ALDERLEY CONSULTING GROUP

COMPANY: Environmental Pollution Control, Health & Safety and Occupational Hygiene Limited
Director: Dr Bernard C Acton, MD, PhD, MSc, LBIOH, FIOSH (RSP), MIIRSM, DpPH-MCIEH, FRSH
"Middle Wood Lodge" Middle Wood Lane Shore Littleborough Lancashire OL15 8EZ
Telephone [redacted] **Mobile:** [redacted]
Registered in England No: 2982936 **VAT Registration No: 616 1906 50**
E-mail d [redacted]

TECHNICAL SUPPORTING INFORMATION

EPR Permit Application

Pet Cremator, Animal Carcase/Animal Remains Incinerator & SWIP

[Interim & Long-term Permits]

STATUTORY REGULATION
INSTALLATION & PROCESS DESCRIPTION
POLLUTANT EMISSION CONTROL
STACK HEIGHT CALCULATIONS & AIR QUALITY IMPACT SCREENING

VETSPEED Limited
The Cambridge Pet Crematorium
A505 Main Road
Thriplow Heath
Royston
Hertfordshire
SG8 7RR

PREPARED FOR: **Mr Richard Brown**
Group Operations Director
VETSPEED Ltd

PREPARED BY: **Dr Bernard C Acton**
PhD, MSc, LBIOH, FIOSH (RSP), MIIRSM, DpPH-MCIEH, FRSH
Technical Director - ACG

Project No. 65210
December 2025

EXECUTIVE SUMMARY

Incineration processes at the *VETSPEED Ltd* site at Royston are currently regulated by the Environment Agency as a 'Part A1' process under the Environmental Permitting (England and Wales) Regulations 2016 [as amended] (EPR) Permit Number EPR/MP3930BE refers.

In the near future, circa March-April 2026, regulation by the EA will cease and the regulation will transfer to the South Cambridgeshire District Council (SCDC).

Future regulation by the SCDC will be by way of two new Permits namely, a 'Part B' PG 5/03 Process Permit together with a Schedule 13A small waste incineration plant Permit.

The 'Part B' PG 5/03 Process Permit will assign operational control over:

[i] The existing Line 1 individual small pet cremator from circa March-April 2026 and thereafter into the future:

AND

[ii] During the period from circa March-April 2026 to circa September-October 2026 a small standby-mobile animal carcase and animal remains incinerator.

The Schedule 13A small waste incineration plant Permit will assign operational control over a new small waste incineration plant that will commence to be installed circa March-April 2026 and which will be commissioned and become fully operational in circa September-October 2026.

This document presents full supporting information for both of the Permit applications.

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1.0 INTRODUCTION

Incineration processes at the *VETSPEED Ltd* site at Royston are currently regulated by the Environment Agency (EA) as a 'Part A1' process under the Environmental Permitting (England and Wales) Regulations 2016 [as amended] (EPR) Permit Number EPR/MP3930BE; copy of the latest Variation is provided at 65210-DOSSIER ONE.

In the near future, circa March-April 2026, regulation by the EA will cease and the regulation will transfer to the South Cambridgeshire District Council (SCDC).

The *Alderley Consulting Group* has been retained by Mr Richard Brown, Group Operations Director at *VETSPEED Ltd* to assist with preparation and submission of the application for an EPR 'Part B' PG 5/03[REF1] Process Permit plus a Schedule 13A[REF2] small waste incineration process (SWIP) EPR Permit from the SCDC. The PG 5/03 and the Schedule 13A cremation/incineration processes will run concurrently, each under its own EPR Permit, with effect from circa September-October 2026. In the interim period [circa March-April 2026 to September-October 2026], only the EPR 'Part B' PG 5/03[REF1] Process Permit will be in force, but this will control operation of both the existing Line 1 animal carcase cremator plus the short-term operation of a small contingency/mobile animal carcase/animal remains bulk load incinerator.

VETSPEED Ltd was established in September 1979; the Company currently operates six pet crematoria in the UK and is nationally further expanding. All sites operate in full accordance with their respective environmental permissions; no site has been subject to any associated enforcement action.

2.0 EXISTING & FUTURE REGULATION OVER THE ROYSTON OPERATIONS

The *VETSPEED Ltd* site at Royston is currently operating under EPR Permit code EPR/MP3930BE that took effect from 28 April 2008 and that was formally last Varied by the EA wef 5th September 2024.

Formerly, the EA Permit included for the incineration of wastes as defined by Schedule 1 of the PPC Regulations Section 5.1A(1)(a), namely the "incineration of non-hazardous WID waste and hazardous clinical WID waste limited to 350 kg hr^{-1}"; this was carried out in the Line 2 incinerator. As such, the Royston site has existing Planning Development approval for the incineration of non-hazardous and hazardous waste types. In addition, the former EA Permit controlled the incineration of WID exempt animal carcases (as then approved under the Animal By-Products Regulations 2003) in the Line 1 individual animal carcase cremator together with the incineration of animal carcases/animal remains in the bulk load Line 4 incinerator.

Use of the WID non-hazardous wastes and hazardous wastes Line 2 waste incinerator was shut down between 2005 and 2006 and decommissioned between 2009 and 2010, but regulation of the Line 1 and Line 4 animal carcases/animal remains cremation/incineration PG 5/03[REF1] processes by the EA continued because the Line 4 animal carcases/animal

remains incineration process incorporated a Wastewater Treatment cell that is used to dispose of rainwater that runs off the yard areas that are subject to potential contamination with various waste types, including hazardous waste, that the Site is permitted to process within the provisions of the EA's EPR Permit code EPR/MP3930BE.

Therefore, as of the date of this application to the SCDC, the current EA Permit covers regulation of:

- treatment of infectious waste by two rotating autoclaves (Rotoclaves), with post-treatment shredding, compaction and storage of treatment residues [Lines 2 and 3]
- repackaging of hazardous waste
- temporary storage of hazardous waste
- disposal of animal carcases in two animal carcase cremators/incinerators [Lines 1 and 4]
- steam generation, container washing and raw material storage
- repackaging of non-hazardous waste
- temporary storage of non-hazardous waste
- the site's ancillary boilers.

In the near future [circa March-April 2026], the Line 4 incinerator will be decommissioned and removed from Site. This is because the unit is past its useful life and struggles to comply with currently assigned ELVs. Also, at this time the existing Wastewater Treatment cell will be decommissioned and removed from Site. Thereafter wastewater will be drained to two existing Storage Tanks termed the Yard Tank and the Road Tank from where it will be tankered offsite by a Licensed Waste Carrier to a licensed Wastewater Treatment Works. At this point in time therefore the regulation of the EPR 'Part A2' SG10[REF3] process by the EA will cease and regulation will then fall under the jurisdiction of the SCDC under EPR 'Part B' PG 5/03[REF1] provisions.

Accordingly, concurrent to this application to the SCDC for EPR Permits to operate the 'Part B' PG 5/03 Process together with a Schedule 13A SWIP, application also has been made to the EA for Variation of EPR Permit code EPR/MP3930BE to remove the EA's control over all incineration activities at the Royston site; Variation Application Code 65297 refers. These two concurrent applications have been confirmed to be procedurally correct and lawful by the Local Authority Unit section of the EA.

Variation Application Code 65297 to the EA additionally seeks to update and extend the Waste Classification Codes[REF4] that are processed by different procedures at the Royston site as defined within the EA's EPR Permit code EPR/MP3930BE.

Boilers at the Royston site are ancillary to the operations regulated by the EA and will therefore remain under the control of the EA as exists within the EA's existing EPR Permit code EPR/MP3930BE.

During the interim period of replacement of the Line 4 incinerator [circa March/April to October 2026] *VETSPEED Ltd* will require to also operate a small temporary mobile bulk load animal carcase/animal remains incinerator. Again, this mobile incinerator will fall under the

jurisdiction of the SCDC for regulation by way of a temporary provision within the EPR Part B PG 5/03 Permit.

During the interim period the aggregated throughput capacity of the existing Line 1 x18 chamber individual pet cremator and this small temporary mobile bulk load animal carcase/animal remains incinerator will be less than 10 tonnes per day and therefore Process Guidance Note 5/03 of July 2013[REF1] will be the relevant guidance for the conditions appropriate for the control of emissions into the air from both the Line 1animal carcase cremator and the small temporary mobile animal remains incinerator.

Regarding this small temporary mobile animal remains incinerator, *VETSPEED Ltd*'s intention is to have this temporary approval for use as a contingency only.

PLEASE NOTE: Reference to the dates "March/April to October 2026" above and below at this stage are not-set-in-stone as factors such as weather affecting structural groundworks, supply time of incineration plant, etc. means that there must remain a degree of flexibility.

3.0 PROPOSED LAYOUT DESCRIPTION, PROCESSING & EQUIPMENT PROVISION

3.1 Site Areas

65210-DOSSIER TWO provides the existing and proposed areas of operation. 65210-DOSSIER THREE provides the "red line" limitation within the site where the incineration processes will be located.

3.2 Throughput and Equipment To Be Operated

At the time of this application the permitted throughput of animal carcases/animal remains is controlled by the EA's EPR Permit code EPR/MP3930BE to less than 1 tonne per operational hour but with an aggregated treatment capacity of the Line 1 and Line 4 processes of more than 10 tonnes per day. Going forwards the incineration capacities will be:

- March/April to October 2026, a throughput of animal carcases/animal remains controlled to less than 1 tonne per operational hour and an aggregate treatment capacity of the Line 1 process and the Temporary Mobile Unit Line process of less than 10 tonnes per day.

- Post-October 2026, the requested new cremation throughput capacity will be a throughput of

  [i] animal carcases/animal remains controlled to less than 1 tonne per operational hour and less than 10-tonnes per day in the existing Line 1 unit,

  and

  [ii] with respect to the SWIP, one of the following four scenarios:

TABLE ONE: SWIP Wastes

Scenario Number	Detail	Maximum Throughputs kg h^{-1}
1	Animal carcases/animal remains and non-hazardous wastes	531
2	50:50 Clinical Waste + animal carcases/animal remains	412
3	100 % Clinical Waste	338
4	100 % Sharps	240

Animal carcases/animal remains will include whole carcases comprising domestic pets and anatomical waste, equine, small farmed animals unfit for human consumption and roadkill. PVC-free packaging that is used in the storage and transport of cadavers will additionally be co-burnt.

3.2.2 EXISTING CREMATOR LINE 1:

The existing Line 1 Cremator is to continue to be used at all times in the future.

The unit is a *TODAYSURE MQ11483/5* x18 multi-chambered individual pet cremator comprising of x6 separate casings that provide x2 large animal cremators, x8 medium sized animal cremators and x8 small pet cremators; these are all individual pet cremator cells. 65210-DOSSIER FOUR provides a schematic of the design.

The Cremator is fitted with:

- Temperature displays
- Individual primary burner selection times
- Temperature control of the primary and secondary burners
- Sequenced control
- Status lights

The ELVs to be assigned by the EPR Part B Process Permit are to fully comply with the provisions of PG5/03[REF1], as tabulated below:

TABLE TWO : Line 1 Cremator – ELVs

POLLUTANT	ELV mg Nm^{-3}
Carbon Monoxide	100
Particulates (PM_{10})	100
VOCs	10
HCl	100
Nm^{-3} refers to STP as dry gas at 11% v/v oxygen	

65210-DOSSIER FIVE provides copies of the most recent MCERTS/UKAS compliance report relating to year 2024 that gives certified evidence of compliance with the assigned ELVs.

3.2.3 INTERIM TEMPORARY MOBILE INCINERATOR:

As stated above, this would only be used as a contingency unit operated as a bulk load animal carcase/animal remains incinerator. Principal Management at *VETSPEED Ltd* will attempt to distribute its clients' animal carcase/animal remains waste volumes to other sites that *VETSPEED Ltd* operates throughout the UK such that at most times only the existing Line 1 unit will be used during this interim period [March/April to October 2026]. The problem will be when one or more of the x6 cremator cell casings must be taken off-line for maintenance or repair when the daily practical maximum capacity of the unit will drop.

A number of incinerator manufacturers are able to provide mobile units for temporary use in the event of emergency such failure of existing plant, crisis waste destruction e.g. BSE/CJD, Covid, etc. and as in this application of contingency.

The incinerators are small up to100 kg h^{-1} units that are housed in 40-foot-long ISO road transportable containers.

They are easily connected to existing fuel and electricity services. The contingency unit to be operated will be designed with two oil burners and will require a 3-phase 400V 50Hz electricity supply. Being of Hot Hearth design they support utmost combustion efficiency and have high a capacity secondary combustion chamber so ensuring environmental performance.

The PLC based control system with touchscreen provides a fully automated process which is simple to operate and easy to follow human machine interface. Pre-programmed operational modes all a range of waste types to be processed.

The BS EN 746-2010 compliant burner management system and thermal link emergency shutdown system allows for safe and compliant operation.

Inter-changeable front-loading modifications allow the controlled delivery of wastes into the primary combustion chamber (PCC). The PC controls prevent loading of the PCC until the secondary combustion chamber (SCC) attains pre-set temperature control at in excess of 850^0C.

The units operate compliant with PG5/03[REF1] ELVs. The incinerator operates with a 2-seconds+ SCC residence time at $850+^0$C.

The portable stack that is supplied with the incinerator is 8m tall, has an internal diameter of 510mm producing a stack efflux velocity of circa 12m s^{-1}.

Rated at less than 100 kg h^{-1} or 2.40 tonnes per day, as a standalone unit it is classified as an EPR PG5/03[REF1] Part B Process. During the interim period of replacement of the Line 4 incinerator [March/April to October 2026] *VETSPEED Ltd* will operate the existing Line 1 Cremator and this small temporary mobile incinerator, in aggregate, at less than 10 tonnes per day.

3.2.4 THE NEW LINE 4 SWIP:

The new Line 4 SWIP will be a state-of-the art model R500 rotary hearth unit designed and manufactured by *Addfield Projects Ltd* of Burntwood, Staffordshire who will additionally install/commission the SWIP. The design allows for 8,000 hours operation per year based on continuous 24 hours per day operational campaigns. The unit with be compliant in all aspects within the provisions of Schedule 13A[REF2].

The Primary Combustion Chamber (PCC) being configured as a rotary kiln system is designed to reduce the waste mass to a fine, inert, ash. The PCC will inject combustion air co-currently at the static front face producing a partially combusted flue gas ready for complete combustion in the Secondary Combustion Chamber (SCC). The internal hearth arrangement is designed to slowly move the waste materials and resultant ash through the chamber using 3 dam riser walls to increase the kiln residence time of the waste and ash and contain any liquids reaching the end of the hearth with the nose ring. The ashes pass off the rotary hearth onto downward opening 'bomb doors' from which they would be periodically discharged to the ash skip.

The high-level SSC will provide a turbulent and high-temperature environment (>850°C or >1,100°C) for the thorough treatment and oxidation of the partially combusted flue gases that are produced during the PCC incineration process. The resulting combustion flue gases from the SCC will conveyed via a refractory lined duct with air attemperation, to a new attached 17.0m [See Section 4.0] mild steel lagged and clad stack.

The equipment for the main plant offers flue gas cooling via a low maintenance Low-Pressure Hot Water Heat Exchanger (LPHWHE). The by-product of this indirect cooling is hot water for on-site use which can be optionally passed to an Organic Rankine Cycle to recover 100kWe gross / 87.6kWe net for circa 47.6 weeks per year operating 24/7.

The system is to be complete with a waste handling and loading facility to accommodate existing practice at the Royston site. The system will comprise one waste bin lift and tip unit with a weigh scale. This unit is designed to accept waste arriving within the various Dolav Box Pallets and 770 litre bins. The 360 litre bins would be decanted into the 770 litre bins using another separate simpler bin lift & tip unit. The system would automatically introduce the waste into the incinerator PCC via a hydraulic ram loading box, with a hinged lid, connected to the Rotary Kiln Static Front Face waste inlet vestibule provided the SCC is above the required temperature i.e. 850°C or 1,100°C.

To guarantee the SWIP ash quality, the continuous operation design of the Rotary Hearth unit facilitates the removal of ash periodically from the ash vestibule when it is fully burned down. The unit will be fully abated and fitted with a continuous emission monitoring system (CEMS) so as to fully comply with the provisions of Schedule 13A[REF2]. The exhaust system will be fitted with an MCERTS-compliant CEMS which will be linked to a control room-based SCADA system to provide a permanent and constant record of all flue gas emissions to the atmosphere. Stack entry products would be continuously and indicatively*** monitored and recorded (records kept for 2 years including alarms). Stack emission Sampling Port locations will be compliant with Technical Guidance Note M1 and access requirements (including test platform and cage access ladder) compliant with BS EN: 15259.

*Indicative monitoring is used as baseline for emission management. The SCADA is programmed with the best expected operational compliant emission levels such that when increasing level of emission significantly above the baseline is experienced a trigger level alarm is activated to forewarn the operator before an abnormal event resulting in unaccept emissions can occur.

A Selective Non-Catalytic Reduction De-NOx System, injecting compressed air atomised urea will be installed in the hot gas ducting connecting the main plant SCC exit to the Waste Heat Recovery Boiler inlet.

On exiting the LPHWHE at circa 200°C the flue gases will pass into cool gas ducting and be injected with flue gas cleaning reagents sodium bicarbonate and activated carbon conveyed into the dirty flue gas stream with ambient air which would also attemperate them to circa 180°C for the optimum reaction temperature. The powdered sodium bicarbonate and activated carbon would be delivered from two separate 'big-bag' dosing stations able to be serviced by a standard fork-lift truck. To increase the reaction efficiency, the flue gas and reagents would then pass through a turbulent venturi section before passing to the filtration system within which the sodium bicarbonate and activated carbon would be caught by the filter media, along with any particulate fly ash, and continue to react with the pollutants in the dirty flue gas. The sodium bicarbonate neutralises any acidic gases such as HF, HCl & SO_2 whereas the activated carbon adsorbs any vapour phase heavy metals and dioxins/furans that may have reformed in the Waste Heat Recovery equipment under the process known as 'De-Novo' Synthesis occurring in the LPHWHE between 450°C to 200°C.

The new Line 4 SWIP will be fitted with an Emergency Shutdown by-pass; this would be in the form of a vent-only (not operational) system such that on major plant or power failure the counterbalanced by-pass damper, normally held closed by compressed air, would fail to open and allow the process to vent whilst shutting down. In the event of a power loss shutdown a 60-minute Uninterruptible Power Supply would maintain all of the controls such as plant, SCADA, Boiler and CEMS control panels to allow a safe and monitored emergency shut-down.

65210-DOSSIER SIX details the four intended waste-type incineration scenarios that are to be processed in the new Line 4 SWIP. The SCC specification has been designed to allow continuous operation at the capacities as stated in 65210-DOSSIER SIX and for the capacities of 338 kg h^{-1} Clinical Waste and for the 240 kg h^{-1} Sharps Waste scenarios, 180 kg h^{-1} of liquid trade effluent can also be concurrently processed.

65210-DOSSIER SEVEN details the clinical and sharps waste types that will be incinerated in the SWIP.

The maximum throughputs for Clinical Waste and Sharps cited in the "TABLE: SWIP Wastes" at Page 4 above are set to ensure correct maintenance of SCC temperatures and residence times as tabulated overleaf:

TABLE THREE : SWIP Gas Loads, SCC Temperatures & Residence Time

Scenario Number	Detail	Maximum Throughputs [kg h^{-1}] & Maximum Gas Loads ($Am^3 s^{-1}$)***	SCC Temperatures & Design Residence Times
1	Animal carcases/animal remains And non-hazardous wastes	[531] (2.578)	[850^{0}C] (2.456 second)
2	50:50 Clinical Waste + animal carcases/animal remains	[412] (2.592)	[1,100^{0}C] (2.377 seconds)
3	100 % Clinical Waste	[338] (2.678)	[1,100^{0}C] (2.322 seconds)
4	100 % Sharps	[240] (2.585)	[1,100^{0}C] (2.345 seconds)

***NOTE: These volumes are post of the dilution/cooling air fan. The control settings on the dilution/cooling air fan allow gas flow control into the boiler and hence chimney stack to achieve the required efflux velocity of greater than 15 m s^{-1} without affecting the design residence times.

Historically the EA controlled the transition between waste types/SCC temperatures with respect to the old Line 2 Clinical/Hazardous Waste incinerator by way of the following Condition of the EPR Permit:

Excerpt from: Permit Number MP3930BE V3 25 May 2006

2.3.10 Waste shall not be charged, or shall cease to be charged, into the incinerator of Line 2 if:

(a) the combustion chamber temperature is below, or falls below, 850°C (for non-hazardous waste of hazardous waste where the content of halogenated organic substances (as chlorine) does not exceed 1%), 1100 °C (for hazardous waste where the content of halogenated organic substances exceeds 1% (as chlorine), or 1000 °C (where cytotoxic or cytostatic drugs are burned, even if the level of halogenated organic substances (as chlorine) does not exceed 1%), or

(b) the oxygen level is below, or falls below, 6% (wet) by volume; or

(c) any continuous emission limit value is exceeded; or

(d) any continuous emission limit value is exceeded, other than under abnormal operating conditions ; or

(e) monitoring results required to demonstrate compliance with any continuous emission limit value are unavailable other than under abnormal operating conditions.

Going forwards it is proposed that the above control over waste types/SCC temperatures takes accord of the improved design measures and documented control procedures as prepared and issued by *Addfield Projects Ltd*. 65210-DOSSIER EIGHT sets out these waste-type transition procedures.

3.4 Day-to-Day Practice

The routine day-to-day practice will be such that carcases/animal remains are cremated/incinerated within 48-hours of receipt, but in the event of exceptional circumstances will be stored under refrigeration for a maximum of five days. Refrigeration capacity is circa 254 m^3 with a floor dimension of 8.6 m x 8.7 m and with a utilisable height of 3.4m thereby affording a storage capacity of circa 60 tonnes.

Collection/delivery vehicles to be used are purpose-designed sealed units. They are not used for overnight etc. storage of cadavers.

The updated cremation/incineration installation will operate to a site-specific Working Plan that will accord with 'national' *VETSPEED Ltd* practice. Completion of this Working Plan will coincide with final operational decisions. A copy of this site-specific Working Plan will be submitted to the Regulator within 2-months of issue of the EPR Permit.

4.0 POLLUTANT EMISSION CONTROL, D1 CALCULATIONS, ADVANCED STACK HEIGHT DETERMINATIONS & AIR QUALITY IMPACT SCREENING

A comprehensive study of requisite stack heights and air pollution impact modelling has been undertaken to demonstrate acceptance if the incineration plan for the Royston site post-September-October 2026.

The initial stack height assessment applied Her Majesty's Inspectorate of Pollution (HMIP, now the Environment Agency) 'D1' methodology[REF5] to identify the likely required stack height for the proposed new Line 4. Although the Dispersion Guidance Note (D1) does not provide a detailed and comprehensive assessment of the potential impact of emissions on air quality, it does provide a useful initial assessment of the stack height likely required to provide effective dispersion. A series of iterative models applying stack heights based around the D1 predicted discharge point were then run to determine and confirm an optimum stack height.

The first step in the D1 calculation procedure is to calculate the pollution index, or major pollutant from the discharge. The calculated pollution index is then used to calculate the final discharge stack height, correcting for the presence of nearby tall buildings if necessary. Finally, attention is given to subsidiary matters such as absolute minimum stack heights, discharge conditions etc.

Iterative modelling of discharges from the existing Line 4 Cremator were then undertaken to confirm the optimum stack height for the major pollutant identified in the stack height assessments. The starting stack height of 14.5 m reflects the existing Line 1 Cremator process

discharge point, before models were run with both the existing Line 1 Cremator and the proposed Line 4 SWIP stacks at 15 – 20m, increasing in 1 m increments.

The most significant change in the gradient of the plotted curves for either stack whether considering short or long-term averaging periods was calculated to be between 15m and 16m. Inclusion of the annual average process contribution of particulate matter from Line 1 discharging at 17m was calculated to be 0.65 µg m^{-3}, or less than 2 % of the 40 µg m^{-3} air quality standard and as such, is unlikely to have any significant effect. Therefore, the optimum proposed stack heights were determined as being 17m for both the existing Line 1 Cremator and new Line 4 SWIP; these heights were then confirmed through detailed modelling.

A current Planning Development Application is under consideration for these two proposed 17m high stacks; approval is forecast as a formality as all that is required is to raise two circa 14.5m high stacks to 17m. The position of the stack for the new SWIP is in the same general vicinity on site.

The detailed atmospheric dispersion modelling of emissions from the existing Line 1 Cremator and the proposed Line 4 SWIP at the Royston site was undertaken on the basis of the conclusions of the sensitivity analyses. Emissions of NO_x, SO_2, CO, particulate matter (as PM_{10} and as $PM_{2.5}$), VOCs (as Benzene), HCl, HF, Ammonia, Mercury, Cadmium, heavy metals, Dioxins and Furans, PCBs and PAH (as Benzo[a]Pyrene), were assessed in line with the air quality standards and their objective values (where applicable), or against specific pollutant EALs detailed in EA guidance[REF6]. Modelling of the emissions has assumed continuous operation and the maximum permitted emission levels.

The modelled emissions data were as summarised overleaf in TABLE FOUR; values blocked in lilac in TABLE FOUR are the ELVs that are appropriate to be set as a Condition of the new EPR Permit. These values are as previously agreed with the EA as part of the Permit Number EPR/MP3930BE-V007 (latest Variation dated 5th September 2004) for the Line 4 x18 chamber individual pet Cremator and in accordance with Schedule 13A[REF2] with respect to the new Line 4 SWIP.

Hourly averaged meteorological data from the Stansted Airport measurement station, located approximately 24 km to the south of the Royston site was applied to the models. Five years' of data for 2020 to 2024 were used in the detailed modelling assessment.

Estimates of background concentrations for NO_x, NO_2, PM_{10} and $PM_{2.5}$ are provided on the UK-AIR website hosted by DEFRA at a resolution of 1 km x 1 km grid spacing. Data were obtained for 2026 for the locality around the Royston site, representing the earliest date of the revised operations. The data show that future estimates of background concentrations for the pollutants included within the model and without any process contribution from the new Line 4 SWIP, are well below their respective air quality standards. It must be noted that contributions from the existing operations at the site, including Line 1 and the existing Line 4 processes, will be accounted for within the estimates and therefore this means some 'double-counting' has occurred and as such the modelling results are well on the 'safe side'.

TABLE FOUR : Modelled Emissions Data

Long-Term Emissions **Substance**	**Line 1 Emission Limit (mg Nm^{-3})**	**Mass Emission Rate (g s^{-1})**	**Line 4 Emission Limit (mg Nm^{-3})**	**Emission g s^{-1} Scenario 1**	**Emission g s^{-1} Scenario 2**	**Emission g s^{-1} Scenario 3**	**Emission g s^{-1} Scenario 4**
Nitrogen Oxides (as NO_2)	300*	0.324	200	0.247	0.248	0.245	0.247
Sulphur Dioxide	N/A	-	50	0.062	0.062	0.061	0.062
Carbon Monoxide	100	0.108	50	0.062	0.062	0.061	0.062
Particulates (PM_{10})	100	0.108	10	0.012	0.012	0.012	0.012
VOCs	20	0.0216	10	0.012	0.012	0.012	0.012
HCl	100	0.108	10	0.012	0.012	0.012	0.012
HF	N/A	-	1	0.0012	0.0012	0.0012	0.0012
Cadmium / Thallium	N/A	-	0.05	0.0000618	0.0000620	0.0000612	0.0000617
Mercury	N/A	-	0.05	0.0000618	0.0000620	0.0000612	0.0000617
Other Metals – Sb, As, Pb, Cr, Co, Cu, Mn, Ni, V	N/A	-	0.5	0.000618	0.000620	0.000612	0.000618
Ammonia	N/A	-	10	0.012	0.012	0.012	0.012
Dioxins and Furans	0.000001	1.08×10^{-09}	0.0000001	1.24×10^{-10}	1.24×10^{-10}	1.22×10^{-10}	1.23×10^{-10}
Dioxins, Furans and PCBs	N/A	-	0.00000015	1.85×10^{-10}	1.86×10^{-10}	1.83×10^{-10}	1.85×10^{-10}
PAH (as B[a]P only)	N/A	-	0.001	0.00000124	0.00000124	0.00000122	0.00000123
Short-Term Emissions **Substance**	**Line 1 Emission Limit (mg Nm^{-3})**	**Mass Emission Rate (g s^{-1})**	**Line 4 Emission Limit (mg Nm^{-3})**	**Emission g s^{-1} Scenario 1**	**Emission g s^{-1} Scenario 2**	**Emission g s^{-1} Scenario 3**	**Emission g s^{-1} Scenario 4**
Nitrogen Oxides (as NO_2)	N/A	-	400	0.494	0.496	0.489	0.494
Sulphur Dioxide	N/A	-	200	0.247	0.248	0.245	0.247
Carbon Monoxide	N/A	-	100	0.124	0.124	0.122	0.123
Particulates (PM_{10})	N/A	-	30	0.037	0.037	0.037	0.037
VOCs	N/A	-	20	0.025	0.025	0.024	0.025
HCl	N/A	-	60	0.074	0.074	0.073	0.074
HF	N/A	-	4	0.00494	0.00496	0.00489	0.00494
Nm^{-3} refers to STP, dry gas at 11.0% v/v oxygen							
* Cremator Line 1 has no emission limit for Nitrogen Oxides specified in the current Permit and therefore the maximum feasible emission level has been assumed for these calculations							

Six ecological receptor locations were incorporated into the modelling representing sensitive ecological habitats in the area.

The modelled ecological sites were located between 1.85 and 3.67 km from the site and, as would be expected at such distances, the impact from the process operations on air quality at the sensitive habitats was predicted to be very small. There are no UK National Site Network (Special Areas of Conservation and Special Protection Areas) or Ramsar sites within 10 km of the site.

The detailed stack height calculations and detailed atmospheric dispersion model report is reproduced at 56210-DOSSIER NINE.

Summary observations/conclusions of the detailed atmospheric dispersion modelling include:

- Account has been taken of the existing Line 1 animal cremation process in conjunction with anticipated worst-case emissions from the proposed new Line 4 SWIP. The new SWIPwill be capable of receiving various waste mixes, including 100 % cadavers (design), 50:50 cadavers and clinical waste, 100% clinical waste or 100% sharps waste. Initial assessments confirmed that, whilst emissions from each scenario were similar, assuming a feedstock of 100% sharps generally resulted in the highest process contributions from the proposed plant and hence, the majority of the modelling work and the reported results are based on this scenario.

- Assuming that both Lines 1 and the proposed Line 4 SWIP discharge through 17m high stacks, the model predicted that process contributions for all modelled pollutants would be well below the objective limits defined within the UK Air Quality Standards Regulations, or relevant environmental assessment levels recommended by the Environment Agency, with all impacts either screening as insignificant or being deemed to not be significant at the secondary assessment stage.

- The point of maximum process contribution for each pollutant and averaging period occurred in the vicinity of the Royston site. With few sensitive human health or ecological receptors in the locality, the potential for exposure to dispersed emissions is limited and the impact of any such exposure was confirmed to not be significant, either to human health or the environment across the modelled grid, and at specific receptor locations. More than half of the pollutant species and averaging periods assessed were immediately screened as having an insignificant impact at all local receptors.

- Sensitive ecological receptors were included in the modelling assessment and impacts at these sites were confirmed to be insignificant for all pollutants and averaging periods.

- Short-term process contributions and predicted environmental concentrations also remained within their stated environmental quality standards when discharging at the allowable half-hourly limit values and were therefore screened as not significant, with all pollutant contributions equating to less than 15% of the short-term assessment levels.

- The overall conclusion from detailed modelling of emissions from the operation of Line 1 and proposed Line 4 SWIP at the site was that the potential impact on local air quality is likely to be small, generally being screened as insignificant and will not therefore have any significant impact on the health of people living and working nearby, or on the surrounding environment.

5.0 SUMMARY IMPACT ASSESSMENT

TABLE FIVE below provides a summary of possible impacts associated with the operation of the two small pet cremators simultaneously; these impacts are tabulated together with ratings of their potential to cause concern. The ratings are categorised as:

- L = none/low
- M = moderate
- H = high.

TABLE FIVE : Impact Summary

PROCESS	POTENTIAL IMPACTS				
	NOISE	LAND (Solid waste)	CONTROLLED WATERS (Liquid waste)	ODOUR	AIR
Cadaver receipt & storage	L	L	L	M	M
Cremations	M	L	L	L	M
Cremator de-ashing	M	L	L	L	M
Ash disposal	L	L	L	L	L

5.1 Control of Impacts

Importantly, operations at Royston will essentially mimic procedures at other operational Sites that have enjoyed consistent approval by the Animal & Plant Health Agency certification inspections and Local Authority Regulatory Officers and the EA.

5.1.1 NOISE

Operations will not give rise to any off-site noise issues. The most noise generated within the installation will originate from vehicle deliveries and on-site vehicle movements. Stack efflux noise will be marginal.

5.1.2 SOLID WASTE

Solid waste arisings at the installation will present no operational issues. The principal 'waste' is cremator ash that is essentially inert and that is either returned to the pet owners or disposed by routing to the *VETSPEED Ltd*'s established local licensed Waste Hauliers and local licensed landfill sites

5.1.3 LIQUID WASTE

There are no liquid waste streams associated with the cremation/incineration operation.

5.1.4 ODOUR

Cadaver receipt can be associated with minor odour generation; however, the installation has the option for immediate cremation or storage under refrigeration that historically has been proven to prevent any off-site odour problems.

5.1.5 AIR

No significant air impacts will be associated with operation of the two cremators; please refer to Section 4 above.

5.1.6 FUEL STORAGE

The existing kerosene storage arrangement will be sufficient for the intended uplift in throughput.

5.1.7 UPSET CONDITIONS

There are no foreseen implications with respect to noise or solid waste or liquid in the event of upset conditions. Burner malfunctions could result in a short duration dark smoke emission pending cremator/incinerator shutdown; these are unlikely scenarios but not impossible.

5.1.8 FIRE

The site layout and routine operational practices are inherently designed to minimize the risk of fire.

All employees will have received proficient information, training and instruction with respect to fire prevention. The Fire Authority will be aware of the presence of proposed operations and will be consulted with respect to all associated issues

*****END*****

REFERENCES

[REF1] Process Guidance Note 5/03 (2013 Version) – Statutory Guidance for Animal Carcase Incineration [*incineration of animal carcases with a disposal rate of 50 kilograms per hour to 1 tonne per hour and a capacity of under 10 tonnes per day*]

[REF2]Small Waste Incineration Plant as defined in Schedule 13A to the Environmental Permitting Regulations [*capacity of less than 10 tonnes per day for hazardous waste or 3 tonnes per hour for non-hazardous waste*]

[REF3]Sector Guidance Note IPPC SG10 July 2005 Integrated Pollution Prevention and Control (IPPC) Secretary of State's Guidance for A2 animal carcase incineration with capacity of less than 1 tonne per hour [*but exceeding 10 tonnes per day*]

[REF4]Waste classification codes, also referred to as LoW (List of Waste) or EWC (European Waste Catalogue) codes for hazardous and non-hazardous waste; The List of Wastes (England) Regulations 2005

[REF5] HMIP publication *"Technical Guidance Note (DISPERSION) [D1]"* Guidelines on Discharge Stack Heights for Polluting Emissions

[REF6] https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit