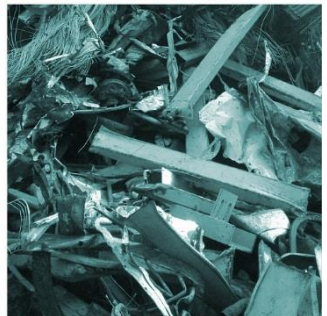
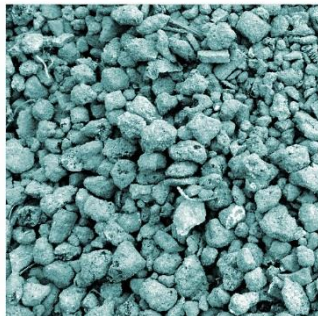
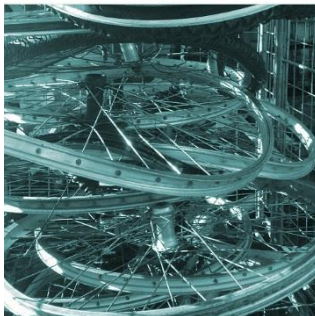
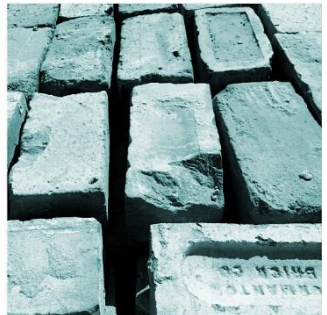
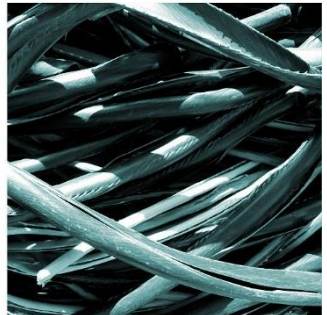
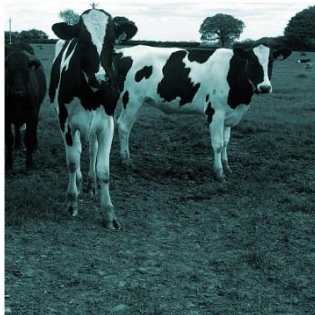
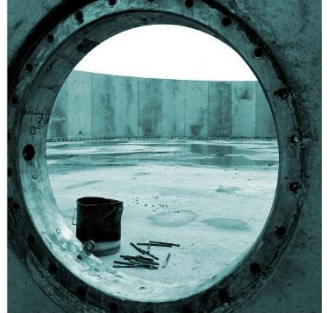


CARBON CAPTURE SCOTLAND LIMITED CO2 RECOVERY & DRY ICE PRODUCTION FACILITY

Non-Technical Summary

June 2022



REPORT SCHEDULE

Operator: Carbon Capture Scotland Limited

Client: Carbon Capture Scotland Limited

Project Title: CO₂ Recovery & Dry Ice Production Facility Permit Application

Document Title: Non-Technical Summary

Document Reference: HC1691-01

Report Status: Final V1.2

Project Director: [REDACTED]

Project Manager: [REDACTED]

AUTHOR	DATE
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REVIEWER	
[REDACTED]	30 th November 2021
APPROVED	
[REDACTED]	30 th November 2021

REVISION HISTORY	DATE	COMMENTS	APPROVED
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Final V1.1	28 th February 2022	For Submission to SEPA	[REDACTED]
Final V1.2	9 th June 2022	Amended to Reflect Company Name Change	[REDACTED]

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1. Non-Technical Summary1

1. NON-TECHNICAL SUMMARY

1.1. Non-Technical Summary

- 1.1.1. The Carbon Capture Scotland Limited CO₂ Recovery & Dry Ice Production Facility at Crofthead is a carbon dioxide (CO₂) recovery plant and dry ice production unit located at Crofthead Farm, Dumfries, Scotland, DG2 8QW at approximate grid reference NX825686.
- 1.1.2. The plant is situated on land adjacent to the Crofthead Biogas Anaerobic Digestion (AD) Facility and it is intended to receive CO₂ arising from the biogas upgrading facility that is part of the biogas operations at the site.
- 1.1.3. The Crofthead Biogas AD Facility is a Part A installation and operates under an environmental permit issued by the Scottish Environmental Protection Agency (SEPA), permit reference PPC/A/1180559.
- 1.1.4. The Crofthead Biogas AD Facility permit is held by Crofthead Biogas Limited. The Carbon Capture Scotland Limited CO₂ Capture & Dry Ice Production Facility (the Facility) is under the control of a different operator to the rest of the installation (Carbon Capture Scotland Limited).
- 1.1.5. The Carbon Capture Scotland Limited facility is a directly associated activity (DAA) to the main AD activity and as such is part of the wider installation. The wider site is a multi operator installation with the two respective parts of the installation in control of different operations with separate permits.
- 1.1.6. The Carbon Capture Scotland Limited facility receives CO₂ arising from the upgrading of biogas to biomethane. Prior to construction of the Carbon Capture Scotland Limited plant, the CO₂ was vented to atmosphere following its removal from the biogas via a series of membrane filters.
- 1.1.7. The CO₂ arising from the biogas upgrading facility is piped directly to the Carbon Capture Scotland Limited site via an underground pipeline. The Carbon Capture Scotland Limited operator is responsible for maintenance and monitoring of this pipeline and as such it is included in the permitted area of the CO₂ recovery facility.
- 1.1.8. The CO₂ received at the site is processed in the CO₂ recovery plant which consists of prefabricated automated equipment which operates on a continuous 24/7 basis. A supervisory control and data acquisition (SCADA) system provides the interface with the system for the operator and can be accessed remotely at all times of the day.
- 1.1.9. The CO₂ recovery plant achieves compression of the CO₂ to achieve further purification and a liquified state.
- 1.1.10. Liquified CO₂ is stored in one of two 62,000kg storage tanks which provide storage for final material and material that will be further processed in the dry ice production plant. The site is also fitted with

a liquid CO₂ offloading point to allow liquid CO₂ from other plants to be brought to the site for further processing to produce dry ice if required.

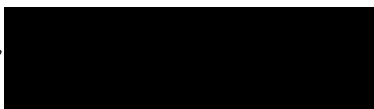
- 1.1.11. The CO₂ recovery process equipment is provided by the same manufacturer that provided the biogas upgrading unit at the AD facility and is subject to a maintenance contract from the manufacturer.
- 1.1.12. The CO₂ recovery process is powered by mains electricity and takes place in sealed unit with only emergency pressure relief valves for emissions points.
- 1.1.13. Condensate arising from the operations is drained to a sealed collection system and either re-circulated in the AD process or removed from site for disposal.
- 1.1.14. The dry ice production plant operates between the hours of 08:00 – 16:00 Monday to Friday only. This site is manned during these hours.
- 1.1.15. The dry ice production plant comprises three dry ice machines which receive liquid CO₂ from one of the CO₂ storage tanks. The liquid CO₂ enters the machines which are at atmospheric pressure causing the CO₂ to sublime into 'snow'.
- 1.1.16. The snow is then pelletised into dry ice pellets within the machines, after which the pellets are passed, via a conveyor belt, into a 'slicing' machine which creates 'slices' of dry ice. The slices are then conveyed to a packing station where the dry ice is packed into containers designed to package dry ice for between three and seven days. The packaged dry ice slices are loaded onto pallets ready for dispatch from site.
- 1.1.17. During the production and compression of 'snow pellets' to produce dry ice blocks, small amounts of the sublimed material convert to gaseous CO₂ as a natural and unavoidable aspect of the process. This limited volume of CO₂ is vented to atmosphere on a continuous basis during the operation of the dry ice facility at emissions point A1. The CO₂ vented has therefore passed through the entire process and is considered 'pure'.
- 1.1.18. There are no stores of raw materials or chemicals at the site other than material contained within sealed plant and equipment, small stores of domestic materials, and a 3000l diesel store for re-fuelling of site plant/vehicles.
- 1.1.19. General wastes are stored in a skip prior to dispatch from site.
- 1.1.20. Waste liquids arising from maintenance activities at the site are removed immediately at the point of generation and not stored/bulked up at the site.
- 1.1.21. Surface water arising from building roofs and clean concrete yard areas is piped or runs off to discharge to soakaway beyond the site boundary.
- 1.1.22. The final CO₂ and dry ice products achieve end of waste status following processing at the site and are dispatched as products that are compliant to the relevant food industry specification. Dry ice product is removed on pallets in heavy goods vehicles (HGV's) up to twice a day, and liquid CO₂ is

removed by tanker on average every three days. Liquid CO₂ from other sites may be brought to site for bulking and blending prior to final dispatch.

- 1.1.23. Domestic sewage will be managed via a septic tank system in the adjacent welfare and carparking facility which is not included in the permitted area. An application for a discharge consent/permit will be made when these facilities are installed.
- 1.1.24. The whole facility will be operated in accordance with an Environmental Management System (EMS) that facilitates the interface between the operations at the AD facility and the adjacent farm site. Attendance at site by a technically competent manager (TCM) is not required since the site is producing a recovered end of waste product.



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