant adverse effects identified. This information is not repeated here in any detail.

14.2 Sources of Information

14.2.1 The sources of information to enable this assessment include the following:

- Chapter N : Risks & Accidents of the 2018 IAMP ONE ES.
- Authorship of chapters addressing vulnerability to major accidents and disasters, in other Environmental Statements.

14.3 Consultation & Scope of Assessment

14.3.1 As part of the informal consultation with SCC in 2019, consideration was given to the potential risk of accidents during construction and that there could also be a low risk of the presence of unexploded ordnance (UXO) within the Site (based on the findings of the 2018 IAMP ONE EIA).

14.3.2 It is anticipated that similar conclusions can be drawn in relation to the Site and its vulnerability to major accidents and disasters as have been identified for the IAMP ONE and IAMP TWO 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 2020 EIA. Rather, it was proposed that a short chapter would be prepared providing cross-references to the findings of the IAMP ONE and IAMP TWO EIAs for this topic. During a meeting held on the 15th November 2019, SCC indicated that this approach would be acceptable. Based upon this, the same approach has been applied for the 2021 EIA undertaken to inform this ES.

14.3.3 For the 2020 EIA, two indicative masterplans were prepared for the outline application and the previous assessment considered the multiple unit (i.e. Figure 3.1A) development as the worst-case option on the basis that increased numbers of units within the site increased the potential risk of major accidents and disasters. As this ES supports a detailed application for a single unit development, this is reflected within this assessment.

14.3.4 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 it is expected, but still to be confirmed, that this site will be classed as an Upper Tier COMAH site.

14.3.5 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.

14.3.6 As part of the preparation of the reports the following is currently 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.
- Environmental Risk Tolerability Assessment (CDOIF[1] Assessment).

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

- Dangerous Substances Explosive Atmosphere Regulations (DSEAR) Review.

[1] Chemical Downstream Oil and Industries Forum.

- Hazard Identification (HAZID) and Hazard and Operability (HAZOP) studies.
- Layer of Protection Analysis (LOPA).
- Major Hazard Consequence Modelling.
- Quantitative Risk Assessment (QRA) and analysis.

14.3.8 Envision AESC 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.

14.3.9 Given that the scale and nature of the processes to be operated in the battery factory have no direct current comparator in the UK, Envision AESC is currently holding discussions with the Health and Safety Executive to agree the correct interpretation of the COMAH Regulations to the factory.

Environmental Permitting Regulations

14.3.10 The large-scale use of solvents in the manufacturing processes to be operated in the proposed battery factory will result in the Envision AESC 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.

14.3.11 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.
- Noise and vibration impact.

14.3.12 Envision AESC is aware of its responsibilities and will ensure that that the plant will use Best Available Techniques (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.

14.3.13 Given that the scale and nature of the processes to be operated in the battery factory have no direct current comparator in the UK, Envision AESC is currently holding discussions with the Environment Agency to agree the correct interpretation of the EP Regulations for the factory. The discussions will affect who the responsible regulatory authority will be for the factory under the EP Regulations (either the Environment Agency or the Local Authority) but the requirement to implement BAT processes and management techniques will not be affected.

14.4 Methodology

14.4.1 There is no set methodology for the assessment of the vulnerability of a proposed development to major accidents and disasters and, as such, a risk-based assessment has been used. This assessment considers 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.

14.5 Baseline Environment

14.5.1 The baseline environment of the project area comprises:

- The existing industrial development within the Nissan site and adjacent areas to the south of the A1290.
- The ongoing development of the IAMP ONE site.
- The development of the ELMA land within the Green Belt to the north-west of the Site.
- The small area of housing, public house and museum, to the east.

14.5.2 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.

14.6 Impact Assessment

During Construction of the Development

14.6.1 As noted in the 2018 IAMP ONE ES, Chapter N, at Section N3.0, any vulnerability of construction phase activities to potential hazards that might result in major accidents or disasters can expect to be controlled through the use of a Construction Environmental Management Plan (CEMP). As noted above (para. 14.3.1), there is a low potential for the presence of UXO within the development plots. This needs to 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

14.6.2 The operational phase of the development will comprise the operation of an electrode and battery manufacturing facility with a maximum capacity of up to 9 GWh / annum, which will manufacture lithium-ion battery pouch cells and modules for electric vehicles and employ circa 1,000 staff (850 shift-based and 150 day-based). Owing to the use of inhalable nickel powder in quantities exceeding 1 tpa within the manufacturing process, the Site will be classified as an 'upper tier' COMAH site[2]. Other materials to be used within the manufacturing processes include Lithium Hexafluorophosphate (LiPF6), which is a flammable and toxic mutagenic, and N-Methyl-2 pyrrolidone (NMP), which is flammable and toxic.

14.6.3 A risk-based approach will be used to develop safe, working practices to protect staff and environment from effects of hazardous materials during daily operations as well as during emergency situations.

14.6.4 An uninterruptible power supply (UPS) system is to be installed to ensure that power to critical systems is maintained in the event of a potential power failure. The UPS will ensure that fans remain operational; thereby allowing a diverter pipe to channel all NMP emissions to an emergency carbon bed where it will be treated (and avoid emissions from potentially affecting people / environment).

14.6.5 The potential environmental or man-made hazards that might present a risk to the proposed development may include:

Natural Hazards

- Geophysical hazard (e.g. mine collapse).

[2] For a summary of the environmental permits being sought in relation to the proposed development, please refer to Table 14.1.

- Flooding.
- Extremes of weather (e.g. high wind / heavy rain) damaging infrastructure and buildings.
- Fires from lightning strikes damaging infrastructure and buildings.

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.
- Leakage of hazardous substances.
- Fire resulting in damage to infrastructure and buildings, plus any secondary effects on air quality and human health from emissions to air.
- Catastrophic failure of plant or machinery resulting in damage to infrastructure or buildings.

14.6.6 Within Chapter N of the 2018 ES, Table N4 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 concluded that, where mitigation for and management of accidents and disasters falls outside the scope of primary controls (i.e. CEMPs, Site Waste Management Plans (SWMP), Surface Water Management Strategies, etc.), additional measures would be put in place at the detailed design stage, once the end use of a building is known. These should comprise:

- Development of an Operational Management Plan setting out the maintenance and monitoring regimes to be used at individual development units to reduce the risk of hazards occurring.
- 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. Chapter N, Section N6.0 identified that this could be secured as a planning condition.

14.6.7 A brief update on the likely effects from potential natural and industrial hazards in relation to the IAMP ONE Phase Two site is set out, below.

Geophysical Hazards

14.6.8 Chapter J of the 2018 IAMP ONE ES ruled-out the scope for mine-related accidents;

Section J4.4 notes that the IAMP area is at some distance from coal seams, shallow mine workings, surface mining, or mine entries are all at least 2 km away, though the Site is underlain by deep underground workings. Section J5.3 of the 2018 IAMP ONE 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 investigation as part of any ongoing works, in addition to any SI carried out for a specific development plot would also be able to be used to inform the risk to development.

Flooding

14.6.9 An FRA has been undertaken for the proposed development and concludes that, with mitigation in place, the risk of flooding (be it from surface water, groundwater or sewers) ranges from low to very low. As such, the likelihood of flooding resulting in a major event at the Site is considered to be **Very Low**.

Extremes of Weather

14.6.10 Extremes of weather have the potential to result in environmental damage, including the potential for damage to containment or storage structures (e.g. from falling objects) resulting in the release of potential contaminants. It is anticipated, however, that buildings, site layouts and installations will 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 **Very Low**.

Lightning Strikes

14.6.11 Lightning strike has the potential to give rise to fire or damage structures and infrastructure (including electrical systems) and the likelihood of lightning strikes increases with increased temperatures. Buildings and infrastructure can, however, be protected (using BS EN 62305) so as to reduce the risk of damage by ensuring that 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 Failures

14.6.12 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 limited considerably via the use of work plans, method statements, risk assessments, regular checks / maintenance and other good practices.

14.6.13 While 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

14.6.14 Any failure of storage tanks and / or bunds risks the release of contaminants into the environment. As above, however, provided that regular checks are undertaken on these, the risk of such failures occurring can be reduced to **Very Low** to **Negligible**.

Leaks / Spillage of Fuel

14.6.15 This could potentially result in the release of 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, risk assessments and containment measures provisions 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)

14.6.16 Fire within industrial buildings may occur from a range of factors, including human error, the incorrect use of equipment or from machinery overheating. A site-specific fire strategy is being developed for the proposed development at the site.

14.6.17 As with the other aspects, providing that measures are in place to limit the risk of this occurring (e.g. regular maintenance and a provision of fire extinguishers), the likelihood of harm to the environment will be **Low**.

Catastrophic Failure of Plant / Machinery (damaging structures and infrastructure)

14.6.18 Catastrophic failures of equipment should be preventable given good checking and maintenance 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.

14.6.19 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 via the implementation of plans and procedures addressing them. These would encompass regular maintenance of plant and equipment, development of and adherence to method statements, installation of protection systems (e.g. against fire, lightning strikes and so on) and the like.

14.6.20 The vulnerability of the proposed development, both during the construction stage and when operational, to major accidents and disasters, can, therefore, be considered to be **Very Low**.

14.7 Mitigation Measures

14.7.1 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 building (developed on the Site) is occupied, its 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.

14.8 Environmental Permitting

14.8.1 The large-scale use of solvents in the manufacturing processes to be operated in the proposed battery factory will result in the Envision AESC 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.

14.8.2 The factory will 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.
- Noise & Vibration Impact.

14.8.3 Envision AESC is aware of its responsibilities and will ensure that that the plant will use Best Available Techniques (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.

14.8.4 Given that the scale and nature of the processes to be operated in the battery factory have no direct current comparator in the UK, Envision AESC is currently holding discussions with the Environment Agency to agree the correct interpretation of the EP Regulations for the factory. The discussions will affect who the responsible regulatory authority will be for the factory under the EP Regulations (either the Environment Agency or the Local Authority) but the requirement to implement BAT processes and management techniques will not be affected.

14.9 Residual Effects

14.9.1 With the appropriate mitigation measures in place, **no Significant effects** are anticipated.

14.10 Cumulative Effects

14.10.1 The assessment of the vulnerability of the project to major accidents and disasters has, of itself, considered the interaction between the different aspects of the environment and the proposed development. This concluded that the vulnerability of the project to this is Low and, as such, no further assessment of intra-cumulative effects is required.

14.10.2 In considering the potential for the project, in combination with the development of the wider IAMP site (i.e. IAMP ONE and IAMP TWO), to give rise to an increased risk of major accidents and disasters, it is assumed that the findings of the 2018 ES (Chapter N) for the IAMP ONE area will be applicable to the IAMP TWO area. As noted above, the potential for UXO within the development area is considered to be low and would be considered within the CEMP developed for the onsite construction works. The IAMP ONE 2018 ES (Table N4) identified the potential for up to moderate effects on the vulnerability of the development to both natural and industrial hazards. These hazards, however, would be addressed through the preparation of operational management plans, emergency preparedness and response plans. As such, any residual effects would be Not Significant. The combination of the Site with the wider IAMP ONE and IAMP TWO development areas, given the proposed mitigation, is not considered to result in any significant adverse cumulative effects with regard to the vulnerability of the proposed development to major accidents and disasters.

14.10.3 In relation to the potential 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). On this basis, no further inter-cumulative effects have been assessed.

14.11 Assumptions & Limitations

14.11.1 This assessment assumes that:

- The findings of the 2018 ES (Chapter N) for the IAMP ONE area will be applicable to the IAMP TWO area.
- Current industry best practice / procedures discussed above will be adopted and applied.

14.11.2 No limitations to the assessment have been identified.

14.12 Conclusions

14.12.1 From the above assessment, it can be concluded that, with appropriate measures in place 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) in accordance with the COMAH regulations, the effect can be considered to be **Very Low** and **Not Significant**.