Rocket Factory Augsburg Assessment of Environmental Effects Public Consultation Responses

Summary of matters raised	Summary of how the matter has been addressed in the AEE and/or licence
Overall Environmental Impacts Respondents have commented that RFA's AEE does not consider all possible environmental effects thoroughly enough and including potentially negative impacts on the local wildlife.	The RFA AEE considers the potential environmental effects of the Applicant's intended activities and includes the information reasonably required to assess and reach a decision on the likely significant effects, from the proposed activities, on the environment. Effects of RFA's operations from SaxaVord spaceport on wildlife (ornithology, terrestrial ecology and marine) have been assessed and are reported in Chapters 5, 6 and 10 of the RFA AEE respectively.
Differences to the planning application Respondents raised concerns that there are differences between these proposals and those which were considered by the council at the planning stage. The main concern is that the RFA ONE NOM launch vehicle is significantly larger (both in height and diameter) and more complex than the launch vehicle proposed in the documents used as part of the planning application. In addition, there was concern that the differences between the proposed launch vehicle at planning stage and RFA's proposals, such as an increase in the number of engines, will lead to an increased impact on the environment across a wide range of receptors. Respondents also raised concerns that the drop zone in the Pacific is outside what was considered within the planning application, as are some of the proposed propellants.	The RFA AEE has been undertaken and is issued as a standalone report in which all effects have been assessed in terms of Proposed Project, including the fact that the RFA ONE NOM launch vehicle is larger than the launch vehicle proposed in the documents used as part of the planning application for the SaxaVord Spaceport (reference 2021/005/PPF) and the RepLV used in the subsequent SaxaVord Spaceport operator licence application (reference SR-APP-001019). Whilst the assessment does refer to, and as relevant include as appendices previous relevant assessments and documents, the RFA AEE has assessed the effects of the RFA ONE NOM launch vehicle specifically and therefore the conclusions of the RFA AEE, which have been drawn independently of the Saxavord Spaceport AEE conclusions, are considered to be valid.
Impact significance	The baseline noise environment in Unst has been characterised by survey and found to be typical of a remote, rural environment with very little anthropogenic noise; this has been taken into account in the evaluation of

Respondents questioned the assessment of effects, noting that any increase in noise is an effect to the people currently living there even if it is not significant, especially given the baseline conditions on Unst.	significance. The proposed project will comprise a limited number of noise events per year, which will result in elevated noise levels for a very short duration. Noise levels will be comparable to other short-duration noise events which may be experienced infrequently by residents of Unst, such as a helicopter passing overhead. Advance warning will be provided before all launches, such that any residents wishing to avoid the noise may choose to be inside at the time of the launch and thereby further reduce their exposure. Noise impacts will therefore be limited and have been assessed as not significant.
Visual Impacts A respondent had concerns on the visual impact to the Lamba Ness headland, its natural beauty and wildlife.	As discussed and agreed with the CAA during the RFA AEE preparation stage; due to the fact that the RFA ONE NOM Launch Vehicle is only 10 m longer than the RepLV limiting case launch vehicle assessed for the SaxaVord Spaceport AEE and there are no material changes to the SaxaVord Spaceport infrastructure required for the proposed activities, it is considered that no further assessment of landscape, seascape and visual impact for RFA's proposed activities is required on top of that previously submitted in the SaxaVord Spaceport AEE. As such Landscape and visual assessment has not been considered further in the RFA AEE. A letter further detailing the reasoning for this position is included in Appendix 2.1 of the RFA AEE and the SaxaVord Spaceport AEE Landscape, Seascape and Visual Impact Chapter has been included for reference as Appendix 2.2. Effects of RFA's operations from SaxaVord spaceport on wildlife (ornithology, terrestrial ecology and marine) have been assessed and are reported in Chapters 5, 6 and 10 of the RFA AEE respectively. Effects have been assessed as not significant.
Local Transport Impacts Respondents have raised concerns over transportation of the rockets and propellent to the site (including how it is transferred to the island and how	As stated in Chapter 3 of the RFA AEE, the component parts of the RFA Launch Vehicles and all associated commodities and payloads will be transported to SaxaVord Spaceport in standard road containers. Propellants and fuels will be delivered by ISO tanker/container lorries by road. No

it is managed), and of the increased visitor numbers, and the impact of both on local roads and ferries (including ferry capacity). They queried whether commercial ferries could be used instead of the Bluemull ferry, and taken straight into Baltasound.	oversize loads are proposed and the transportation of the rockets and propellent to the site is within the boundaries of the transport activities previously assessed and accepted in the SaxaVord Spaceport AEE. In regards to potential increases in visitor numbers, section 7.8.2 of the RFA AEE highlights that a Spectator Traffic Management Plan has been developed for the SaxaVord Spaceport to avoid congestion and encourage sustainable transport choices. Visitor management is the responsibility of the Spaceport Operator. The planning application for SaxaVord Spaceport was lodged with Shetlands Islands Council in January 2021 and planning permission granted on 30 March 2022 (planning reference number 2021/005/PPF). This included as Chapter 9 of the Environmental Impact Assessment an assessment Traffic and Transport effects.
Employment A respondent had concerns on the quality of jobs available for the local population.	Employment generated by the SaxaVord Spaceport falls under the assessment of effects of the Spaceport itself; rather than individual Launch Operators. The planning application for SaxaVord Spaceport was lodged with Shetlands Islands Council in January 2021 and planning permission granted on 30 March 2022 (planning reference number 2021/005/PPF). The Environmental Impact Assessment Report submitted with the planning application included as Chapter 14 an assessment of the socio-economic impact of the Spaceport and this work was referenced again in the SaxaVord Spaceport AEE which stated in Chapter 4 that during operation of the spaceport, "*beneficial economic impacts are expected to arise from employment associated with the operation of the spaceport. Three highly skilled jobs are anticipated which relate to operation of the proposed project, as well as supporting roles. It is anticipated 98 jobs are to be supported by full operation of the proposed project, 63 expected to be based in Unst and 35 elsewhere in Shetland Islands.* Further, paragraph 4.9.29 identified a list of wider, less quantifiable benefits such as diversifying the economic base of Unst and the Shetland Islands, and offering new career paths for young people.

	As discussed and agreed with the CAA during the RFA AEE preparation stage; due to the fact that Launch Vehicle height aside, the Proposed Project is within the limiting case envelope assessed for the SaxaVord Spaceport, it is considered that no further assessment of population effects (including employment) for RFA's proposed activities is required on top of that previously submitted in the SaxaVord Spaceport AEE. A precis of the SaxaVord Spaceport population effects chapter, updated to reflect how the Proposed Project sits within the wider SaxaVord Spaceport assessment, is included as Appendix 2.3. The SaxaVord Spaceport AEE Population and Human Health Chapter has been included for reference as Appendix 2.4.
Launch Day Impacts A respondent raised concerns that local residents would be prevented from going about their business on launch days.	Launch exclusion zones and spectator management are the responsibility of the Spaceport Operator rather than individual Launch Operators. The planning application for SaxaVord Spaceport was lodged with Shetlands Islands Council in January 2021 and planning permission granted on 30 March 2022 (planning reference number 2021/005/PPF). This included as part of the submission an assessment of effects on traffic and transport and concluded that effects were not significant. A Spectator Traffic Management Plan has been developed for the SaxaVord Spaceport to avoid congestion and encourage sustainable transport choices around launch days.
Incidents Respondents had concerns over incidents related to spaceflight operations, including possible crash or explosion shortly after launch that could impact on nearby land/homes, or the contamination that will cause.	Under section 2 of the Space Industry Act 2018, the regulator (in this case the CAA) must carry out its functions relating to spaceflight activities with a view to securing the health and safety of members of the public and the safety of their property. This duty has primacy over the other matters that the regulator must take into account in exercising its functions. Matters relating to significant damage and loss of life to humans fall outside the scope of the AEE but have been considered by the CAA as part of the Safety Case in the licensing process. Incident response planning for the Spaceport as a whole is necessarily the responsibility of the Spaceport Operator, rather than individual Launch

	Operators. An Emergency Response Plan (ERP) has been developed as part of SaxaVord Spaceport's Safety Case and sets out the arrangements for dealing efficiently with an emergency incident in connection with launch and hazardous operations in support of a launch. RFA will work with SaxaVord Spaceport and adhere to all safety and incident response procedures. Chapter 9 of the RFA AEE considers the environmental effects of potential accidents and disasters associated with RFA operations from SaxaVord Spaceport. Accident and disaster events taken forward for assessment are summarised in Table 9.2.
Air Quality Impacts A respondent has concerns that potentially not all the fuel is burnt during launch and of chemicals/fuels reaching the local population. A respondent highlights the RFA launch vehicle is larger than in the SaxaVord planning documents potentially resulting in more pollutants in the air.	Launch vehicles are fuelled precisely in order to minimise weight at launch and therefore residual fuel will be minimal. All launches will take place from Launch Pad 1 at the SaxaVord Spaceport and will be in a northerly direction over the sea. A bespoke air quality assessment has been undertaken as part of the RFA AEE. Air Quality effects from the specific fuels/propellants required for the proposed activity have been assessed in Chapter 7, which covers: ➢ potential for emissions from traffic associated with operation of each RFA ONE NOM launch to cause significant effects at ecological sites and receptors relevant for human health; and ➢ potential for emissions from each RFA ONE NOM Launch Vehicle to cause significant effects at receptors relevant for human health. There are no airborne pollutants associated with ancillary launch activities considered likely to have any significant adverse effects on important local ecology. Launch emissions are detailed under 7.4.15 to 7.4.25 for the RFA ONE NOM Launch Vehicle. Paragraph 7.12.2 of the RFA AEE confirms that launch emissions are predicted to have no perceptible impact at any identified receptors under prevailing wind directions. The maximum predicted 8-hour concentration of Carbon Monoxide is 0.61% of the Air Quality Standard. Emissions from launches are therefore considered to have an effect of negligible significance on air quality, therefore resulting in no likely significant effect.

Climate Change Respondents highlight the carbon emissions related to launches are adding to Shetland's carbon emissions at a time when the targets aim to decrease emissions, with the RFA ONE NOM launch vehicle being also larger than the representative launch vehicle used to estimate SaxaVord Spaceport's carbon impact. A respondent stated that the greenhouse gas emissions associated with the project are considered significant by the Institute of Environmental Management and Assessment best practice guidance.	A bespoke assessment of climate change effects has been undertaken as part of the RFA AEE and is reported as Chapter 4. The estimated greenhouse gas emissions for each launch of the RFA ONE NOM are 70.6 tonnes CO_2e. Greenhouse gas emissions from launch activities are assessed as a low impact given that they are too large to be considered negligible but do not represent a significant proportion of regional emissions. Whilst it is acknowledged in the AEE that the IEMA guidance notes that any net GHG emission is potentially significant, the small quantities involved with the Proposed Project will not have a significant effect in terms of regional emissions or national attainment of UK Net Zero goals. As such, they are considered to represent no likely significant effect. Data on greenhouse gas emissions and future mitigation will be gathered through a reporting plan requirement of the Launch Operator Licence to be issued by the CAA which will require information on calculated greenhouse gas emissions and progress to reduce greenhouse gas emissions, including implementation of the measures outlined in the RFA AEE.
Impact on Wildlife Respondents have queried whether the impact of bird flu has been considered in relation to the breeding bird populations on Unst, and that there is a risk launch operations may add to existing pressures on breeding bird populations, potentially slowing down or ending their breeding on the island. A respondent highlighted the RFA ONE NOM is larger than the representative launch vehicles used for SaxaVord Spaceport's planning application and negative impact on migratory birdlife. A respondent highlighted potential impacts on otters in the area of the B9087 highway, related to works in that area.	Long term breeding bird populations around the peninsula are being monitored by SaxaVord Spaceport and reported to relevant authorities in line with the planning conditions for the Spaceport. RFA AEE Chapters 5 and 6 covers Ornithology and Ecology and Biodiversity respectively. Potential impacts from the Proposed Project have been assessed, include consideration of the larger launch vehicle size. The assessment concludes that the magnitude of predicted operational effects is either 'no effect' or 'negligible' for all bird species except one, a confidential Schedule 1 species. For this species, minor magnitude operational effects were considered likely to be significant in the absence of mitigation; however, after mitigation (taking the form of habitat management and as agreed with Shetland Islands Council during the planning phase), all residual effects are predicted likely to be not significant. The works on the B9087 highway is not part of the Proposed Project and therefore not relevant to the RFA AEE.

Water Use Respondents have asked about the origin and fate of the deluge water used on the launch pad, and any plans for reuse of the water on the launch pad. This includes concerns being raised about additional water pollution impacts from the larger RFA ONE NOM launch vehicle. Concerns were also raised that water runoff would go into the sea, and a respondent questioned where the contaminated water destined for offsite treatment would go.	The origin and fate of the deluge water is part of the SaxaVord Spaceport infrastructure and will be subject to operational environmental management by SaxaVord Spaceport. The effects of operation of the SaxaVord Spaceport on the local water environment were considered in detail in Chapter 9 of the SaxaVord Spaceport AEE, which confirms that water required for site operation will be sourced from a nearby MoD reservoir or tankered onto site as required. There are no anticipated significant effects on hydrological and hydrogeological receptors from operation of the Spaceport.
Marine Impacts Respondents have raised concerns over debris, Pacific Ocean drop zones, its potential contamination of the marine environment, the potential noise impact on marine life. This includes mention of Shetland and Fair Isle awarded Important Marine Mammal Area status. A respondent has concerns the larger RFA ONE NOM could contribute more debris.	The effects of Proposed Project operations on the marine environment, including debris, has been assessed in detail and is reported in Chapter 10 of the RFA AEE. The chapter considers the potential marine receptors present within the effects range of the predicted impact points from returning RFA ONE NOM Launch Vehicles. Specifically, Chapter 10, paragraph 10.1.4 of the RFA AEE scopes impacts on the Pacific Environmental Zone of Influence (EZI) of the RFA ONE NOM Launch Vehicle may overlap with the Exclusive Economic Zones (EEZs) of other countries. The second stage of the launch vehicle will not be released on any trajectory where it will fall within the Exclusive Economic Zones of any of these nations, unless prior permission is obtained pertinent to the specific launch. Chapter 10, paragraph 10.10.56 of the RFA AEE on direct strikes from debris concludes that though there is a high sensitivity, the combination with a low exposure, and negligible magnitude, means that the risk to ecological receptor populations (seabirds, marine megafauna, and Marine Protected Areas) in the Environmental Zone of Influence from direct strike by the returning RFA ONE NOM Launch Vehicle component is negligible. No likely significant effect.

	In regards marine life, the potential effect of the Proposed Project on water quality and biodiversity have been assessed as having a negligible or minor risk on receptors; resulting in no likely significant effects to marine life.
Noise Respondents have raised concerns on the intrusion of noise from launch activities and impact on seabirds.	Noise effects from the Proposed Project are considered within RFA AEE Chapter 8 Noise and Vibration. The noise assessment concludes that noise during engine tests and launches will be audible at Noise Sensitive Receptors (NSRs) within and beyond the study area and levels will exceed the criterion for community annoyance associated with aircraft noise. However, it is noted that instantaneous noise levels at the closest residential NSRs will be below the threshold at which damage to hearing may occur. The short duration of audible noise 'events' associated with engine tests and launches, their infrequent occurrence and notice provided to the community in advance of launches will reduce the associated levels of annoyance to below that which may be associated with aircraft noise from conventional airports. Accordingly, adverse health effects are not expected. Noise effects associated with launches have therefore been assessed in the RFA AEE as not significant, resulting in no likely significant effect. Section 8.7 of the RFA AEE outlines standard mitigation for noise, including community engagement protocols. The potential impacts of noise and vibration from the operation of SaxaVord Spaceport (including launches) on human receptors are considered in Chapter 8 of the SaxaVord Spaceport AEE. It is concluded that there will be no significant noise effects during the daytime. In regard to night-time launches, of the proposed 30 launches per year, when taking into account the no-launch window agreed between mid-May to the end of June as a mitigation of impact on seabirds, in any one month there may be three or four launches. Given the proposed frequency of launches and the short duration of the noise events associated with launches adverse effects associated with sleep disturbance due to night-time launches are considered to be minimal, resulting in no likely significant effect (paragraph 4.3.9). Potential noise impacts on seabirds are considered in RFA AEE Chapter 5 and Volume IV Appendix 5.2. Noise levels have been predicted at nesting

	locations of sensitive species. The assessment concludes that the magnitude of predicted operational effects is either 'no effect' or 'negligible' for all bird species except one, a confidential Schedule 1 species. For this species, minor magnitude operational effects were considered likely to be significant in the absence of mitigation; however, after mitigation (taking the form of habitat management and as agreed with Shetland Islands Council during the planning phase), all residual effects are predicted likely to be not significant.
Launch Exclusion Zone (LEZ) A respondent commented on Figure 3.1 of the RFA AEE (Launch Exclusion Zone (LEZ) schematic) and advised that there are at least three permanently inhabited properties (and a further one soon to be inhabited property) within the LEZ.	As detailed in Chapter 3 of the RFA AEE, all launches will have an overall northerly direction from the SaxaVord Spaceport. Section 3.7.11 - 3.7.14 of the RFA AEE provides an overview of the Launch Exclusion Zone based on the SaxaVord Spaceport AEE and covers all potential trajectories. The dimensions of the Launch Exclusion Zone for the RFA ONE NOM Launch Vehicles will be detailed fully in an updated RFA ONE NOM Flight Safety Case. Therefore, matters relating to the safety clear zones and exclusion zones fall outside of the scope of the RFA AEE but are considered by the CAA as part of the Safety Case in the licensing process. Under section 2 of the Space Industry Act 2018, the regulator (in this case the CAA) must carry out its functions relating to spaceflight activities with a view to securing the health and safety of members of the public and the safety of their property. This duty has primacy over the other matters that the regulator must take into account in exercising its functions.
Public Access A respondent raised concerns over the lack of public access to the peninsula where the spaceport is located due to permanent fencing.	The RFA AEE makes reference to the fact that whilst the SaxaVord Spaceport will generally be accessible, the public will be restricted from accessing the Proposed Project site during launches, and at all times the launch pads and integration buildings of the SaxaVord Spaceport will be fenced off from public access both to protect against livestock and for security reasons. Public access to the peninsula where the spaceport is located is the responsibility of the Spaceport, rather than individual Launch Operators, and as such is outwith the scope of the RFA AEE.
Explosives Licence	Explosives fall outside of the scope of the RFA AEE but are considered by the CAA as part of the Safety Case in the licensing process.

A respondent has not seen reference to an application for an explosives licence from the Health and Safety Executive.	
<u>Operations at Baltasound</u> A respondent raised concerns over disturbance related to testing activities at the former airport at Baltasound Airport last summer (summer 2023), and that the community engagement protocols were not used to forewarn the community of the activities to minimise the potential for annoyance.	This response is in reference to Baltasound Airport, not RFA operations at SaxaVord Spaceport, and as such is not applicable to the RFA AEE.