NORTH LINCOLNSHIRE GREEN ENERGY PARK

Planning Act 2008

Infrastructure Planning (Applications Prescribed Forms and Procedure) Regulations 2009

North Lincolnshire Green Energy Park

9.29 Salmonella Risk Assessment

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1. AB AGRI'S CONCERNS

1.1 Written Representation

1.1.1.1 The raw materials intake of ABN plant is located in close proximity to the proposed ERF and the RDF delivery route. Risks to the biosecurity of the ABN's plant, particularly potential salmonella contamination from waste handling, are of significant concern. The Applicant's response to AB Agri's concern is stated in 'Regard had to consultation responses' document (ref: 7.2.18) but the details set out in the Application do not provide adequate mitigations, as it confirms that not all RDF materials will be delivered in sealed containers, and materials to be delivered by HGV will be in bales on curtain sided trucks/tippers (which goes against assurances made in their pre- application correspondence). We note that the delivery routes to the ERF are on the southern face of the building, away from AB Agri, but it does not preclude HGVs passing AB Agri on First Avenue with RDF materials in bales and/or uncleaned vehicles. The Applicant states that they are continuing to engage with AB Agri to resolve all outstanding technical issues, but there has been no engagement from the Applicant since February 2022.

1.1.1.2 We consider that the following mitigation measures are necessary:

- A condition requiring RDF to exclude material of animal origin;
- A condition requiring all RDF to be delivered in sealed containers and wrapped/sealed bales;
- A condition requiring an Operational Environmental Management Plan to include wheel washing and disinfectant regime for RDF delivery vehicles, and

1.1.1.3 A routing agreement that HGVs do not drive past ABN.

1.1.1.4 If these measures are not applied, then AB Agri's operations will be substantially prejudiced and a knock-on effect on the supply chain as described above will arise, unless wide ranging and costly measures are applied on site to mitigate the biosecurity risk that would rise otherwise.

1.2 Written Submission of Oral Case

1.2.1.1. AB Agri confirmed that they had reviewed the Applicant's responses to our representations and understood the points made regarding controls of odours as well as pest control. Notwithstanding this, AB Agri remains concerned that the Applicant is not able to control the space between the two plants which gives rise to the risk of transmission of salmonella principally. AB Agri explained that this is a constant ongoing issue for animal feed production, particularly on the riverside site as it attracts birds.

1.2.1.2 Seagulls and other birds (carrying salmonella or other diseases) are always part of risks that AB Agri faces. AB Agri explained that since the salmonella control in the UK animal feed was identified over 30 years ago, the principles of risk assessment have been based on all the controls available such as pest control, but also dealing with environmental proximity and doing as much as practically possible to limit the risk of ingress (of

salmonella carrying rodents and birds). AB Agri stated that this is the essential point – by building the proposed facility adjacent to AB Agri's plant will increase the risk. For this reason, AB Agri stated that further steps will need to be taken to protect its facility from the threat posed by the proposed facility.

1.2.1.3 AB Agri provided a context to AB Agri's site, as follows:

- The site was originally built in the mid-1980s by JE Porter Limited who constructed a large number.
- of poultry farms which were fed from the feed mill. The site went through changes in ownership and AB Agri acquired the site in 2009.
- The site was originally part of the nitro chemical plant site which was destroyed in the explosion in 1974. The original animal feed mill (built in the 1980s) was demolished and rebuilt in 2004.
- In the UK, 1.1 billion chickens are consumed per year. AB Agri's feed mill at Flixborough feeds 10% of those (i.e. around 110million chickens per annum). Therefore, the site is a significant strategic site in terms of UK food supply chain.
- If the feed mill is contaminated by salmonella as a result of the proposed development, it will have a very significant effect on the poultry supply chain in the UK. The feed that AB Agri supplies goes to chickens that are distributed to supermarkets and restaurants/takeaways. Therefore, the impact is significant and at national level, as the salmonella contamination would result in the shortages or lack of chickens in supermarkets.

1.2.1.4 AB Agri stated that the proposed measures put forward by the applicant start to address some risk but they do not reduce the risk to a reasonable level, as there is still a very real chance of salmonella migrating from rodents and birds into the feed mill as a result of the proposed development adjacent to AB Agri's plant, which does not currently exist. AB Agri went on to explain that the raw material intake faces the river and open countryside, which will be exposed to the proposed waste facility, dramatically increasing the risk to the animal feed mill production at Flixborough.

1.2.1.5 In response to the Examining Authority's question about what AB Agri is seeking would satisfy, beyond what the applicant is offering, AB Agri stated that there will need to be significant further changes to the plant (ie on site mitigations) in order to reduce the risk to an acceptable level to ensure that AB Agri can operate within the parameters of safely supplying feed to the poultry supply chain. It would require significant investment to the site in order to achieve the segregation of the plant from the risk and improving manufacturing techniques on the basis that there is no effective means of ensuring that rodents and birds will not travel between the two adjoining facilities.

1.3 Post-hearing Notes

1.3.1.1 At the hearing on 26 January 2023, AB Agri was requested to provide clarity on the existing measures in place to deal with biosecurity risks and

what would be necessary to improve those and why the improvements are necessary.

1.3.1.2 The biosecurity risks to the feed mill plant at Flixborough arise from potential salmonella contamination. As stated previously, salmonella bacteria are highly contagious and contamination risks arise from vehicles, rodents and birds' droppings carrying diseases and salmonella. Salmonella contamination can persist for long periods of time and is a major hazard as it would result in the disruption or closure of the feed mill facility which would affect the UK's food supply chain.

1.3.1.3 The existing biosecurity control (see Section 4 below) is satisfactory for the existing situation where there is no facility handling waste of significant quantity adjacent to the site. The biosecurity risks will increase if the proposed facility is operated even with the measures proposed by the Applicant, such as:

- routing of waste in the vicinity of AB Agri;
- vehicle specifications in terms of biosecurity;
- cleansing procedures for vehicles delivering or transferring waste on site;
- pest control and management; and
- monitoring the effectiveness of the tipping hall negative pressure environment.

1.3.1.4 The proposed facility will handle waste of significant quantality adjacent to AB Agri's site. Currently there are no HGVs handling waste in the vicinity of AB Agri's site. The Applicant has been ambiguous in terms of how waste will be delivered by road. We note from the Applicant's response to our WR that operators are required to ensure that RDF is wrapped or containerised. It is noted that a minimum of six layers is typically applied for non-containerised RDF, but the precise number of layers will be ultimately determined by the requirements of the hauliers and the off-takers involved. The Applicant states that they are able to specify such requirements to its suppliers. However, the Operational Environmental Management Plan only goes as far as baled waste being delivered in curtain sided trucks – there is no requirement for bales to be completely wrapped or sealed.

1.3.1.5 With regards to birds and rodents, it should be noted that the biosecurity risk from birds and rodents will increase as there is a higher chance of them transmitting salmonella and other diseases from the waste handling operation in the area, as they are attracted by waste facilities handling food and organic waste materials. The risk is high because of the area lies on the riverside where birds are generally present.

1.3.1.6 Not all measures suggested by the Applicant are reflected in the Operational Environmental Management Plan (OEMP) or other parts of the DCO, so it is not clear how the proposed measures will be enforced and be effective. Fundamentally, the biosecurity risk for AB Agri will significantly increase by the introduction of the proposed facility, handling a significant quantity of waste, in close proximity, as the measures proposed by the Applicant do not deal with the eventuality of potential tipping hall negative

pressure failure, RDF delivered without being sealed or adequately wrapped and vehicles sanitisation not taking place regularly. Therefore, even if the OEMP includes all measures proposed by the Applicant, in AB Agri's experience, the increased biosecurity risk cannot be reduced to a reasonable level.

1.3.1.7 The existing biosecurity control at the Flixborough site is not proportionate to the increased risk as set out above and on-site mitigations, particularly around the raw intake area, are required to minimise the risk to an acceptable level.

1.4 Further Representation

1.4.1.1 As AB Agri explained at the Issue Specific Hearing 3 (ISH3), the presence of birds is an ongoing issue for animal feed production at this site, as it is a riverside location which attracts birds by nature. In this context, seagulls and other birds are part of the risks that AB Agri often faces at sites in similar locations. However, the risks to biosecurity due to the presence of birds are limited at present, as the birds are not exposed to waste material in close proximity.

1.4.1.2 Bringing a new development which handles waste on site and off site (through deliveries) represents a new biosecurity risk in close proximity to AB Agri's site. This is because, unlike at present, the birds have the high potential, even with the proposed management procedures, to be exposed to waste material from a facility processing a significant quantity of waste in immediate proximity to the AB Agri site. Put simply, the current presence of birds in the area is a natural occurrence, and is capable of being managed. On the other hand, the application proposals will substantially elevate the risk of those birds, and any additional population that might be attracted by the proposed waste handling facility becoming contaminated – this is an unacceptable biosecurity risk. As stated previously, likewise there is also a significantly increased risk from rodents transmitting salmonella or other diseases from the waste handling operation.

1.4.1.3 As AB Agri has consistently raised in all its representations, the proposed development raises a significant biosecurity risk to the animal feed mill, as salmonella contamination from waste containing organic or animal origin materials would result in the closure of the feed mill facility for a significant period of time or closure indefinitely. The current biosecurity measures implemented by AB Agri as set out in our Post-Hearing Submission dated 7 February 2023 are appropriate for the current level of risk. However, they are not sufficient to cope with the significantly increased amount of contaminants potentially transmitted from a facility handling waste of such substantial quantity adjacent to the site.

1.4.1.4 The proposed mitigation measures by the Applicant relative to the RDF delivery route (not using the First Avenue), the method of waste delivery and handling of the waste within the ERF do not provide satisfactory control measures to minimise biosecurity risks to an acceptable level. This is because the delivery of RDF by road will significantly increase the quantity and frequency of waste in the area and the Applicant's Operational Environmental Management Plan only goes so far as baled waste being

delivered in curtain sided trucks. There is no binding commitment from the Applicant that waste will be delivered in sealed containers or fully wrapped, as we understand it cannot be commercially met by the Applicant or the prospective operator of the facility. The Applicant has also not committed to the regular wheel washing of delivery vehicles in the Operational Management Plan. Further, the measures proposed by the Applicant do not deal with the eventuality of potential tipping hall negative pressure failure, RDF delivered without being sealed or adequately wrapped, and vehicle sanitisation not taking place regularly.

2. PROJECT DESCRIPTION WITH RESPECT TO RDF TRANSPORT AND HANDLING

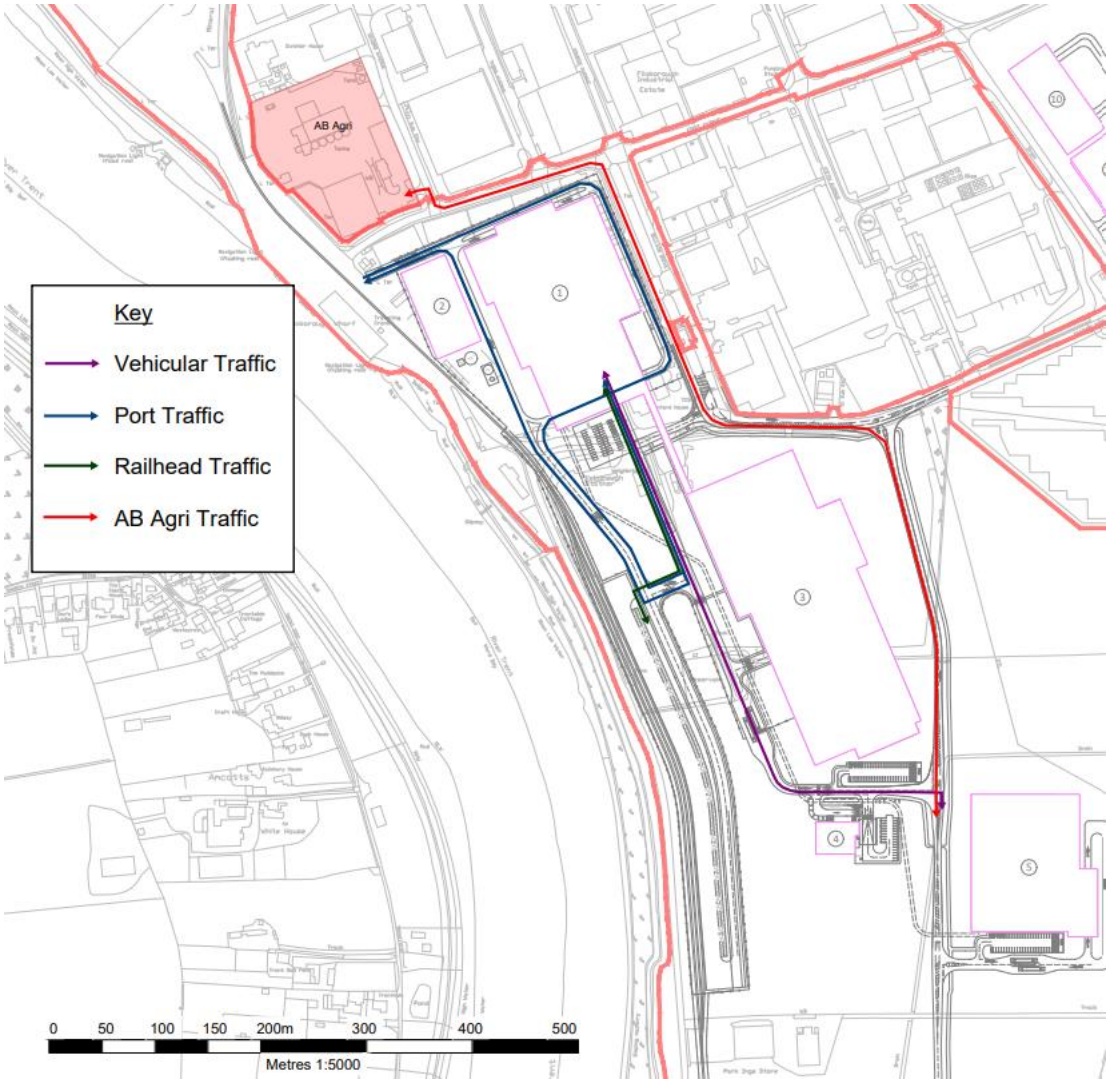
2.1.1.1 RDF will arrive from contracted suppliers and be delivered to the ERF tipping hall. RDF will arrive at the site via three transport modes:

- via road transport on the new access road entering the site from the south;
- via rail to the new rail sidings and thence to the tipping hall transported in containers on internal Project roads and drawn by ‘slave’ vehicles (which do not leave the Project site and use public roads); and
- via the existing wharf and thence to the tipping hall transported via internal ERF roads by the same slave vehicles that move the rail transported RDF.

2.1.1.2 It should be noted that the Applicant is looking at options to unload RDF from incoming vessels using the train unloading route which will further reduce the proximity of RDF to the AB Agri site.

2.1.1.3 The access routes, the ERF tipping hall and the AB Agri intake hall locations are shown in Figure 1.

Figure 1: Access Routes



2.1.1.4 For any of the above transport modes the RDF could be delivered in two forms:

- baled and wrapped in layers of polythene or other plastic wrapping; or
- bulk RDF compacted into covered/fully-enclosed containers.

2.1.1.5 In addition, by road from the south only, some RDF will arrive carried in covered trailers e.g. with a walking floor.

2.1.1.6 Therefore in summary: deliveries via rail will be in containers; by ship will be in containers or baled; and by road either of the aforementioned or in covered trailers. At no time in transit before the RDF reaches the tipping hall will it be uncovered or open to the elements.

2.1.1.7 The Applicant will contractually require its suppliers to adhere to the Refuse Derived Fuel - Code of Practice, further details of which are provided in Section 3.1 below.

2.1.1.8 RDF from all of the transport modes will be delivered to the tipping hall. Within the tipping hall, delivery vehicles will transfer RDF directly to the RDF bunker. The bunker hall will be situated within the main ERF building

to the north of the tipping hall. Prior to being loaded into the boilers, RDF will be stored and mixed within the bunker to improve homogeneity. The bunker hall can contain five days supply of RDF. There will be no outside storage of RDF. The bunker hall will be set into the ground, with its floor 10 m below finished floor level and constructed of reinforced concrete that is impervious to water and gas. The fuel bunker will be a water retaining structure, designed to prevent leachate entering the surrounding ground.

2.1.1.9 Once the RDF arrives at the Energy Recovery Facility it will be delivered into the tipping hall and then moved to the bunker prior to being combusted. Only at this point will it be exposed to the elements. The tipping hall will be maintained at negative pressure meaning that dust, aerosols or even odorous gases cannot be escape into the open atmosphere outside the building but will instead be drawn through the ERF into the combustion process. Any pathogens, such as salmonella, present in the RDF will not survive the combustion process.

3. NLGEP CONTROLS

3.1 RDF Containment and Transport to the Project Site

3.1.1.1 Where the transport and handling of RDF is concerned, the Applicant will operate the Project in accordance with the Refuse Derived Fuel - Code of Practice (RDF CoP) (Version 1, October 2017) prepared and published by the RDF Industry Group. The purpose of the RDF CoP is to share good practice across the industry and provide confidence to regulators regarding the various aspects of producing, handling and transporting RDF. In the course of preparing the RDF CoP, inputs were provided by the Environment Agency (EA), Department for Environment, Food and Rural Affairs (Defra), Natural Resources Wales (NRW), Scottish Environment Protection Agency (SEPA), the Food Standards Agency (FSA) and the Advisory Committee on Animal Feedingstuffs (ACAF).

3.1.1.2 The RDF CoP covers all aspects from the waste arriving at a waste transfer station through to it being received at an energy recovery facility, i.e. its scope covers the full range of activities involved in RDF being transported by river, rail, or road to the NLGEP and its unloading at the facility.

3.1.1.3 It is worth emphasising the role of 'Duty of Care' in the whole process. All operators in the waste supply chain must comply with Duty of Care (DoC) requirements. In England DoC is based on Section 34 of the Environmental Protection Act (EPA) 1990 and regulated by the Environment Agency and local authorities. Operators have a legal responsibility to ensure that waste is produced, stored, transported and treated/disposed of without harming human health or the environment.

3.1.1.4 The transportation of RDF within England must therefore be undertaken in compliance with DoC, and this includes specific requirements for waste carriers. Waste carriers must be registered, and all movements of waste must be covered by a written description of the waste, e.g. waste transfer note, which can be a paper copy or an electronic DoC certificate.

3.1.1.5 The main elements of DoC that relate to RDF transportation of RDF include:

- preventing the escape of waste, especially regarding the careful transportation of wrapped bales of RDF to prevent damage to the wrapping; and
- describing the waste accurately to ensure it is handled in an appropriate manner.

3.1.1.6 The number of layers of plastic wrapping required to meet these recommendations will vary depending on the quality of the wrapping process, the thickness of the plastic film and the amount of handling that the bales will be subjected to. A minimum of six layers is typically applied for non-containerised RDF that is being handled multiple times through the supply chain; however, the precise number of layers will be ultimately determined by the requirements of the hauliers and the off-takers involved. The Applicant is therefore able to specify such requirements to its suppliers.

3.1.1.7 To reduce the potential for nuisance (litter and odour), operators are required to ensure that RDF is wrapped or containerised:

- sufficiently to prevent the loss of waste materials and littering during storage and transport;
- sufficiently to prevent the leaking of leachate;
- sufficiently to prevent fly infestation and access by vermin;
- in a way that meets any conditions and specifications set out in the contract with the off- taker; and
- in a way which makes it easy to handle and store.

3.1.1.8 The requirement for NLGEPL's RDF suppliers and hauliers to adopt the RDF CoP will be secured through the Operational Environmental Management Plan (OEMP).

3.2 RDF Routing

3.2.1.1 The Applicant has agreed to AB Agri's request on vehicle routing. No vehicles carrying RDF will be routed along First Avenue.

3.2.1.2 RDF routing will be secured through the OEMP.

3.3 Controls at the Energy Recovery Facility

3.3.1 Negative Pressure Environment

3.3.1.1 The tipping hall will be maintained under negative pressure with all air from the tipping hall drawn through the plant. In the plant, the combustion temperature will be sufficient to destroy odorous compounds and any airborne pathogens.

3.3.1.2 It is worth noting that the Environment Agency will require strict controls to avoid odour nuisance from the ERF and the ERF is designed accordingly. An odour management plan will be produced as part of the Environment Permit.

3.3.1.3 This measure will be secured through the Environmental Permit.

3.3.2 Vermin Controls at the Tipping Hall

3.3.2.1 The Applicant will contract a specialist pest management company. The precise methods of pest control will be determined by local circumstances and a risk assessment. However, they are likely to be based on the following three principles.

- Physical: physical pest control is the process of trapping and exterminating or removal of pests to eliminate them from an environment or excluding them through design of buildings etc.
- Chemical: chemical pest control is widespread and includes targeted baited poisons
- Biological.

3.3.2.2 More specifically for birds there are a number of approaches such as the following.

- Falconry, which is still considered the gold standard.
- Lasers, using green laser beams unsettles birds and, while harmless dissuades them from using an area. Laser bird deterrents can be used to scare and repel all types of pest bird species including pigeons, gulls, starlings and Canada geese.
- Propane cannons are effective but not recommended here due to noise sensitivity.

3.3.2.3 For rats there are a number of approaches. Most important is to exclude rats from buildings through design, which may include such matters as:

- eliminate any gaps around pipes etc, as rats only need a gap of 15mm to gain entry to a structure;
- post-construction search for any potential entry points and seal these up with wire wool embedded in quick-setting cement;
- focus on low level gaps first as these are the most likely areas for rats to enter;
- maintain checks around pipes and windows;
- ensure that drain inspection covers are in a good state of repair and any disused pipes are sealed off;
- paint walls in high gloss to prevent scaling walls with rough surfaces.

3.3.2.4 Other deterrent and control measures include:

- sonic noise deterrent; and
- baited traps and poison.

3.3.3 Other Controls

3.3.3.1 Other controls include the following:

- regular monitoring of boundary fences and building exteriors;
- camera surveillance;
- spiked surfaces to prevent bird roosting; and
- good site housekeeping and domestic/office refuse control outside the tipping hall and across the site in general.

3.3.4 Management Considerations

3.3.4.1 All required pest control measures will be incorporated into the Environmental Management System for the Environmental Permit and the OEMP as required in the form of a Pest Management Plan and other measures. In addition to the physical controls and procedures, the Project site HSE function will have responsibility for ensuring that staff are appropriately briefed and trained, and that monitoring and inspection take place on a daily basis.

3.3.4.2 Design measures referenced (such as eliminating gaps, the finish of external walls and spiked deterrents) above will be secured through the Design Principles and Codes Document.

3.3.4.3 Other potential measures referred to above will be determined through a detailed biohazard risk assessment undertaken as part of the application for an Environmental Permit. The EA will determine the ultimate need for such measures and for a Pest Management Plan to provide the framework for implementing them.

4. AB AGRI CONTROLS

4.1.1.1 AB Agri has stringent biosecurity controls in place to minimise the risk of salmonella contamination. Measures include controlling dust, managing the flow of equipment, preventing rodent infestations, preventing contamination from birds' droppings and the sanitisation of vehicles. Specifically, the following biosecurity controls are in place at the site.

- The site is equipped with a heat treatment "Salmonella Kill Step" as set out in Agricultural Industries Confederation's the Universal Feed Assurance Scheme (UFAS) in compliance with the Defra Code of Conduct for the Control of Salmonella in Feed. The heat treatment manages the normal microbiological loading in raw materials and occasional challenges at raw material intake.
- All three production lines have short term conditioners feeding long term conditioners, with all feeds treated to a minimum of 80c for well in excess of 2 minutes as per the UFAS guidance.
- All three lines have filtered air, with coolers located within a room with two stage filtration.
- The site has 'Neubacid Soft IV Plus acid' available to deal with salmonella, if present, which is an additional measure used alongside the heat treatment and paid for by customers at their request.
- Acid treated wheat (which cannot be heat treated) is created using the Neubacid for inclusion in broiler feed.
- Virkon disinfection application is used via hand sprayers or drive over mats, for vehicle biosecurity.

5. ASSESSMENT OF RISK

5.1 Source-Pathway-Receptor

5.1.1.1 The following assessment is based on the assumption that RDF could be a significant source of Salmonella. However it should be noted that based on a review of the readily available scientific literature by the Applicant there is little evidence to suggest that this is the case. Salmonella has been measured in soils around landfills and in municipal wastewaters so it is prudent to assume its possible presence in RDF. However it is reasonable to state that RDF is probably at the lower end of the scale of significant sources of this pathogen. For example, a study of Salmonella on soils in and around a landfill, detected other possible sources of Salmonella showing higher concentrations on soil outside the active landfill (Frączek et al 2022). Salmonella are intracellular pathogens, and live mainly in human and animal hosts, but growth of Salmonella on plants and in biofilms in the environment has been recorded (Winfield and Groisman 2003, Oludario et al., 2023, Steenackers et al., 2012).

5.1.1 Airborne Contamination

5.1.1.2 The concentration of total culturable bacteria on atmospheric aerosols is lower around waste incineration sites than around open landfill sites (Heo et al 2010). Therefore, the Project should not be considered a significant source of airborne Salmonella. Furthermore, airborne particles containing any bacteria in the tipping hall would not get into the environment due to the negative pressure in the building.

5.1.1.3 Several studies on the airborne transmission of Salmonella, have found that aerosol and dust and soil particles harbouring bacteria is possible, but this is mainly correlated to animal and poultry bird confinement, spray irrigation of wastewater, land application of biosolids or manure on agricultural land or aerosols formed on wastewater treatment plants (Kumar, 2011, Samaddar et al, 2021, Wilson et al, 1991).

5.1.2 Leachate from Containers on Vehicles

5.1.2.1 It is theoretically possible although very unlikely for liquid to leach from the vehicles in transit, noting that RDF will be sealed in plastic, carried in containers and/or in covered vehicles.

5.1.2.2 The largest contribution of salmonellae (97.27%) to municipal solid waste, are from pet faeces (Gerba et al, 2011), which are usually disposed with absorbing material. This would preclude large amount of highly Salmonella contaminated leachate for containers with fresh refuse. The main sources of Salmonella contamination in soils are animal waste, biosolids from wastewater treatment plants, and contaminated irrigation water. The survival of Salmonella sp. in soil is determined by various factors such as: temperature, moisture, soil type, presence of plants, exposure to sun (UV) light, protozoan predation and the initial number of organisms present (Jacobsen, C and Bech, T., 2012). It is important to note that most of the studies done on survival of Salmonella have been performed on agricultural soil, where the different factors affecting Salmonella survival are more

advantageous for their survival than on the harsh environmental conditions on a paved road (drier, higher temperatures, higher exposure to UV light (Nyeleti et al 2004, Allen et al 2005).

5.1.2.3 Additionally, natural or not-recycled water sources such as rivers and irrigation canals have been shown to act as reservoirs of viable Salmonella ((Baudart et al., 2000; Li et al., 2014; Martínez et al., 2017). Therefore, the risk of contamination posed by leachates on an access road are at least comparable, if not lower than the risk that wild animals drinking water from the river and agricultural drains nearby, especially if a farm or other sources of Salmonella are upstream (Gorski L et al, 2022).

5.1.3 Vermin in Tipping Hall

5.1.3.1 While in transit it will not be physically possible for birds or rats to gain contact with the RDF. Taking RDF as the source, birds and rats entering the tipping hall could theoretically come into contact with salmonella-containing material in the RDF, such as food wastes, after it has been deposited in the tipping hall. From there, rats or birds that have consumed salmonella-containing material could in theory visit the AB Agri facility and transfer the contamination through their droppings to the AB-Agri facility.

Birds

5.1.3.2 The nature of the tipping hall structure (an enclosed building with large amounts of mechanical activity and movement of material) is unlikely to provide an attractive foraging environment for birds even should they enter the area. The majority of birds (including pigeons and gull species) use visual as opposed to olfactory cues in foraging for food (see e.g. Potier et al 2019; Washburn et al 2013; Cook 2001)). Since the RDF is unloaded in a closed environment (i.e. out of sight) it will not provide a visual cue to foraging birds. Since it will be unloaded in a negative pressure environment it will not provide an olfactory cue either.

5.1.3.3 It is noted that the riverside location provides natural gull habitat. However it should also be noted that gulls range over large areas in search of food. Several studies have looked at foraging distances for example between breeding areas and landfills, with distances recorded in excess of 30 to 40 km foraging distances (Langley et al 2021; Belant et al 1993; Washburn et al 2013; Shaffer et al 2017). It is a strong likelihood that gulls in the vicinity of the AB Agri facility will have visited landfill sites locally (for example Roxby landfill, 5 km away).

5.1.3.4 It is reasonable to conclude that the Project will not by its nature will not substantially add to the numbers of avian pest species visiting the area and will not therefore materially add to the existing level of risk to the AB Agri operation. The Applicant proposes measures that will reduce an already low level of risk from avian pest species further.

5.1.3.5 A meta-analysis of the role of birds on the pathogen transmission by birds, found that prevalence in wild birds is low for Salmonella (6.4%, Smith et al., 2020). Additionally, Ramos et al. (2010) did not find a correlation between the prevalence of Salmonella in gulls and the amount of refuse they eat,

which indicates that even if the gulls would have access to the RDF inside the tipping hall, the risk of the gulls transferring salmonella to the AB Agri facility would be similar to the risk that already exists at this facility without a nearby Energy Recovery Facility.

Rats

5.1.3.6 Byers et al (2019) conducted a systematic review of the published literature and databases to provide a comprehensive description of what is known about urban rat movement, including information on such matters as: home range; site fidelity; dispersal; movement patterns; and barriers to, and factors impacting, movement. The initial search identified 1,665 sources, 105 of which were reviewed in full. A final group of 37 unique studies examining the movements of Norway rats and black rats provided the information summarised in Byers et al (2019).

5.1.3.7 Key conclusions from the review are summarised below.

- Home range and site fidelity: home ranges tend to be irregularly shaped and encompass important food sources, the home burrow, and areas of dense vegetation. Rats are generally familiar with the extent of their home range, but their usage tends to be concentrated within a fraction of this area. Genetic studies and recapture rates have demonstrated that when food and shelter are readily available rats display a strong site fidelity, rarely leaving their home range.
- Daily movement: urban rat movement is linked to the availability of important resources (i.e. food and shelter, and therefore site fidelity). Daily movement distances of 10 to 20 m are typical from capture-mark-recapture studies, although distances between 30 and 150 m have been inferred in genetic studies; use of sewers for movement can extend daily movement around the home range exceptionally up to 200 m.
- Barriers: rat movement is impeded by barriers such as roads and waterways, although population genetics-based tools demonstrate that rats may cross roads more often than previously estimated using trapping-based techniques.
- Dispersal from natal sites: dispersal of rats away from their natal site is usually over short distances. Mean dispersal distances between parents and offspring have been recorded as 45 m for Norway rats. Long-distance dispersal events are infrequent but can occur over a distance of several kilometres, usually involving individuals from a population. Rat immigration is not always successful, with some migrating individuals being evicted by resident populations.
- Factors involved in dispersal: several factors can be involved in rat dispersal away from their natal site. Rats may change their home range and natural movement patterns in response to such factors as: environmental change; anthropogenic habitat modification; resource availability and competition; dominance hierarchies, and mate searching.

5.1.3.8 The direct 'line of site' distance from the entrance to the Project tipping hall to the AB Agri intake is circa 250 m; the distance on the ground that a rat would be able to travel in straight lines is circa 450 m. These separation distances and rat behaviour in terms of site fidelity and use of their home range make it very unlikely that rats would commute between the two sites on any regular basis. Assuming that rats established a home range centred on the Project tipping hall (i.e. none of the mitigation proposed by the Project is applied) then under certain circumstances an individual or a few individual rats might subsequently disperse from this home range. This would only constitute an increase in risk to AB Agri on the basis that:

- these rats establish a new home range near or sufficiently nearer to the AB Agri facility as opposed to another location;
- rats dispersing from a home range near the Project carried salmonella;
- rats exposed to other sources of salmonella do not currently have a home range in the general vicinity of the AB Agri; and
- AB Agri's rat control measures were not applied or failed.

5.1.3.9 Considering rat behaviour, it is unlikely that even if the operational Project attracted substantial populations of rats that the existing level of salmonella contamination risk to AB Agri would be materially increased to the extent that AB Agri's existing controls failed. With the controls proposed by the Applicant the low level of risk is reduced further.

5.1.3.10 Furthermore, low level of carriage of Salmonella (1%) has been reported on rodents from natural, landfill and farm environments (Allen et. Al, 2007) and higher contamination of rats with Salmonella had been linked to close contact with other animal species, raw food and high temperature environment (Meerburg and Kijlstra 2007 and references therein, Skarżyńska et al. 2020)

5.1.4 Geographic Proximity

5.1.4.1 Although AB Agri refer to the Project as 'adjoining' its facility, in reality there are substantial distances separating the AB Agri raw material receptions area and the ERF tipping hall and RDF transport routes. There are also substantial physical structures between the ERF tipping hall and AB Agri.

5.1.4.2 These separation distances and barriers have been considered in the above assessment.

5.2 Residual Risk with Controls in Place

5.2.1.1. Based on the above considerations the likelihood of the operating Project compromising AB Agri's biosecurity is very small even without the application of a series of proposed measures, above and beyond compliance with the RDF CoP, by the Applicant. There are no features of the Project that would act to increase the populations of avian and rodent pest species in the area. The ability of pest species to gain access to the RDF either in transit or after delivery to the tipping hall will be very limited. While the movement of RDF on roads is a low-risk activity for Salmonella

transmission in the first place, the Applicant's proposed re-routing will reduce a very low risk further.

5.2.1.2 Having considered all relevant aspects of risk, the Applicant considers that its operation will not result in any material change to the current Salmonella contamination risk profile for the AB Agri facility.

6. CONCLUSIONS AND SECURING CONTROLS

6.1.1.1 In regard to the mitigation matters specifically raised by AB Agri the Applicant's position is set out below.

Table 1: Applicant Responses to AB Agri

Matter raised by AB Agri	Applicant response in brief
A condition requiring RDF to exclude material of animal origin;	This is not practicable as material of animal origin cannot be excluded from RDF. Since RDF is exposed to the environment for the first time in the tipping hall and with other controls in place the possible presence of material of animal origin in the RDF would not change the risk profile and is therefore unnecessary.
A condition requiring all RDF to be delivered in sealed containers and wrapped/sealed bales;	RDF will be delivered to the tipping hall in wrapped/sealed bails and sealed containers with the exception of some road deliveries by covered trailer with walking floors. The latter will only arrive from the south via the new access road (i.e. the closest they will come to AB Agri is the ERF tipping hall), will not attract or contact pest animals while in transit and as the first time the RDF they carry is exposed to the environment is in the tipping hall using such vehicles will not change the risk profile.
A condition requiring an Operational Environmental Management Plan to include wheel washing and disinfectant regime for RDF delivery vehicles;	A wheel washing and disinfection regime will be considered in the course of the Environmental Permitting process and based on a risk assessment. It should be noted that no vehicles will pass the AB Agri facility and the only vehicles to use public roads will be those accessing the ERF via the new access road to the south.
A routing agreement that HGVs do not drive past ABN.	The Applicant has committed to no vehicles carrying RDF using First Avenue

6.1.1.2 At this stage it is the view of the Applicant that compliance with the RDF CoP, and the routing change, will minimise any risks to AB Agri involved in transporting RDF. In addition, the Applicant has committed to certain design considerations in the Design Principles and Codes Document. The operation of the Project will be regulated by the terms of the Environmental Permit from the Environment Agency. It is anticipated that many if not all aspects of the delivery and handling of RDF set out in the RDF CoP will be covered by the terms of the permit, thus becoming a legal compliance matter for the Applicant. Any operational environmental management requirements that fall outside the remit of the Environmental Permit will be addressed by an Operational Environmental Management Plan (OEMP) (which will be approved by North Lincolnshire Council, with input from the Environment Agency) as secured by DCO Requirement 4.

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