

An Bord Pleanála
64 Marlborough Street
Dublin 1

Wednesday, 6th July 2022

Dear Sir/Madam,

RE: STRATEGIC INFRASTRUCTURE DEVELOPMENT APPLICATION FOR EXPANSION OF THE BAUXITE RESIDUE DISPOSAL AREA AT AUGHINISH ALUMINA LIMITED, IN THE TOWNLANDS OF AUGHINISH EAST, AUGHINISH WEST, ISLAND MAC TEIGE, GLENBANE WEST, AND FAWNAMORE AT OR ADJACENT TO AUGHINISH ISLAND, ASKEATON, CO. LIMERICK

An Bord Pleanála Ref: ABP-312146-21

Response to Submissions

1.0 Introduction

Tom Phillips + Associates¹ have been instructed by the Applicant, Aughinish Alumina Limited² (AAL), to submit a response to a number of submissions received from third parties in relation to the expansion of the Bauxite Residue Disposal Area (BRDA) at an existing alumina facility at Aughinish Island, Askeaton, Co. Limerick. This response is submitted on or before the 6th July 2022 as outlined in correspondence received from An Bord Pleanála (ABP) dated 8th June 2022.

2.0 First Party Response to Submissions

We note that submissions have been received from the parties below in relation to the proposed development.

1. Environmental Protection Agency (EPA)
2. Development Applications Unit, Department of Housing, Local Government and Heritage (DAU)
3. Transport Infrastructure Ireland (TII)
4. Mary Kate Bolger
5. Environmental Trust Ireland (ETI)
6. Futureproof Clare (FC)
7. Cappagh Farmers Support Group (CFSG)

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² Aughinish Island, Askeaton, Co. Limerick.

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TOWN PLANNING CONSULTANTS



We provide a response to the issues raised in the submissions below where it is considered appropriate to do so. We note that where similar issues arise in a number of submissions it is not the intention to address these items multiple times throughout but would refer back to the initial response below where that issue arises.

Environmental Protection Agency (EPA)

We note the submission of the EPA in relation to the proposed development (dated 24th May 2022). In relation to this submission, we would like to clarify that the licence review application Ref. No. P0035-08 is currently with the EPA and incorporates the proposed development seeking permission from ABP and it is not required or intended to update the licence review application further to the details already submitted as part of the planning application.

Development Applications Unit (DAU), Department of Housing, Local Government and Heritage

The DAU submission recommends that mitigation measures outlined in Section 5.5 of the EIAR should be implemented and notes that there are no works proposed within any designated areas.

Transport Infrastructure Ireland (TII)

TII state that they have no specific comment to make in relation to the subject development in terms of impacts relating to the safe and efficient operation of the national road network in the vicinity of the site.

Mary Kate Bolger

Mary Kate Bolger, the guide / operator of Dolphinwatch, Carrigaholt has made a submission highlighting her concerns in relation to the potential for the proposed development to impact upon the population of Bottlenose Dolphins in the Lower River Shannon SAC.

It is stated in the Natura Impact Statement (NIS) which accompanied the planning application, that Bottlenose Dolphins are largely concentrated near the mouth of the Shannon estuary and are infrequently present upstream of Glin (Rogan *et al.* 2018), c. 15km west of the subject site.

A number of claims are made regarding the exposure of the dolphins in the Shannon Estuary to bauxite residue either through ground or air via dust. These claims are strongly disputed. It is also noted that commentary in relation to dolphin health presented in the observation do not directly relate to operations at AAL but rather to the general operation of industry in general.

The scientific literature does not support such an assertion. For instance, a recent publication based on a long-term study of this dolphin population found that the overall adult survival rate for the Shannon population (0.94 ± 0.001 SD) is comparable to those reported from other



bottlenose dolphin populations in temperate regions (Ludwig *et al.* 2021). The population has been studied intensively for almost 30 years and in this time the population has remained relatively stable, with a marginal increase in overall abundance of individuals from 1996 to 2018 (Rogan *et al.* 2018).

As part of the NIS which accompanied the current planning application a Conceptual Site Model (CSM) prepared by RSK Environmental Ltd. considered the available scientific evidence and the fundamental source-pathway-receptor model to evaluate the potential pathways that could connect activities at the subject site and the immediate marine and terrestrial environments. Sampling data indicated that no pathways are being realised that may impact on sediment metal concentrations in the immediate marine environment. The data showed that metal sediment concentrations were in line with the typical background concentrations for the marine environment in Ireland.

The CSM concluded that no pathway for heavy metals has realised an impact on the marine sediments, and hence marine benthic species in the immediate vicinity of the refinery plant. There is no evidence that heavy metals concentrations are elevated in the marine sediments, and consequently no evidence that toxic impacts would occur to the marine benthic biota. These data indicate that there is no pathway from the AAL activity producing a negative impact on the designated prey species of intertidal feeding birds and other higher fauna in the designated estuarine Natura 2000 sites.

Mary Kate Bolger goes on to describe the prevalence of skin lesions on the Shannon population of Bottlenose Dolphins. She has observed that the prevalence of dorsal fin lesions has increased since the beginning of such data collection in 1990. Similar skin lesions have been observed in populations of dolphins from all over the world (e.g. <https://phys.org/news/2020-12-devastating-skin-disease-dolphin-body.html>). Several theories have been put forward, including the influence of declining salinity due to Climate Change (<https://onlinelibrary.wiley.com/doi/abs/10.1111/mms.12731>). There is nothing unique in the Shannon population showing skin lesions and reassuringly, as already stated, the evidence is that the adult survival rate for the population is stable (Ludwig *et al.* 2021), which is in direct opposition to the claim of Mary Kate Bolger that the '*overall health of this population may be declining*'. There is no link between the claims made by Mary Kate Bolger above and ongoing operations at AAL.

Mary Kate Bolger also raises concerns in relation to 'noise pollution' from rock blasting and its potential to impact upon Bottlenose Dolphins. As part of the EPA Industrial Emissions Licence (IEL) review process for the permitted borrow pit at AAL (LCCC Reg. Ref. 17/714; ABP Ref. ABP-301011-18), a specialist in marine mammals, Dr. Daphne Roycroft prepared a Marine Mammal Risk Assessment (MMRA) on the potential impacts of the blasting on Bottlenose Dolphins and other marine mammals. It concluded that there was no risk of likely significant effects on the species arising from noise and vibration impacts from the borrow pit site. Noise and vibration levels of the blast will attenuate quickly, such that they pose no risk to sensitive receptors in the vicinity of the site, and where the nearest Bottlenose Dolphin habitat is located over 1.3km from the borrow pit. That MMRA (Appendix 6.4 of the EIAR) was provided with the reports in support of the Appropriate Assessment (AA) process for the current application.

Mary Kate Bolger highlights the economic benefits of tourism associated with the dolphin population near Carrigaholt. We would concur with her sentiments on the benefits, social, educational and economic from nature-based tourism. We would however, respectfully

submit that the issues raised have been fully addressed in the reports provided in support of the AA and answered herein.

Cappagh Farmers Support Group (CFSG)

It is noted that the Cappagh Farmers Support Group (CFSG) submission repeatedly refers to 'hazardous waste'. For clarity, as per the EU Waste List Category, the bauxite residue (or 'red mud' as referred to) is categorised as non-hazardous waste under European Waste Code 010309.

We can confirm to the CFSG that the height of the BRDA is below 32m above sea level and has been carried out in accordance with the permission granted under Limerick County Council (LCC) Reg. Ref. 05/1836; ABP Ref. PL13.217976. The development of additional bauxite residue storage capacity at the BRDA has been subject to detailed assessment to ensure there are no issues with regard to stability and safety of the proposal. The stability assessment for the BRDA is provided in Appendix D of the Engineering Design Report: BRDA Raise Development (Appendix A of the EIAR refers).

CFSG is incorrect in their assertion that the 'red mud pond' was constructed further to planning permission granted in 1974, and with particular regard to Condition 38 of said permission. The original BRDA was constructed between 1980 and 1982 under PP 15737 which was permitted in 1979. This permission included a superior method of disposal of the bauxite residue involving the thickening of the bauxite residue and increasing its density. This claim by CFSG is entirely inaccurate and is a completely incorrect premise for the following arguments in their submission with regard to the construction of the BRDA over time on this 'base layer'.

CFSG state that *'The approx. 170 Acre unlined [area] has the potential to undermine the embankments from water coming in and out underneath eroding sections of the embankments leaving to huge environmental disaster.'*

In this regard, we refer ABP to the Seepage and Water Quality Assessment prepared by Golder (Appendix H of the Engineering Design Report: Bauxite Residue Disposal Area Raise Development – presented in Appendix A of the EIAR) which concluded that there is negligible seepage through the base of the facility, either in the unlined or lined phases due to the underlying depth of bauxite residue, the characteristics of the underlying estuarine soils and the composite basal lining system (natural and geosynthetic). There is no evidence provided by CFSG in relation to any seepage issues with the BRDA (either lined or unlined parcels), indeed groundwater monitoring carried out at observations wells in the vicinity of the BRDA illustrate that there is no impact to groundwater or to the surrounding environment. This is further discussed in Chapter 10 of the EIAR.

CFSG comment upon the previous ABP permission to provide a Borrow Pit at the site (Limerick City and County Council (LCCC) Ref. 17/714; ABP Ref. ABP-301011-18). The proposed development provides for an extension (in an eastward direction) of the permitted Borrow Pit by c. 3.9ha.



Two production blasts have been conducted to date at the permitted borrow pit on foot of (LCCC) Ref. 17/714; ABP Ref. ABP-301011-18 (on 17 June 2022 and on 28 June 2022). The monitoring data has returned values in compliance with the licence requirements (IEL P0035-07) for vibration and air overpressure and with the threshold criteria and response framework detailed in the Borrow Pit: Phase 1 BRDA, Blast Vibration Assessment (Golder 2017). The monitoring has been conducted by Golder-WSP, the AAL BRDA and Environmental Teams and the Borrow Pit Contractor Blast Team and has been constantly attended by representatives from Golder-WSP and Gas Networks Ireland.

No adverse effects have been identified for the BRDA, the gas transmission pipeline or for local residences as a result of the two blasts, which are located at the southern extent of the Borrow Pit and at the nearest distances to the BRDA. The monitoring data from the initial blast for the permitted Borrow Pit has been utilised to calibrate the model and will be continually refined following each subsequent blast to determine the maximum instantaneous charge (MIC) weight to remain compliant with the established thresholds during the development of the permitted and proposed Borrow Pit. The Borrow Pit Extension is at a greater distance from the BRDA over that already permitted.

CFSG also query whether there is any certification *'that can vouch for the stability of these structured embankment walls'*. All necessary certification of the structural stability of the BRDA is recorded and reported in accordance with conditions associated with Schedule C7 of the EPA Licence.

It is also raised that given the proposed increased height of the BRDA there will be greater impact to health of the community from dust blown from the BRDA. We refer to the Air Quality chapter (Chapter 11) of the EIAR which evaluated a number of fugitive dust emissions scenarios that assessed the increased height of the BRDA at different stages. The Human Health Assessment considered these scenarios in its assessment and adverse impacts were not predicted as a result of the proposed development.

It is also stated that there is no breakdown of what is contained in the bauxite residue and the impacts associated with this on public health. It is noted that a detailed composition of both the bauxite residue and the salt cake is contained within the EIAR and particular emphasis and assessment has been had to this in terms of potential impacts on human health in the *Human Health Assessment for Bauxite Residue and Salt Cake* which forms Appendix 7.3 of the EIAR.

In response to quotes attributed to Mr. Michael Archambo, it is noted that the constituents of bauxite residue and salt cake were evaluated in the Human Health Assessment, along with cancer and non-cancer health effects following inhalation of such substances on the population. It is also noted that all chemical and NORM (Naturally Occurring Radioactive Materials) have been addressed in detail in the Human Health chapter of the EIAR.

CFSG also outline their objection to the extension of the Salt Cake Disposal Cell (SCDC) within the BRDA as *'it is a very dangerous hazardous waste product... to blow in the air and leave the Plant out on to the communities...'*. Again, we refer to the Human Health Assessment and the Air Dispersion Modelling carried out as part of the EIAR which demonstrates there is no issue in this regard.

CFSG also query as to whether bauxite residue will be used in the final closure of the SCDC. The closure details for the SCDC are illustrated in Appendix A of the Engineering Design Report

and shown in the set of SCDC raise drawings (Dwg. Nos. 14a-14f refer). It is also reinforced that the handling and deposition of salt cake from the facility to the SCDC is done so having regard to best practice in health and safety, which are detailed for specialist operatives doing this work.

CFSG make an entirely inaccurate statement that *'...red mud was 40 feet below land surface...'*. Deposition of bauxite residue within the BRDA commenced at the existing land surface elevation and at no time was deposited 40 feet below this level. The following argument outlined in the submission, based on the premise of dust blown from this elevation, is just entirely incorrect as the scenario never arose in the first place. The article provided in the observation relating to an incident at a farm in Co. Mayo clearly states that following an investigation by the EPA and comparison of the samples taken at the farm and from the AAL BRDA, there was no link. Another unsupported claim is made in relation to the ceasing of milk production on a farm due to heavy metals but no evidence is provided to support the assertion nor any link provided to operations at AAL.

The submission refers to the history of the lands that the BRDA is located on and states that local historians note this is a tidal area (no reference provided). As is clearly evidenced in Chapter 5 of the EIAR, the First Edition Ordnance Survey Map of 1840 details that the site was a network of irregular fields at that time with a number of structures throughout. Any reclamation works for these lands were therefore carried out prior to this era. The Office of Public Works completed drainage and enhanced tidal protection embankments at the area in the early 1960's, well before the facility was developed on site in the late 1970's and early 1980's.

CFSG states that the outer walls (tidal protection embankments) are being eroded and sections coming away. AAL carries out routine maintenance works to the embankments on an ongoing basis and that similar embankments exist along the estuary such as at locations near Shannon Airport and Foynes Port. It should also be noted that this embankment does not form part of the containment infrastructure for the BRDA but notwithstanding this, AAL monitors the structure and maintains this on an ongoing basis.

CFSG also raise concerns with regard to the extent of areas on the Shannon which may be covered in water in the next 10 years and refers to an unreferenced map in this regard. Section 17.4.2.1 of the EIAR, outlines that climate change has the potential to alter weather patterns, increase sea levels and increase the frequency of rainfall. A detailed risk assessment, entitled *"Risk Assessment & Break-Out Study for the Bauxite Residue Disposal Area (BRDA)"* (Golder Associates Ireland Ltd 2019) and the 2021 Engineering Design Report Appendix G Breach Analysis has been undertaken as part of this EIAR and is included as part of Appendix A of the EIAR for a number of potential risks taking into account the impact of climate change on sea levels and increased rainfall amounts. The risk assessment found that, after allowing for the potential effects of climate change, the risk associated with a containment breach or bauxite residue release was either highly improbable or very unlikely.

In addition, as outlined in Section 17.4.2.1 of the EIAR, Chapter 10 (Hydrology) has investigated the likelihood of flooding and has found that there is no current or predicted flood risk (either pluvial or coastal) for the Site. Thus, in line with the methodology outlined in Table 17.1, Table 17.2 and Table 17.3 of the EIAR, the likelihood of extreme weather and flooding leading to a containment breach or bauxite residue release was assessed to be of

very low likelihood and with a moderate to high adverse effect leading to a finding of low risk and thus a non-significant impact.

CFSG also seem to suggest that there is a viable alternative currently to depositing the bauxite residue within the BRDA and that the lack of storage such as this will not impact the operation of the plant or the significant economic benefits it provides for the region. We refer to the Examination of Alternatives chapter of the EIAR where alternative disposal techniques, recovery and re-use options have been considered. AAL provides a total of 482 No. jobs directly and a further 385 No. maintenance and installation contractor employees with its operation activities and those of its supply chain generating €130 million in value for the Irish economy. In the event that additional storage for bauxite residue cannot be provided on site, there is a significant risk for the future viability of the facility post 2030 with the knock-on impacts that would be felt by the economy of the region.

CFSG object to the proposed extension of the permitted Borrow Pit by a further 3.9ha. It should be noted that the permitted Borrow Pit development (which has recently commenced as per earlier discussion) is located closer to the BRDA than the proposed extension and has already been considered by Limerick City and County Council (LCCC), ABP and the EPA as appropriate. The Borrow Pit extension will further secure the rockfill requirement associated with the proposed BRDA raise and is considered to be a more environmentally sustainable approach to obtaining rockfill immediately adjoining the location where it is required which will also eradicate heavy goods vehicle (HGV) rockfill movements from external sources. This will also serve to provide future security of supply from within the site and not have to rely on external quarries.

Again, it is submitted that this group have, despite what is stated in their submission, not provided any scientific evidence of the claims in relation to the blasting of rock at this location. The proposed quarrying of rock has been carefully considered within the EIAR and is proposed further to permission already being established by all relevant competent authorities for blasting in closer proximity to the BRDA that is currently sought. Furthermore, again there are inaccurate comments from CFSG in relation to the LCCC Opinion on the proposed development in which they claim serious reservations have been raised – this is clearly not the case. LCCC recommended that they were satisfied to grant permission for the proposed development, pending clarification on 2 matters.

- *Clarify status of groundwater vulnerability at the proposed borrow pit extension and proximity to groundwater table:* Section 10.6.10.2 of Chapter 10: Soils, Land and Geology of the submitted EIAR discusses the groundwater contours for the site as recorded by the monitoring wells for January 2021 and July 2021 (Figures 10.19 and 10.20).

Figure 10.22 provides a zoom-in map for the groundwater contours in Borrow Pit and Borrow Pit Extension footprints for July 2021. Monitoring wells BH1, MW05, MW06 and MW07 are present within the Borrow Pit Extension footprint and provide the data for the elevation range of the groundwater in this area. The groundwater elevation range for BH1 for 2021 is 5.033 mOD to 8.073 mOD and the groundwater elevation range for MW05 to MW07 is 1.604 mOD to 4.976 mOD. Extraction is therefore proposed above the groundwater table.



- *Clarification in relation to the status on Meadow Barley:* It is confirmed by Ecology Ireland Ltd. that Meadow Barley is not present within the application footprint but elsewhere on the island and that Borrow Pit extension area is dominated by scrub habitat and there is no potential for Meadow Barley to occur in that area.

It is also queried in the submission as to what will happen with the *'...9 hectares of a hole when the rock is taken out'*. We refer to the Landscape Masterplan prepared by Brady Shipman Martin and the closure plan detailed in the EIAR / Engineering Design Report which illustrates that the Borrow Pit floor will be planted and landscape pockets created in localised areas.

Environmental Trust Ireland (ETI)

Environmental Trust Ireland (ETI) makes a number of points in its observation. ETI makes, in its introductory section, an assertion that significant effects on the qualifying interests of the River Shannon and River Fergus Estuaries SPA and Lower River Shannon SAC cannot be ruled out on the basis of the documentation submitted by the applicant. We disagree entirely with this statement.

ETI's observation goes on to refer to an instance of failure of containment that occurred in Ajka, Hungary, claiming that *'similar spontaneous, unpredicted or uncontrolled release with devastating environmental consequences is entirely foreseeable for Aughinish'*. It is highlighted that the method of bauxite residue storage at AAL is entirely different to that which was carried out at Ajka, where an older technology was used called 'wet ponding'. AAL utilises the 'dry stacking' system of bauxite residue disposal which is in accordance with the Best Available Technology (BAT) with EU BREF Management of Waste from Extractive Industries. This method ensures that there is a negligible amount of fluid in the bauxite residue and therefore it cannot become 'mobile' and flow as occurred at Ajka.

The event in Hungary was indeed tragic and damaging to the environment. The proposed development has been subject to detailed environmental impact assessment and the potential risks to the receiving environment have been thoroughly assessed. ETI's contention that the proposed development *'will further exasperate the environmental, human and animal health toxicity problems correlated with Aughinish Alumina production facility'* is not supported by evidence. Neither would any such claimed relationship imply causation in the absence of scientific evidence.

ETI state that no radiological assessment has been carried out since 2008. Section 8.6.9 of Chapter 8: Soils, Land and Geology of the submitted EIAR provides an update to the 2008 radioactive assessment undertaken by Radiological Protection Institute of Ireland (RPII). AAL undertook additional radioactive assessment of the bauxite residue and process sand during 2021. Two samples of bauxite residue (composite samples from Q3 2020 and Q4 2020) and one sample of process sand (composite sample produced during 2020) were tested via alpha- and gamma-spectrometry for the presence of thorium and uranium isotopes at the Socotec Laboratories in Oxfordshire, UK. The 2020 test results returned values comparably with and slightly lower across the board with the previous RPII 2008 assessment. As such, the BRDA does not present a radiation hazard to either site operatives, visitors or the surrounding environment.



ETI's observation claims that groundwater monitoring revealed 'excess amounts' of arsenic and mercury. The groundwater monitoring at the site is described in detail in the EIAR and in Section 6.9 of the NIS. A detailed assessment of the risks to groundwater arising from the operational and post-closure phases of the proposed development was carried out. With the implementation of the mitigation measures presented in the EIAR (and CEMP) the predicted residual impacts on groundwater was assessed as negligible non-significant/slight in nature. As part of the NIS which accompanied the current planning application a Conceptual Site Model (CSM) considered the available scientific evidence and the fundamental source-pathway-receptor model to evaluate the potential pathways that could connect activities at the refinery plant and the immediate marine and terrestrial environments. Sampling data indicated that no pathways are being realised that may impact on sediment metal concentrations in the immediate marine environment. The data showed that metal sediment concentrations were around the typical background concentrations for the marine environment in Ireland.

ETI also refer to the use of a 'completely arbitrary Zone of Influence of 15km' in the reports in support of the AA process. The context for using 15km for illustrative purposes is detailed as follows in Page 26 of the reports in support of the AA, which is a standard approach, following national and international guidance.

"We present below a summary of the screening process of Natura 2000 sites where likely significant effects might potentially occur, in the absence of mitigation. We have set the study area to a nominal 15km offset from the facility boundary. This is an arbitrary distance typically used for illustrative purposes (e.g. DoEHLG 2009). The potential for impacts upon more distant designated sites is considered in the event that any likely significant effects are identified in relation to these distant sites during the assessment process."

ETI's observation proceeds to state that likely significant effects on a number of sites were improperly ruled out at Screening Stage. No evidence or support is offered as a basis for this claim. The final sentence of this Point claims that cumulative and in combination effects were not properly considered or at all. This is incorrect, as the potential for cumulative and in combination effects is considered in detail in the reports in support of the AA process (e.g. Section 5.2.8 of the NIS).

There is also an unsupported assertion that 'no adequate or proper assessment has been conducted under the Habitats Directive or under the Environmental Impact Assessment Directive of the impact of the water and air emissions on ecosystems, species or European sites'. This is completely inaccurate. Chapter 6 (Biodiversity) of the EIAR presents considerable detail on the flora, habitats and fauna in the receiving environment and a thorough consideration of the potential environmental impacts of the proposed development on ecology and designated sites. The reports provided in support of the AA process (including the NIS) contain a detailed analysis and assessment of the potential sources of emission.

ETI suggest that the Applicant is applying for development on the site in a piecemeal manner and the proposal '...constitutes project splitting contrary to EU law'. This represents an incorrect understanding of 'project splitting' which, in essence, involves dividing up projects in order to avoid carrying out an environmental assessment. The subject application (and most recent EPA Licence review) both incorporated EIAR and AA and therefore clearly in accordance with EU law. It is also submitted that the planning applications and licensing

applications, recently granted and being sought, are entirely appropriate and are being implemented to ensure the continued successful operation of the facility.

ETI's observation states that the AA assessment and the EIAR are rendered '*defective and fatally flawed*' due to what is claimed to be an inadequate consideration of the potential for cumulative and in-combination effects arising from certain activities, in particular the oil-fired power station at Tarbert and Irish Cement facility at Mungret. Both of the sites mentioned are distant from the proposed development with the power station c. 20km and the Mungret plant >24km from the application site. It is not correct to state that these are excluded as both of these plants are existing and it is considered that the operation of these plants would be picked up in the relevant baseline data assessed in the EIAR. The potential for cumulative and in-combination effects is considered in detail in the EIAR and reports in support of the AA process. All relevant national and EU Guidance on the preparation of the EIAR and documents in support of the AA process have been followed.

ETI states that the EIAR is inadequate and not in accordance with the 2014 EIA Directive but without providing support for this. As detailed in Chapter 1 of the EIAR, the EIAR has been prepared having regard to the EIA Directive 2014/52/EU and with reference to all the relevant guidance documents as detailed in Section 1.7 of the EIAR. It is also claimed that the proposed development does not comply with the Aarhus Convention with regard to public consultation. In addition to the public submission period for the planning application, which ETI has availed of, further public and prescribed body consultation has been undertaken as part of the EIAR which is detailed in Section 1.9 of the EIAR.

ETI raises concerns in relation to quarrying at the subject site which has been addressed earlier in this document. It is noted however that 2 No. blasts have been recently completed at AAL for the already permitted Borrow Pit which have confirmed there was no adverse effects. ETI also raises the issue of COMAH in relation to the subject site and the SCDC. As detailed in Chapter 16 of the EIAR, the AAL Facility is not deemed to be an establishment subject to the COMAH Regulations 2015, i.e. it is not a Seveso site.

ETI claim that the applicant has '*failed to address or properly address the impact of climate change on the proposed development*'. This is incorrect - the potential for flooding and other climate change related impacts are considered in the EIAR (e.g. Chapter 17 of the EIAR) and that part of the EIAR engages with the topic of climate relative to the proposed development.

ETI also make a factually incorrect statement that '*Leachate and run off from the hazardous salt cake disposal cell and bauxite residue disposal area into the estuary and the groundwater has not been properly considered in any aspect of the planning documentation*'. This is inaccurate, section 10.6.8 of Chapter 10: Soils, Land and Geology of the submitted EIAR discusses the BRDA water management system for the proposed development.

The BRDA is surrounded by the composite lined perimeter interceptor channel (PIC) which collects all waters emerging from the BRDA (bauxite residue slurry bleed water, surface water runoff, sprinkler water and seepage) and transfers the free water by gravity to the pumping stations. The pumps convey the waters either to the effluent clarification system (ECS) located in the Plant or to the storm water pond (SWP), which is also composite lined.

The SCDC is an independently compositely lined cell located within the BRDA. The waters inside the SCDC comprise dissolved salt cake (caustic liquor leachate) which are diluted by the



rainfall catchment of the cell. The drainage of its internal catchment i.e., inside the lined crest, is via the perforated decant tower located in the north-east corner of the SCDC. A decant pipe is located at the base of the decant tower, where the waters flow by gravity to the storage tank installation located to the north and at a lower elevation than the SCDC (to the south-west of the SWP). The waters are then pumped to the Plant for caustic recovery.

The drainage of its external catchment i.e., the areas downstream of the lined crest comprising the access ramp, the access roads on the crest of the dam walls, the crest of the tipping wall and the downstream slopes of the dam walls, emerges at the toe of the rock fill slopes onto the surrounding bauxite residue and follows the same trickle-down flow path (as for other waters emerging from the BRDA) through the rock fill stage raises or via the installed collector drainage pipes, to the PIC. Section 6.8 of the NIS also presents a detailed consideration of emissions to "Surface Water, Transitional Water and Marine" environments. The groundwater monitoring at the site is described in detail in the EIAR and in Section 6.9 of the NIS.

The ETI's observation concludes by reiterating the assertion that *'the proposed development poses serious environmental and human health risks, is detrimental to the integrity of the European sites and is contrary to the proper planning and sustainable development of the area'*. This concluding statement is rejected. It does not acknowledge the detailed analysis and data in relation to environment, health and protected areas that are included in the application and in the supporting EIAR and NIS.

Futureproof Clare (FC)

Futureproof Clare (FC) expresses concern with regard to rock blasting at the subject site and possible impacts on the adjoining BRDA. As highlighted earlier in this response, the competent authorities have already granted planning permission and an EPA licence with respect of the operation of a Borrow Pit which is closer to the BRDA than the extension proposed under this application. We address a number of specific points raised in relation to blasting in this submission below.

FC state that *"The EIAR (2021) of the proposed development in Aughinish concludes that the probability of the BRDA failure resulting in containment breach and release of bauxite residue is in the range Very Unlikely to Almost Impossible, based on the possible events such as:*
[...]

- *Fire and explosion events due to plant and work activities causing borrow pit face collapse and representing a threat to groundwater quality;*
- *Inadequate borrow pit design causing borrow pit face collapse;*
- *Seismic events causing borrow pit face collapse; and [...]*

These points are not supported or are even contradicted in the rest of the report."

The 'possible' events listed are extracted from Section 16.5.4.2 of Chapter 16: Major Accidents and Disasters of the submitted EIAR which discuss hazard and consequence identification for the BRDA and Borrow Pit Extension. These hazards and consequence are discussed and assessed in Section 16.8.2. The 'possible' events listed in the observation relate solely to the Borrow Pit Extension and do not pose a threat to the BRDA.

FC state that "Upstream design consists of those dams where new levels of the raises of the dam are built on top of previously deposited tailings. This method is particularly dangerous because the underlying tailings can liquify and collapse, giving way for the whole structure to topple (Earthworks)".

This statement is strongly disputed and does not engage with or acknowledge the detailed analysis in the EIAR. The liquefaction assessment and the stability assessment for the BRDA are provided in Appendix C and Appendix D, respectively, of the Engineering Design Report: BRDA Raise Development. The section titled 'Alternatives to tailings dams' in Earthworks 2019 lists Filtered Tailings (sometimes called dry stack) as an alternative to conventional tailings dams. The AAL layered deposition and mud-farming techniques for bauxite residue replicate this Filtered Tailings process in the field; i.e., the moisture content is reduced, and the density is increased via compaction by plant. The characteristic Dry Density-Moisture Content (DD-MC) relationship for AAL bauxite residue is > 95% of the Standard Proctor compaction and has a firm to stiff consistency.

FC states that:

"However much more alarming is the extension of the borrow pit, adjacent to the deposits of red mud, and the ongoing explosions that will be taking place in order to expand it, which classify as explosion events and cause seismic activity".

'.. the need for parameters [k and b values] to be accurate and site specific, joined with the impossibility to find reliable parameters and the utilization of the parameters from a different mine altogether, point out the fact that the results are not to be trusted ...'

'The distances [set-back distances from blasts at the Borrow Pit to the BRDA embankments and the GNI gas transmission pipeline] can be easily breached, and the margin of error has not been considered".

The BRDA Raise application relates to an eastern extension of the currently permitted Borrow Pit which has already begun to be developed as of 17th June 2022. The monitoring data from the two initial blasts for the permitted Borrow Pit has been used to calibrate the model and provide more accurate predictions of peak particle velocity (PPV). The model calibration will be refined following each blast to determine the maximum instantaneous charge (MIC) weight to remain compliant with the established PPV thresholds during the development of the Borrow Pit. The blasts completed to date are in compliance with the parameters outlined in the permission and should alleviate any misplaced concerns the observer may have in this regard.

The Borrow Pit Extension is at a greater distance from the BRDA than that already permitted. The Borrow Pit Extension application has a defined extraction boundary which has been selected based on the required set-back distances to remain below the established thresholds for PPV. The drilled boreholes for the blast are established such that the extraction boundary is maintained.

FC also makes a number of comments with regard to climatic changes which they consider have not been considered adequately. Section 10.8.4 of Chapter 10: Soils, Land and Geology of the submitted EIAR discusses the water management system for the proposed



development. Climate change factors have been addressed in assessment of the water management systems contained within the Engineering Design Report: BRDA Raise Development. Section 16.8.2.2 and Section 16.8.2.3 of Chapter 16: Major Accidents and Disasters of the submitted EIA provide assessments of the risk of potential tidal surge or wave events and potential storm (extreme rainfall) events to the BRDA. The precautionary principle is designed to assist with decision-making in certain circumstances of lack of full scientific certainty. The precautionary principle was never intended to be invoked in respect of hypothetical effects and theoretical risk and does not arise where the desired level of protection is defined and understood, and the risk of harm can be quantified. These situations are dealt with using 'normal' risk management tools as is the case for the assessment of BRDA water management system, the assessment of the natural hazards to the BRDA and the blast assessment.

It is also considered unusual that FC within the climatic changes section of their submission appears to be supportive of the importation of rockfill from external sources and does not seem overly concerned with the potential HGV movements that will be removed from the local road network as a result of the operation of the permitted Borrow Pit and extension as proposed.

FC state that:

"We argue that the assessment criteria and the terminology used to calculate the level of risk (BRDA classification to CDA as a facility with a 'High' hazard potential classification) is reductionist, biased towards the profit-making mentality of the industry and neglectful and unaware of the requirements and functioning of life on our plant"

"We also observe that the applicant has used the CDA risk assessment guidelines, while a more recent report which is global in scope exists, the Global Industry Standards on Tailings Management 2020, and we wonder why has not the latter been used instead."

In accordance with Section 4.2.1.3.4.3 of the 2018 Best Available Techniques (BAT) Reference Document for the Management of Waste from the Extractive Industries, with Directive 2006/21/EC on the management of waste from extractive industries, EUR 28963 EN, (MWEI BREF 2018), and in the absence of a National or EN Standard, AAL have selected to undertake the classification of the BRDA and ancillary infrastructure in accordance with the CDA Guidelines (CDA 2014) and to adopt the target level standard-based criteria for design parameters (inflow design flood, seismic event and factors of safety for static, pseudo-static and post-seismic stability), which are dependent on the consequence of failure.

The CDA Guidelines are an internationally recognised best practice standard for design, operation and management of tailings facilities which promotes a risk-informed approach to safety analysis and assessment as it includes deterministic standards-based analysis among many considerations. The Global Industry Standard on Tailings Management (GISTM) 2020 provides a similar consequence classification matrix for tailings facilities, The advantage of CDA over GISTM is that it also provides target level criteria thresholds for stability in the form of Factors of Safety (FoS) for various stages in the life of the facility and for varying scenarios.

FC also refer to a quote from an article in the Irish Daily Mail by a former employee of the site that *'All you need is a combination of high tides in the estuary and an hour of prolonged rain fall and you have a potential disaster ...'*. No assessment or calculations were provided with



the observation to validate the statement. The most extreme scenarios assessed by the Engineering Design Report: BRDA Raise Development are outlined below and the proposed development has had regard to these factors

- The 24-hour Probable Maximum Precipitation (PMP) depth for the area is ≈ 0.21 m
- The high Astronomical Tide event for the area is ≈ 2.8 mOD

FC state that:

'The EPA classified red mud deposits in AAL as non-hazardous in a 2004 report, despite the leaked 1997 memo written by EPA inspectors to its board says the material is hazardous (FOIE)'....

'Red mud is a TENORM Technologically Enhanced Naturally Occurring Radioactive Material, it contains radium 226 and thorium 232'.

Appendix B of the Human Health Assessment for Bauxite Residue and Salt Cake, provided as an Appendix to Chapter 6: Human Health, summarizes an assessment of the compound present in AAL bauxite residue in accordance with the EU regulations and it is determined that no threshold is exceeded for any of the hazard properties and that the material is non-hazardous. The non-hazardous waste code 01 03 09 is assigned to the AAL bauxite residue under 2014/955/EU Updated List of Wastes.

The Human Health Assessment also summarizes the findings from the RPII 2008 radiological assessment of the bauxite residue and the subsequent updated testing of the bauxite residue conducted by Socotec during 2021. RPII (2008) concluded that the low levels of NORM at the AAL plant comply with safe levels and below the threshold at which the facility would come within the scope of the Irish Regulations from a radiological point of view. The 2021 test results are either comparable to or slightly lower in comparison with previous RPII assessment. As such, the BRDA does not present a radiation hazard to the surrounding environment.

FC state that:

"Rehabilitation attempts so far have been unsuccessful, and we have reason to believe that this would be the case for the AAL facility"

'Without intervention, BRDA environments would remain sterile for an extended period of time'

AAL have conducted trials over the years to demonstrate the proposed capping containment methodology; amend the bauxite residue to reduce the pH and cultivate vegetation on the surface. AAL have partnered with the University of Limerick along with commercial consultancy services in progressing the trials. Subsequently, the proposed 'amended mud' capping for exposed bauxite residue is now included as Condition 8.5.21 in IEL P0035-07.

During 2013, AAL constructed the capping containment and landscaping of the north and west side-slopes of the Phase 1 BRDA which include the large-scale trial capping of the wide Stage 5 (32m width x 1,200m long) with the amended layer mud constructed in two 0.5m depth layers to provide a neutralized soil material (< 9.0 pH) to support vegetation. The vegetation



for trial capping with the amended layer has been successful. We refer to Section 8.2 of the Engineering Design Report (Appendix A of the EIAR) which provides more information on the capping containment trials carried out.

FC also state that *'Current contamination is dismissed despite that evidence of red mud seeping into the water exists already: the local group CFSG witnessed red leakage in the estuary water, visible from the air: '* As per earlier comments relating to this matter, there is no evidence supplied or reference indicated to substantiate these statements. Chapter 10 of the EIAR (Hydrology and Hydrogeology) and the reports prepared in support of the AA process provide detailed assessment of the potential impacts on groundwater and associated ecosystems.

FC also make an observation related to the proximity of the application site to Natura 2000 sites. It states that they are *'particularly worried about the large amount of conservation areas located in the immediate surroundings of the facility'*. The European designated sites in the area were selected by NPWS for the importance of these areas for certain species and habitats. Since these designations, all proposed developments at AAL – including the currently proposed development in respect of the BRDA raise - have had regard to the need to comply with the relevant European Directives under which the designation have been made and to the need to ensure that the specific species and habitats underlying the designations are fully protected. The facility operates under EPA licence and there is strict monitoring and reporting requirements. New developments within the facility are subject to prior planning appraisal, screening, and if necessary full environmental assessment under EIA, Habitats and Birds Directives and, if necessary, full EPA licence review.

The FC observation takes issue with the statement that *"following initial screening of Natura 2000 sites, there were no sites identified beyond 15km from the application boundary which were adjudged likely to be affected by likely significant effects associated with the proposed development"*. The context for using a nominal 15km for illustrative purposes is set out earlier in this response and fuller analysis underlying that is set out in detail in the Applicant's screening/NIS document submitted with the Application.

Using the Source-Pathway-Receptor (S-P-R) model and the likely significant effects threshold it was possible to screen out sites beyond this distance. Indeed, with further consideration of the S-P-R model it was possible to screen out many of the designated sites within 15km of the application site. This was informed by the expert opinion of our ecological team.

The FC observation goes on to quote various sections of the reports in support of the AA process. There appears to be a misunderstanding from FC in relation to statements the Applicant made at Screening Stage (before the application of mitigation) with an acknowledgement of likely impact of *'harmful impacts'* on special conservation areas. The Applicants screening stage statement (correctly) highlights that in the absence of mitigation the likelihood of significant effects on a number of designated sites could not be discounted. The outcome of this stage was that 3 No. sites were brought forward to NIS stage where mitigation measures can be included in the assessment.

The status of Meadow Barley on the site is also raised in the FC submission and we refer to earlier in the response where it is clarified that there is no Meadow Barley documented in the application site.



As noted previously in the response, regular maintenance works are carried out to the tidal protection embankments (which are confused here with the 'retaining walls'). FC refers to five 'incidents' that have occurred at the Facility, the most recent of which was from 16 years ago. It is highlighted that AAL have an excellent record in compliance with the parameters established by their EPA Licence, and health and safety is of paramount importance in the day to day running of the facility. AAL has always maintained its 'fit and proper person' status for the purpose of IPC/IPPC and IED licensing. It is noted that subsequent to the matters referred that planning permission and an EPA Licence was granted for the development of the Phase 2 BRDA (LCC Reg. Ref. 05/1836; ABP Ref. PL13.217976) to Stage 10.

A number of comments are also made in the FC submission with regard to '*industry monopoly*' and to '*examples of malpractice and neglect of democratic principles*' in the aluminium industry. In this part of the FC submission there are references to 'auditors'. The relevant part of the FC submission references a publication that uses that term ('auditors'). FC, in that part of its submission, refers to a 'lack of independence' regarding facility inspection and assessment. The FC submission contains publication quotes regarding 'auditors' lack of independence as a result of '*auditor's dependence*' on corporate fees. These comments and the manner in which they are used in the FC submission are generalised and gratuitous and are strongly objected to by AAL. Further, it is noted that the monitoring and auditing requirements for the BRDA are defined in Schedule C.7 of the EPA granted Industrial Emissions Licence, P0035-07 and it is the EPA that are ultimately the competent body with regard to the compliant operation of the Facility.

FC also make a number of claims in relation to what it calls 'greenwashing' have regard to the alumina / aluminium industry which the Applicant refutes. The existing alumina refinery at Aughinish is the largest of its kind in Europe and is thus of strategic national and continental importance. It is also in the top 5% in the world in terms of the carbon intensity per tonne of alumina produced, according to the Commodities Research Unit (CRU). Aluminium, which is ultimately produced from alumina, is of increasing importance as economies transition towards a low carbon future. The metal's light-weight nature, corrosion resistant qualities, and recyclability are all characteristics which have resulted in its application in renewable technologies such as solar photovoltaic (PV) panels and electric vehicles. The production of alumina is thus critical to facilitating the production of renewable technologies and thereby ensuring that a low carbon and green economy centred on renewable energy production and electric transport modes can be delivered. This is not a 'greenwashing' argument, but is a valid argument that is based on the environmental impact of aluminium relative to other materials.

FC also provides unsubstantiated claims that:

"The Aughinish plant uses about half the electricity coming from the largest dam (Ardnacrusha) of the largest river in the British Isles. There is a valid argument that if this energy was transferred to Irish grid it would significantly reduce the strain on the grid (add to base load grid requirements). This renewable hydropower could replace fossil gas and coal as a reliable and clean back up to wind and solar power."

The 2021 Climate Action Plan recognizes that the biggest share of enterprise emissions in Ireland comes from a small number of large companies, it mentions Aughinish Alumina explicitly. Yet there is no clear intention to tackle this imbalance of energy consumption afforded to these large scale polluters in the Climate Action Plan."



AAL generate 99.85% of their own electricity (based on year 2020) and export 97MW of their electricity to the national grid which is enough electricity in an average year to power 200,000 houses. In addition, electrical power generated by AAL and exported to the grid has the lowest carbon content at 0.240 tCO₂/MWh of any fuel source outside of renewables, e.g. wind. This compares to the national grid average in 2020 of 0.296 tCO₂/MWh.

In addition, natural gas suppliers Ervia / Gas Network Ireland has recently published the report *"Vision 2050 – A Net Zero Carbon Gas Network For Ireland"* (Ervia, 2019). The report highlights that by 2050 natural gas will be replaced by biomethane, abated natural gas (with Carbon Capture & Storage (CCS)) and hydrogen. By 2030 it is envisaged that 20% of current demand will be renewable gas and increasing to over 50% by 2050. The report states that CCS technologies will increasingly capture and store CO₂ emissions from natural gas used for power generation and large industry and will deliver net zero carbon by 2050. Thus, the impact of using gas supplied by Ervia by 2050 will have an overall net zero impact on climate.

As outlined in Section 17.5.1 of the EIAR, in relation to indirect emissions, AAL operates a long-established alumina extraction plant. The facility is licenced by the EPA and AAL operates under the EU Emissions Trading Scheme (ETS) based on Permit Register Number IE-GHG038-10361-3.

The do-something scenario will lead to indirect GHG emissions from the Alumina Plant continuing beyond 2030. However, the ETS market will have to meet a target of a 61% reduction by 2030 based on a linear reduction level of 4.2% compared to the previous linear reduction level of 2.2% per year and thus it is built into the design of the ETS system, of which the AAL facility is a participant, that there will be a gradual reduction in GHG emissions from the facility under the facility's ETS Permit. Under the EU ETS, AAL will continue to be regulated and will continue to pay gradually increasing carbon cost.

The 2021 *Climate Action Plan* (CAP) (Government of Ireland, 2021) provides a detailed plan for taking decisive action to achieve a 51% reduction in overall greenhouse gas emissions by 2030 and setting Ireland on a path to reach net-zero emissions by no later than 2050, as committed to in the Programme for Government and set out in the Climate Action and Low Carbon Development Act 2015 (as amended). The Plan outlines the current status across key sectors including Electricity, Transport, Built Environment, Industry and Agriculture and outlined the various broadscale measures required for each sector to achieve ambitious decarbonisation targets. CAP 2021 also detailed the required governance arrangements for implementation including carbon-proofing of policies and establishment of sectoral emission ceilings and carbon budgets. In relation to large industry and electricity generators, the CAP 2021 provides that emissions from industry sectors covered by the ETS are subject to EU-wide rather than national targets set out under EU Effort Sharing Decision. Box 2.1 states:

"emissions from electricity generation and large industry in the ETS are subject to EU-wide targets which require that emissions from these sectors be reduced by 43% by 2030, relative to 2005 levels".

Thus, the AAL facility which has participated since 2005 in the ETS, the EU's flagship greenhouse gas reduction mechanism, and is fully consistent with the aims of the Climate Action Plan 2021.



3.0 Conclusion

The proposed development is wholly compliant with regard to National, Regional and Local planning policy and will not seriously injure the amenities of the area, property in the vicinity of the facility and would be acceptable in terms of environmental and residential amenity impacts.

Having regard to the observations received to date, it is noted that those received from Prescribed Bodies have not raised concerns in relation to the proposed development. It is submitted that the remaining observations have raised issues which have already been fully addressed to date in the EIAR and NIS submitted with the application and further elaborated in the response provided.

The proposed development will assist in the long-term economic sustainability of AAL, an operator of strategic importance in the Region. We contend, therefore, that the proposal should be granted Planning Permission in the interests of the proper planning and sustainable development of the area.

Yours Sincerely,

Stephen Barrett
Director
Tom Phillips + Associates