

 <p>Lower Reule Bioenergy</p>	Title: Environmental Risk Assessment	Issue: 2	Reference: LRBE-OD-16	Date: 20/3/2020	Page 1 of 8
	Proposed by: S Shaw	Approved by: K French	Assessment Team		
			Name: S Shaw	Signed: <i>S Shaw</i>	
		Name: K French	Signed: <i>K French</i>		


	Hazard	Who/what is at risk and how?	Current control measures	Likelihood	Severity	Risk Factor L x S
1	Odour released from the biogas plant and de-packaging site	<ul style="list-style-type: none"> Local people may be sensitive to the odour / amenity impact 	<ul style="list-style-type: none"> The site is situated away from many houses, however the house on the entrance needs to be taken into account as a receptor Minimum retention time of 40 days. Biofilter and an acid bath in the de-packaging shed Totally sealed de-packaging shed with a roller shutter door, negative pressure and a minimum of 3 air changes per hour Food waste is handled using as first in first out procedure and is in no circumstances stored in the depackaging building bays for longer than 7 days. 	4	1	4
2	Spillage of digesting materials or digestate	<ul style="list-style-type: none"> Local water course Groundwater Land Animals 	<ul style="list-style-type: none"> Totally banded site to meet secondary containment requirements in CIRIA C736 Sealed drainage system Every day, weekly, monthly and annual site maintenance (documented) 5 yearly checks on the integrity of the tanks (documented) Pipe pressure testing every 3 years (documented) Alarms on the SCADA system to alert staff if the tanks become too full or the gas pressure is too high Spreading of digestate is carried out in accordance with a digestate management plan 	1	5	5
3	Jetting from a digester	<ul style="list-style-type: none"> Local water course Groundwater Land Animals 	<ul style="list-style-type: none"> The secondary containment design for the AD plant has been reviewed with respect to the possibility of jetting effect and recommended improvements are being carried out 5 yearly checks on the integrity of tanks Alarms on the SCADA system to alert staff if the tanks become too full or the gas pressure is too high Correctly balanced diet for the digesters Pre-test all feed stocks for the AD plant to prevent foaming etc with new feedstocks 	1	5	5
4	Spillage of unpasteurised food waste	<ul style="list-style-type: none"> Local water course Land Animals 	<ul style="list-style-type: none"> 3 yearly pipe testing (documented) Roller shutter doors on the de-packaging shed where food waste is tipped Pressure testing of the food waste lorry barrel annually 	2	5	10

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	Hazard	Who/what is at risk and how?	Current control measures	Likelihood	Severity	Risk Factor L x S
5	Overfilling of vessels	<ul style="list-style-type: none"> Staff Surrounding land contamination Watercourse contamination 	<ul style="list-style-type: none"> The whole site is secondary contained; therefore, no spillage can affect any land or water course outside the AD plant boundary Tanker always on site to suck out any spillages and recirculate through the AD system 	1	3	3
6	Biogas leaking from AD plant	<ul style="list-style-type: none"> Damage to the atmosphere Staff could breathe in gasses Corrosion of equipment Personnel working on site Release of greenhouse gases 	<ul style="list-style-type: none"> Maintenance schedule in place with reminders to make sure pipe work, tank integrity etc. is checked regularly Process monitoring and observation of results to maintain a steady process and gas production levels wherever possible Any excess gas burned off using the flare, rather than releasing through the PRV's All employees wear personal gas monitors 	1	2	2
7	Failure of containment	<ul style="list-style-type: none"> Wildlife could be contaminated/poisoned Land contaminated Watercourses contaminated Damage to cropping locally Staff potentially if they're in the site at the time 	<ul style="list-style-type: none"> Maintenance on site is being kept up to date with an online system Daily inspections of the bund walls Ground care maintenance Daily walk round of the whole site daily checks recorded in day diary Pressure testing of pipe work every 3 years Pressure testing of digestors every 5 years 	2	5	10
8	Wrong connections made in drains	<ul style="list-style-type: none"> Land and water contamination 	<ul style="list-style-type: none"> No drainage is on site The only drainage to be used is a manual discharge collection sump and gate – to be checked on the daily walk round of site 	2	3	6
9	Incompatible substances allowed to come into contact	<ul style="list-style-type: none"> Chemical reaction leading to emissions PAS110 standards jeopardised 	<ul style="list-style-type: none"> The AD process is entirely sealed Strict waste pre-acceptance, acceptance and rejection procedures are in place and all staff will be trained accordingly. 	2	3	6
10	Unexpected reactions	<ul style="list-style-type: none"> Staff could be harmed The environment could be contaminated 	<ul style="list-style-type: none"> Daily checks to be undertaken Tests performed on new feedstocks to ensure their compatibility (waste pre-acceptance and acceptance procedures in place) Secondary containment around the entire site prevents any releases to the wider environment Daily process monitoring of digesters (PH and temperatures are recorded on a daily basis) 	2	4	8

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	Hazard	Who/what is at risk and how?	Current control measures	Likelihood	Severity	Risk Factor L x S
			<ul style="list-style-type: none"> Regular testing of digestate samples every 6000m3 and every month 			
11	Release of an effluent before checking its composition	<ul style="list-style-type: none"> The environment could be contaminated 	<ul style="list-style-type: none"> Daily checks to be undertaken Tests performed on new feedstocks to ensure their compatibility Secondary containment around the entire site prevents any spillages Daily PH testing Daily Temperature testing Regular testing of digestate samples 	2	4	8
12	Failure of main services	<ul style="list-style-type: none"> Staff could be harmed The environment could be contaminated 	<ul style="list-style-type: none"> Backup generator available at all times Water is sourced from on-site own bore hole with a pending application for a mains water supply for contingency 	2	3	6
13	Failure of an operator system	<ul style="list-style-type: none"> Staff could be harmed The environment could be contaminated if the system doesn't restart quickly 	<ul style="list-style-type: none"> On call rota system in operation (1 in 3 have call phone to attend alarm call out for engine and plant issues normal response time within the hour) A backup generator is available when needed 	2	3	6
14	Vandalism	<ul style="list-style-type: none"> Staff could be harmed The environment could be contaminated 	<ul style="list-style-type: none"> The site is always kept locked at night and manned during the day 7-4pm The site has CCTV with an alarm connected The site is fenced all round. 	1	1	1
15	Air management system failure	<ul style="list-style-type: none"> Staff could be harmed The environment could be contaminated 	<ul style="list-style-type: none"> All staff are to be removed from the building immediately Breathing apparatus is provided on site to be worn in case of emergency All doors are to be kept closed and the building sealed until the air system is repaired 	2	2	4
16	Spillage of oil or diesel	<ul style="list-style-type: none"> Contamination of surface water within secondary containment area 	<ul style="list-style-type: none"> Planned preventative maintenance program for all plant and equipment Diesel and Gas oil tank are both bunded (110% capacity) The oil tanks associated with the CHPs are bunded and are inside the engine containers. Spill kits are provided. Daily checks for minor spillages of oil and diesel Spill kits kept on site (please see site plan) Located outside the engine room Staff trained in Spillage Procedure . If any potential contamination is detected, then the sump will be emptied via tanker and sent to a suitably permitted facility. 	1	4	4

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	Hazard	Who/what is at risk and how?	Current control measures	Likelihood	Severity	Risk Factor L x S
17	Spillage of liquid waste	<ul style="list-style-type: none"> Contamination of surface water within secondary containment area 	<ul style="list-style-type: none"> Daily checks for spillages Always respond ASAP to full digester alarms on site (call out rota out of operating hours response time within the hour) Internal tank testing undertaken every 5 years Pipe testing undertaken every 3 years Check coupling and uncoupling of the digestate lorry is undertaken safely and correctly to prevent spillages (induction checklist in operation for all drivers collecting digestate from site) 	2	4	8
18	Litter	<ul style="list-style-type: none"> Amenity / visual impact Damage to wildlife 	<ul style="list-style-type: none"> Daily checks for litter. Litter picks carried out if litter observed. (recorded on our daily checklist) 	1	2	2
19	Waste, litter and mud on local roads	<ul style="list-style-type: none"> Nuisance, loss of amenity, road traffic accidents. 	<ul style="list-style-type: none"> Daily checks for litter. Litter picks carried out if litter observed. (recorded on daily checklist) All road surfaces are sealed All vehicles will have wheels washed as standard 	2	4	8
20	Pests	<ul style="list-style-type: none"> Harm to human health, nuisance, loss of amenity 	<ul style="list-style-type: none"> Daily checks for pests Contract with pest control company who visit every month 	2	2	2
21	Dust	<ul style="list-style-type: none"> Local human population through inhalation Nuisance from e.g. dust on cars 	<ul style="list-style-type: none"> All waste treatment activities are carried out inside a building or within the AD plant. All surfacing used for vehicle movements is sealed A daily observation check for dust will be carried out. A road sweeper will be deployed as necessary 	2	3	6
22	Noise and vibration	<ul style="list-style-type: none"> Nuisance, loss of amenity, loss of sleep. 	<ul style="list-style-type: none"> Vehicle movements are limited via the site planning permission to 13 lorries per day (this restriction is for delivery vehicles coming to site) The depackaging plant has fast acting roller shutter doors which are kept closed except to allow vehicles to enter and exit Mobile plant is fitted with reversing alarm (Mobile plant operating in side depack shed with fast action speed roller shutter doors down to contain any noise) The CHPs are in containers. The doors are kept closed when not in use and the containers are sound proofed 	2	3	6


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	Hazard	Who/what is at risk and how?	Current control measures	Likelihood	Severity	Risk Factor L x S
23	Releases of NO ₂ and SO ₂ , CO and Total Volatile Organic Compounds (VOC)	<ul style="list-style-type: none"> Protected nature conservation sites - European sites and SSSIs. Local human population Site personnel 	<ul style="list-style-type: none"> The impact on nearby human and ecological receptors is being assessed through an Air Quality Impact Assessment. Any required control measures will be put in place 	2	3	6
24	Accidental explosion of biogas.	<ul style="list-style-type: none"> Respiratory irritation, illness and nuisance to local population Injury to staff, fire fighters or arsonists/vandals. Pollution of water or land. 	<ul style="list-style-type: none"> This risk is controlled by the implementation of an effective management system including close process monitoring and control Emergency gas control in place; flare, PRVs and bursting disc Foam is controlled by daily visual inspections, high level alarms and process monitoring 	2	5	10
25	Accidental fire causing the release of polluting materials to air (smoke or fumes), water or land.	<ul style="list-style-type: none"> Local human population Site personnel Groundwater and surface water Land 	<ul style="list-style-type: none"> The wastes stored and treated on site are not combustible in nature There are fire control mechanisms in place on the CHPs including flame arrestors and automatic isolation valves 	2	4	8
26	Flooding of site	<ul style="list-style-type: none"> If waste is washed off site it may contaminate buildings / gardens / natural habitats downstream. 	<ul style="list-style-type: none"> Site is not in a flood risk zone Any fire water or contaminated water in the case of a spillage can be retained within the secondary containment systems for the AD plant and the depackaging plant prior to removal off-site to a suitably permitted facility 	2	4	8
27	Acceptance of food waste	<ul style="list-style-type: none"> Release of odour into the atmosphere Spillage of food waste 	<ul style="list-style-type: none"> All food waste deliveries are taken within the de-packaging building Always ensure the roller shutter door is closed during a delivery Steam pressure wash off the lorry Ensure the one-way system is followed on site for all deliveries All food waste delivered has passed our pre waste acceptance criteria (LRBE -SOP-07) 	2	2	4
28	Rejection of food waste	<ul style="list-style-type: none"> Release of odour into the atmosphere 	<ul style="list-style-type: none"> Ensure the delivery lorry is quickly turned around Ensure the delivery lorry is parked inside the shed while paperwork and checks are being carried out Ensure the lorry is washed down with the steam jet washer Rejection procedure in place and followed (-LRBE -SOP-01) 	2	1	2
29	Movement of food waste within the de-packaging building	<ul style="list-style-type: none"> Site personnel Groundwater and surface water 	<ul style="list-style-type: none"> Ensure the roller shutter door is closed at all times Ensure the loadall driver has checked in the load and directs to relevant 	2	3	6

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		tipping bay area. <ul style="list-style-type: none"> Ensure the odour abatement system is always working 			

	Further Control Measures	Priority	Action by	Final Risk Factor
1	<ul style="list-style-type: none"> Communicate the risk of odour release to the employees & ensure that they are fully aware of the importance of keeping the doors closed Staff to ensure that gas detectors are worn at all times Ensure that the roller shutter door/s have a maintenance/service contract in place (PUWER Regulations) 	1-3 months	S. Shaw	4x1 = 4
2	<ul style="list-style-type: none"> Communicate the risk of spillage to the employees & ensure that they are fully aware of the clean-up procedures Consider carrying out documented weekly tests on the SCADA alarm systems to ensure that they sensors are fully operational 	1-3 months	S. Shaw	1x5 = 5
3	<ul style="list-style-type: none"> Consider carrying out documented weekly tests on the SCADA alarm systems to ensure that they sensors are fully operational 	1-3 months	S. Shaw	1x5 = 5
4	<ul style="list-style-type: none"> Communicate the risk of spillage to the employees & ensure that they are fully aware of the clean-up procedures Consider carrying out documented weekly tests on the SCADA alarm systems to ensure that they sensors are fully operational Ensure that the roller shutter door/s have a maintenance/service contract in place (PUWER Regulations) 	1-3 months	S. Shaw	1x5 = 5
5	<ul style="list-style-type: none"> Communicate the risk of spillage to the employees & ensure that they are fully aware of the clean-up procedures 	1 month	S. Shaw	1x3 = 3
6	<ul style="list-style-type: none"> Consider periodic audits of the maintenance documentation to ensure that maintenance is being completed 	1 month	KF/S.Shaw	1x2 = 2
7	<ul style="list-style-type: none"> Ensure that any types of walk-around. Inspections etc is fully documented and auditable to prove due-diligence 	1 month	K French	2x5 = 10
8	<ul style="list-style-type: none"> Ensure that any types of walk-around. Inspections etc is fully documented and auditable to prove due-diligence 	1 month	K French	2x3 = 6
9	<ul style="list-style-type: none"> Under COSHH regulations, implement a procedure/policy which captures ALL chemicals/substances which are brought on site Create a register of ALL chemical/substances and where they are used Communicate the procedure/policy to ALL employees 	1-3 months	K French M Haycock	1x3 = 3
10	<ul style="list-style-type: none"> Ensure that any types of walk-around. Inspections etc is fully documented and auditable to prove due-diligence 	1 month	K French	2x4 = 8
11	<ul style="list-style-type: none"> Ensure that any types of walk-around. Inspections etc is fully documented and auditable to prove due-diligence 	1 month	K French	2x4 = 8
12	<ul style="list-style-type: none"> No further Action 			NFA
13	<ul style="list-style-type: none"> Ensure that written procedures are communicated to the relevant which covers what to do in the event of a system failure 	1 month	S. Shaw	2x3 = 6
14	<ul style="list-style-type: none"> Ensure that written close-up procedures are communicated to the relevant people 	1 month	S. Shaw	1x1 = 1
15	<ul style="list-style-type: none"> Ensure that written procedures for air management systems failure are communicated to the relevant people 	1 month	S. Shaw	2x2 = 4

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	<ul style="list-style-type: none"> Ensure that the roller shutter door/s have a maintenance/service contract in place (PUWER Regulations) 			
16	<ul style="list-style-type: none"> Record daily checks for Diesel and oil leaks on daily diary checks 	1 month	S. Shaw	1x4 = 4
17	<ul style="list-style-type: none"> Monitor induction checklist for drivers collecting digestate 	1 month	S. Shaw	2x4 =8
18	<ul style="list-style-type: none"> No further action 			NFA
19	<ul style="list-style-type: none"> No further action 			NFA
20	<ul style="list-style-type: none"> No further action 			NFA
21	<ul style="list-style-type: none"> Add daily checks to day diary 	1 month	S. Shaw	2x3 = 6
22	<ul style="list-style-type: none"> Monitor vehicle movements 	1-3 months	S. Shaw	2x3 = 6
23	<ul style="list-style-type: none"> Review control measures when put in place 	1-3 months	S. Shaw	2x3 = 6
24	<ul style="list-style-type: none"> New updated flare control system being installed 	1 -3 months	S. Shaw	2 x5 = 10
25	<ul style="list-style-type: none"> Monitor and record any changes 	On Going	S. Shaw	2x4 =8
26	<ul style="list-style-type: none"> Review and record any issues 	On Going	S. Shaw	2x4 =8
27	<ul style="list-style-type: none"> Record and monitor any changes 	On Going	S. Shaw	2x2 =4
28	<ul style="list-style-type: none"> Record and monitor any changes 	On Going	S. Shaw	1x1 =2
29	<ul style="list-style-type: none"> Record and monitor any changes 	On Going	S. Shaw	3x3 =6

I the undersigned hereby declare that I have read, understood and agree to work in accordance with the Risk Assessments and all the associated supporting documents.

