NON TECHNICAL SUMMARY

This document has been prepared on behalf of Crapper and Sons Landfill Ltd ('Crapper and Sons' or 'The Applicant' hereafter) by Sol Environment Ltd and provides supporting evidence as required by Environmental Permit Application Forms Part C2 and C4 issued by Environment Agency (EA).

The Crapper and Sons site is located at Park Grounds, Brinkworth Road, Wootton Bassett, Swindon, Wiltshire, SN4 8DW (Grid Reference: SU 0506 8421).

Crappers and Sons Ltd (the 'Applicant' or the 'Operator') is making this application to carry out a '*Substantial*' Variation of their existing environmental permit (EPR/DP3797SE) under The Environmental Permitting (England and Wales) Regulations 2018 (as amended) in order to:

- Increase the tonnage of waste accepted by the Material Recycling Facility and Combustion Plant;
- Amend the flue gas cleaning process at the Combustion Plant to include the use of lime instead of sodium bicarbonate and replace Selective Non-Catalytic Reduction (SNCR) with Selective Catalytic Reduction (SCR);
- Replace the existing permitted Material Recycling Facility with a different technology provider and include additional EWC Waste Codes;
- Amend the odour treatment system in the Material Recycling Facility to an Airsteril® system;
- Add an additional waste code to the permitted list of wastes accepted by the Composting Facility; and
- Replace a portion of the existing REFGAS gasification plant with a new gasification plant provided by Enruption™ which includes a directly associated char combustor which will be regulated as a Small Waste Incineration Plant.

The proposed changes relate to the following permitted activities on site. Please note, the Material Recycling Facility and Combustion Plant are yet to be constructed on site.

- *The Composting Facility* (listed as AR1 in the sites existing permit) – the only amendment to this activity is the additional of a waste code (03-03-10 – fibre rejects, fibre-, filler- and coating-sludges from mechanical separation) to the permitted list of accepted wastes.

- *The Materials Recycling Facility (MRF)* (listed as AR9 in the sites existing permit) – the purpose and function of this activity will not change as a result of this permit variation, however there is an amendment to the existing permitted equipment and technology provider. The facility is currently permitted to accept a maximum of 80,000 tonnes per annum of mixed waste however this will be increased to 140,000 tonnes per annum as a result of this permit application. Additionally, the permitted biofilter is being replaced by an Airsteril® odour treatment system.

- *The Combustion Plant* (listed as AR2 in the sites existing permit) – the Installation is currently permitted to process approximately 45,000 tonnes of RDF per annum. This will increase to 76,000 tonnes per annum as a result of this permit application. The site layout of the plant has also

changed slightly as shown in Figure 1.4. In addition to this, the flue gas cleaning process is being amended to include the use of lime instead of sodium bicarbonate and replace Selective Non-Catalytic Reduction (SNCR) with Selective Catalytic Reduction (SCR).

- *The Gasification Plant* (listed as AR3 in the sites existing permit) – some of the constructed REFGAS plant is being replaced with a new gasification system provided by Enruption™. The front end of the plant, gas treatment and gas engines will remain as currently permitted, however the gasifier retort will be replaced. The new technology includes a char combustor and air heater / steam superheaters. The char combustor will be regulated as a directly associated activity to the gasification plant and meets the definition of an EPR Schedule 13A Small Waste Incineration Plant (SWIP).

The site is also permitted to operate a wood processing facility and a drying plant. There will be no changes to these activities as a result of this application and are therefore not discussed further in this variation application.

All of the listed activities will remain as per the permitted Schedule References listed in *Table S1.1 Activities* of the sites existing permit. The only amendment to the listed activities is the addition of the char combustor related to the Gasification Plant. Each of the gasification systems will produce 96 kg/hour of char resulting in a total of 288 kg/hour of char being processed within the char combustor. Due to the aggregate quantity of char being significantly below the 3 tonnes per hour capacity threshold stated under the EPR Regulations (Section 5.1 Part A (1)), the char combustor meets the description of a 'Small Waste Incineration Plant' (SWIP). The char combustor will be operated in accordance with the Environmental Permitting (England and Wales) Regulations 2018 and Chapter IV of the Industrial Emissions Directive.

Emissions to Air

The permitted Combustion Plant (AR2) has a 30m stack (A1) combined within a single wind shield to form a single chimney for the discharge of cleaned flue-gas to atmosphere.

All combustion products / flue gases arising from AR2 are passed through multiple gas clean up stages and abatement stages resulting in all emissions to atmosphere being comfortably within the stipulated Emission Limit Values (ELVs) for Chapter IV Industrial Emissions Directive (IED) activities.

Due to the increase in throughput through the combustion plant, an updated Air Quality Impact Assessment has been carried out. This is provided within *Annex D – Updated Air Quality Impact Assessment.*

The Gasification Plant currently has three flues (A2 – A4) permitted, which are housed within a combined exhaust stack consisting of three engine exhaust flues. There is an additional flue within this combined stack which will be utilised by the proposed char combustor and the air heater / steam superheaters.

The emission from the char combustor will pass through multiple gas clean up stages and abatement stages resulting in all emissions to atmosphere being comfortably within the stipulated Emission Limit Values (ELVs) for Chapter IV Industrial Emissions Directive (IED) activities.

The Gasification Plant is also fitted with three emergency enclosed flares (currently permitted as A5 – A7 however now will now be listed as A7 – A9 as a result of this permit application) which are used under controlled conditions to regulate gas pressure during start up and shut down conditions.

As currently permitted, Article 42 of the IED exempts the Gasification Plant from being required to be subject to the Emission Limit Values (ELVs) stipulated for IED Chapter IV, as the syngas produced by the plant has been cleaned to such an extent that it is 'fully recovered' and will no longer be considered a waste. The emissions arising from the combustion of cleaned syngas will not lead to emissions higher than those resulting from the combustion of natural gas.

Odour

Due to the design of the Combustion Plant and Gasification Plant, the fully enclosed processing activities and the nature of the waste feedstock materials stored and processed on site, there is very little potential for fugitive offsite odour emissions and impacts to arise from this part of the site.

The Materials Recycling Facility is currently permitted to include a biofilter plant with a single stack (A10). As part of this permit application, the biofilter will be replaced by an Airsteril® odour treatment system.

The advanced technology of Airsteril® system allows the control of odour without the use of fans and with very low energy consumption. The custom designed thermal convection system ensures that contaminated air processed through the unit achieves optimum dwell time in the purifying chamber. As the processed air leaves the unit, it then itself becomes an efficient cleaning agent, targeting pathogens both in the air and on surfaces.

Due to the type of technology, all odourous emissions are treated within the recycling building and there are no vents, extraction or external emissions. Due to this, an Odour Impact Assessment is not appropriate for this type of technology.

All other odour measures will remain as currently permitted.

Emissions to Controlled Water

The only amendment to the drainage arrangements as a result of this permit variation relates to the liquid effluent arising from the Gasification Plant. The effluent will no longer be treated within a packaged

treatment plant and discharged to the sites wider surface water drainage system. The waste water from the gasification system will be injected into the char combustor where it is evaporated, completely removing waste water as a waste stream from the process.

All other drainage arrangements on site will remain as currently permitted.

Emissions to Land

There will be no direct process emissions to land arising from this permit variation.

Waste Management

The total tonnage of recyclables removed from the incoming waste via the Material Recycling Facility will increase due to the increased throughput processed by the plant. As per currently permitted, recyclable materials such as film, card, metals etc will be exported off site to appropriate merchants for recycling. Any non-recyclable wastes will be transferred to the neighbouring landfill.

The main solid by-products produced from the operation of the Combustion Plant will be bottom ash and fly ash, the amounts of which will increase slightly due to the increased throughput of the waste.

The amount of by-products from the proposed operation of the Gasification Plant will decrease as a result of this permit application. The change in technology results in there only being one waste stream from the plant which is the ash produced from the combustion of char. All char and waste water is processed within the char combustor.

The types and amounts of waste produced by the plant is addressed in Section 5 of this Application Support Document.

Impact

Due to the proposed changes on site, the Air Quality Assessment has been updated and the air emissions from the proposed activities have been modelled using AERMOD atmospheric dispersion modelling software.

The air quality and odour impact assessment considered the impacts to all identified residential, sensitive habitat and ecological receptors.

It is the conclusion of the modelling that the Installation is unlikely to have a significant impact at any of the receptor locations examined and is unlikely to have a significant impact on the environment.

All of the air emissions from the Installation have been risk assessed against their potential impact on human health. The results of the assessment are that the proposed installation will not present any risk to human health.

1. INTRODUCTION

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The remainder off this application support document is structured accordingly:

- Section 2: Provides a detailed planning history of the site and associated activities;
- Section 3: Provides specific details associated with the Substantial Variation Permit Application;
- Section 4: Provides specific nature and detailed description of the emissions to air, water emissions and waste associated with the Installation;
- Section 5: Provides details of all environmental monitoring associated with the Installation;

- Section 6: Provides a BAT description of the proposed technology and provides a comparison against the applicable guidance and emission limit values for the Installation; and
- Section 7: Provides an Environmental Impact and Assessment of the Installation against the requirements of the Habitats Directive.

All technical appendices associated with the Installation are included within SOL1911CR01 – Volume 2 and comprise the following:

- Annex A: Figures;
- Annex B: Technical Information;
- Annex C: Environmental Risk Assessment;
- Annex D: Updated Air Quality Assessment and HHRA;
- Annex E: Updated EMS Summary;
- Annex F: Noise Impact Assessment;
- Annex G: Updated Accident Management Plan
- Annex H: Updated Odour Management Plan;
- Annex I: Updated Fire Prevention Plan; and
- Annex J: Existing Permit.

The location of the Installation is provided overleaf in Figure 1.1.

The Installation Boundary is provided in Figure 1.2.

The change in the Material Recycling Facility, Combustion Plant and Gasification Plant layout is shown in Figure 1.3 and Figure 1.4.