Table 1a – Types of activities

Schedule 1 listed activities						
Installation name	**Schedule 1 or other references (See note 1)**	**Description of the activity (See note 2)**	**Activity capacity (See note 3)**	**Annex I (D codes) and Annex II (R codes) and descriptions**	**Hazardous waste treatment capacity (if this applies) (See note 3)**	**Non-hazardous waste treatment capacity (if this applies) (See note 3)**
Westwood Anaerobic Digestion Plant (AR1)	S5.4 A(1) (b) (i)	Recovery or a mix of recovery and disposal of non-hazardous waste with a capacity exceeding 75 tonnes per day (or 100 tonnes per day if the only waste treatment activity is anaerobic digestion) involving biological treatment. From receipt of waste through to digestion and recovery of by-products (digestate). Anaerobic digestion of waste in four tanks followed by burning of biogas produced from the	400 tonnes maximum storage capacity at any one time. To increase maximum annual throughput from 65,000 to 110,000 tonnes per year.	R3: Recycling/reclamation of organic substances which are not used as solvents	N/a	400 tonnes maximum storage capacity at any one time. To increase maximum annual throughput from 65,000 to 110,000 tonnes per year.

		process. Waste types suitable for acceptance are limited to those specified in Table S2.2.				
Westwood Anaerobic Digestion Plant	WFD Annex II operations	Treating biogas and biomethane. The activity is for gas scrubbing, storage, gas cleaning and upgrading to biomethane and injecting upgraded biomethane to the national grid.	Maximum likely injection to national grid pipeline is 750m^3/hr.	R3 – recycling and reclaiming organic substances which are not used as solvents.	N/a	To increase maximum annual throughput from 65,000 to 110,000 tonnes per year. This is to maintain feedstocks for the continuation of gas production for the existing CHP engines to generate electricity and to produce gas to be upgraded to biomethane pending injection into the national grid.

Directly associated activities *(See note 4)*	
Name of DAA	**Description of the DAA *(please identify the schedule 1 activity it serves)***
Storage of waste pending recovery or disposal (AR2)	**R13: Storage of waste pending the operations numbered R1 and R3 (excluding temporary storage, pending collection, on the site where it is produced).** **From the receipt of permitted waste to pre-treatment and despatch for anaerobic digestion on site.** To increase maximum annual throughput from 65,000 to 110,000 tonnes per year. This is to maintain feedstocks for the continuation of gas production in the existing CHP engines to generate electricity and to produce gas to be upgraded to biomethane pending injection into the national grid.

	Storage of residual wastes from pre-treatment to despatch off-site for recovery. The site currently removes approximately 3 Roll on Roll Off skips of packaging wastes and 1 Roll on Roll Off skip of screened separator waste from site each week. With an increase in maximum annual throughout of approximately 41% per annum, this is likely to increase the amount of packaging waste removed from site to approximately 5 Roll on Roll Off skips a week and increase separator wastes to approximately 2 Roll on Roll off skips per week for disposal elsewhere. **Storage of waste in an enclosed building fitted with appropriate odour abatement and on an impermeable surface with sealed drainage.** All storage of waste shall continue to take place within an enclosed building equipped with roller shutter doors. The building will be served by a new purpose designed appropriate odour abatement system with extracted air channelled through to a new carbon filter for treatment prior to emission to air via a 12.7 metre high stack to aid dispersion. All wastes will continue to be stored pending treatment for a maximum of 48 hours within the designated storage bays. The building will be served by impermeable surfacing and sealed drainage. The reinforced concrete floor is engineered to drain towards a 200m^3 below ground sealed sump and away from the entrance doorways. A new sealed separator room will be constructed to 'house' the Borger screw press separator for the screening of PAS110 QP digestate. Extracted air from the separator room will be channelled to an acid scrubber for treatment prior to emission to air via a 4 metre stack. The headspace of Digestate Storage Tank 1 will also be extracted through to this same acid scrubber for treatment. This is a new abatement system and emission point to be listed in the permit. **Waste types suitable for acceptance are limited to those specified in Table S2.2.** There will be no changes in the permitted waste specified in Table S2.2. No new waste types are proposed as part of this variation submission.
Physical treatment for the purpose of recycling (AR3)	**R3: Recycling/reclamation of organic substances which are not used as solvents.** **From the receipt of waste to despatch for anaerobic digestion or despatch off site for recovery.** To increase maximum annual throughput from 65,000 to 110,000 tonnes per year. This is to maintain feedstocks for the continuation of gas production to the existing CHP engines to generate electricity and to produce gas to be upgraded to biomethane pending injection into the national grid.

	Pre-treatment of waste in enclosed building and on impermeable surface with sealed drainage system including shredding, sorting, screening, compaction, baling, mixing and maceration. All storage of waste shall continue to take place within an enclosed building equipped with fast acting roller shutter doors. All wastes will continue to be stored pending treatment for a maximum of 48 hours within designated storage bays. The building will continue to be served by impermeable surfacing and sealed drainage. The reinforced concrete floor is engineered to drain towards a 200m^3 below ground sealed sump and away from the entrance doorways. All existing pre-treatment activities will continue within the waste reception and process building including shredding, sorting, screening, compaction, baling, mixing and maceration. Feedstock will continue to be passed through 2 hammermills (de-packaging plants) and a macerator to process down to a particle size of 12mm. A new sealed separator room will be constructed to house the Borger screw press separator plus an additional unit for PAS110 QP digestate screening. This will take place following pasteurisation, whereby digestate will passed through a chiller unit to reduce the temperature down to approximately 40°C. From here, digestate will be fed through a Borger separator to remove contaminates down to <2mm. **Post-treatment of digestate in an enclosed building and on an impermeable surface with sealed drainage system, including screening to remove contraries, centrifuge or pressing and addition of thickening agents (polymers) or drying for use as a fertiliser or soil conditioner (drying for the purpose of use as a fuel is not permitted).** A new sealed separator room will be constructed to house the Borger screw press separator plus an additional unit for PAS110 QP digestate screening to the southwest of the digesters. This purpose designed building will be served by impermeable surfacing and sealed drainage. This will take place following pasteurisation, whereby digestate will passed through a chiller unit to reduce the temperature down to approximately 40°C. From here, digestate will fed through a Borger separator to remove contaminates down to <2mm to remove any remaining contraries. **Heat treatment (pasteurisation) of waste in two tanks for the purpose of recovery.** Digestate will be discharged to the two 166m^3 pasteuriser tanks. The pasteurisers will be heated for a minimum of 65 minutes at 70.7°C to remove any pathogens as required by the Animal By-Product Regulations. Each tank will be equipped with lower, middle and upper temperatures probes subject to yearly testing and calibration.

	Gas cleaning by biological or physical (carbon filtration) or chemical scrubbing. The existing waste reception and process building will have a new purpose designed replacement air extraction system installed. Extracted air will be channelled through to a new purpose designed replacement carbon filtration system for treatment achieving a minimum of 3 air changes per hour. Treated air will be emitted to air via an approximate 12.7 metre high stack to aid dispersion. Emissions from the filtration system will be subject to six monthly MCERTS testing. A new sealed separator room will be constructed to house the Borger screw press separator plus an additional unit for PAS110 QP digestate screening. Air extracted from this purpose designed building will be channelled through to an acid scrubber for treatment pending emission to air via a 4 metre high stack to aid dispersion. The extraction system will achieve a minimum of 10 air changes per hour. **Waste types suitable for acceptance are limited to those specified in Table S2.2.** There will be no change in the permitted waste list specified in Table S2.2. No new waste types are proposed to be accepted as part of this variation submission.
Steam and electrical power supply (AR4)	**R1: Use principally as a fuel to generate energy.** **From the receipt of biogas produced at the on-site anaerobic digestion process to combustion with the release of combustion gases.** **Combustion of biogas in 3 combined heat and power (CHP) engines with an aggregated thermal input of 7.368 MWth.** The current 3 CHP engines (1 at 0.8 MW, 2 at 1.63MW) will remain in operation. The existing CHP emissions stack will remain unchanged. The Jenbacher CHP engines will continue to convert biogas into electricity and heat. The electricity will be initially utilised within the plant and the remainder sold via purchase power agreement to National Grid or to a third-party user. Approximately a third of the heat generated will be used back in the process to maintain the temperatures of the digesters, for pasteurisation and to heat the premises.
Emergency flare operation (AR5)	**D10: Incineration on land.** **From the receipt of biogas produced at the on-site anaerobic digestion process to incineration with the release of combustion gases.** **Use of one auxiliary flare required only during periods of breakdown or maintenance of the CHP engines and/or auxiliary boilers.**

	The existing CHP flare will be relocated adjacent to the new gas flare to be installed to serve the gas holder providing gas to grid (BUP).
Raw material storage (AR6)	**Storage of raw materials including lubrication oil, antifreeze, propane, ferric chloride and activated carbon.** **From the receipt of raw materials to despatch for use within the facility.** There will no intended storage of any new raw materials from the existing materials stored on site. Existing raw materials stored on site will continue to include lubrication oil, antifreeze for use on the CHP engines, propane for the ignition of both auxiliary flares, ferric or ferrous chloride for hydrogen sulphide dosing and activated carbon. The number of propane cylinders to be stored on site will effectively double due to an additional flare being installed to serve the gas to grid infrastructure. Propane tanks will be installed for the gas to grid system to increase the calorific value of the biomethane pending export to the grid. The site will utilise ferrous chloride to reduce hydrogen sulphide concentrations within the biogas.
Gas storage (AR7)	**R13: Storage of waste pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced.)** **Storage of biogas produced from on-site anaerobic digestion of permitted waste in one stand-alone tanks or roof space of digesters.** **From the receipt of biogas produced at the on-site anaerobic digestion process to despatch for use within the facility.** The gas generated from within Digesters 1 and 2 will be stored in an existing gas holder before being used as fuel in the Combined Heat and Power (CHP) units. Digesters 3, 4, and 5 will be stored in a new gas holder prior to being transferred to a Biogas Upgrade Plant (BUP) and a Gas Export Unit (GEU) pending export to the national grid via a gas pipeline. Gas pressures are continuously recorded on SCADA.
Digestate storage (AR8)	**R13: Storage of waste pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced).** **From the receipt of processed uncertified digestate produced from the on-site anaerobic digestion process to despatch for use off-site.** **Storage of processed uncertified digestate in three storage tanks.**

	Following pasteurisation, digestate will be subject to final screening to remove any foreign objects such as plastic down to a <2mm particle size before being transferred to 1 of 3 Digestate Storage Tanks at 9700m^3 each (29,100m^3 total). PAS110 QP digestate will continue to be stored in the existing purpose built Storage Tanks which are hydraulically mixed before being transported elsewhere for alternative storage or to be applied to local arable land as a bio-fertilizer via taker or via the irrigation main. Storage tank 1 will be subject to a full degrit, integrity assessment by a qualified third party and recommission. The air from the headspace of storage tank 1 will continue to be extracted but will be channelled through to the acid scrubber also serving the screening room. Although a proposed increase in annual throughput from 65,000 to 110,000 tonnes will increase digestate production by approximately 45,000 tonnes per year, the site has an agreement with a third party who are contractually obligated to collect all PAS110 QP digestate pending storage or use for agricultural benefit. This contractual agreement ensures the third party collects and manages all digestate regardless of expected throughput and must do so without compromising PAS110 status, site operations or processing. No increase in onsite digestate storage capacity is required as part of the increase in annual waste throughput.
Surface water collection and storage (AR9)	**Collection and storage of uncontaminated roof and site surface water in a balancing pond and one rainwater storage tank.** **From the collection of uncontaminated roof and site surface water from non-operational areas only to re-use within the facility or discharge off-site to a field drainage ditch via soak-away reed bed.** The total rainwater catchment area within the bund will not increase. Rainwater captured within the secondary containment area will be stored in an above ground 140m^3 Water Tank (formerly FOG tank). Any surplus captured rainwater will be discharged to the onsite surface water pond following visual assessment and ammonia testing. From here, once the levels within the pond rise, the sluice will be opened to allow water to pass through to the reedbed system offsite following a further visual assessment and ammonia reading. Captured rainwater within will be subject to treatment likely to be in the form of aeration and through the addition of an ammonia reduction agent. In the event of elevated ammonia readings, all contained water would be put through the process for treatment and not discharged to the surface water pond. The entire process to release water from within the secondary containment area will be a manually controlled operation as overseen by the site manager and/or duty manager.

	Uncontaminated surface water derived from non-operational areas including from the front concrete apron and from rooftops will continue to be segregated and isolated. Surface water from all non-operational areas will continue to drain directly to the surface water pond.
Air treatment (AR10)	**Collection and treatment of air from the buildings or plant using abatement system – carbon filters (for reception hall) and two biofilters (for cooling storage tank and underground sump) prior to release to atmosphere.** **From the collection of air from site processes to treatment and release of treated air to atmosphere.** A new purpose designed and engineered ventilation and negative air extraction system will be installed within the existing waste reception and process building along with a new carbon filtration system for treatment with an approximate 12.7 metre high emissions stack to aid dispersion. The new purpose designed extraction system and the odour abatement system will ensure a minimum of 3 air changes per hour is maintained within the building at all times. The system will continue to provide effective odour abatement and will be subject to 6 monthly emissions testing in accordance with the permit and BAT. The proposed increase in annual waste throughput will not exceed the existing maximum storage capacity within the building of 400 tonnes at any one time. The size and capacity of the existing waste reception and process building will remain unchanged and will not increase. Consequently, there will be no increase in the size and volume of air to be extracted and treated from within the building. There will be no increase in the mass of emissions released to air from the waste reception and process building. There will be no significant deviation in the nature of feedstocks and therefore no changes to the composition of the extracted air passing through the carbon filter. Currently digestate screening takes place out in the open with no abatement. The new site proposals include a purpose built sealed screening room to house the Borger separator. All extracted air (10 times per hour) from within the Borger house will be channelled through to an acid scrubber for treatment prior to emission to air via a 4 metre high stack to aid dispersion. This will be a new point source emission and will be subject to process monitoring requirements and 6 monthly MCERTS emissions testing. The headspace of Digestate Storage Tank 1 will continue to be extracted but will be channelled through to the same acid scrubber as the screening room instead of an open containerised woodchip biofilter for treatment. The 200m^3 below ground sump within the waste reception hall was previously used for the blending and mixing of feedstocks prior to discharge to the Raw Waste Buffer Tank (RWBT) as well

	as for Digester return. The below ground sump was formerly allied to a cockle biofilter to treat odourous air from the waste mixed and stored within the sump. Following changes to front end operations within the waste reception hall, the below ground sump is no longer used for its intended purpose of blending and mixing feedstocks and for digester return. As such Biogen no longer need to extract channelled odourous air from the below ground sump for treatment. This has already been approved by the Environment Agency (**document references WWBGS1 & BGSEA1**). As such, the extraction system has been switched off and the biofilter and ancillary pipework have been isolated. This will all be decommissioned and removed and the below ground sump has been emptied and cleaned out by a specialist contractor.	
Specified generator	An additional back up diesel generator will be installed and positioned on a purpose built impermeable surfacing adjacent to the existing front concrete apron. This will supply power to the new Gas-to-Grid infrastructure in the event of loss of power to site. This newly installed generator will be in addition to the existing backup generator which will remain in place to continue to provide power for relevant infrastructure associated with the gas to CHP engines. An existing Protected Supply List includes the air blowers for the gas holder, auxiliary flare, roller shutter doors, weighbridge, and a 415v electrical power socket for wheel washing in the reception hall.	
For installations that take waste (See note 5)	**Total storage capacity**	400 tonnes in the waste reception and process building at any one time.
	Annual throughput (tonnes each year)	110,000t (currently 65,000t, 41% increase).