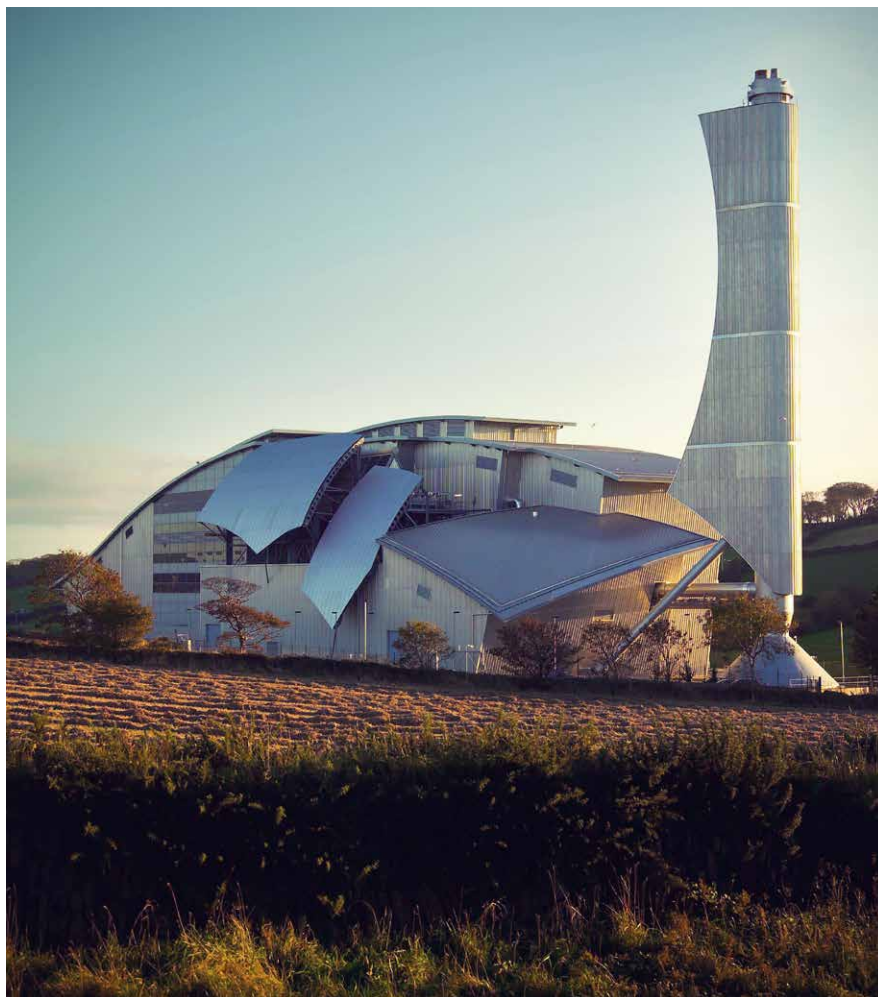


SUEZ Isle of Man Annual Public Report 2020





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Foreword

2020 was a testing year like no other. Nevertheless, it is our great pleasure to introduce another annual report on a successful 12 months' performance, delivered in the face of some daunting challenges.

Our team at the Richmond Hill energy-from-waste facility maintained their proud performance record of environmental protection, health and safety, and operational efficiency.

Despite the erratic flow of incoming waste, prompting a prolonged shutdown, and a dip in total throughput below 50,000 tonnes for the first time since 2016, SUEZ Isle of Man increased its electricity exports over the year – to some 25,500 megawatt-hours – boosting the island's energy security.

As ever, environmental performance was exemplary. Operations were expertly managed to minimise the environmental impacts of the energy-from-waste process and emissions remained well below the annual limits of our operating licence.

Although major maintenance was unavoidably hampered by COVID-related restrictions, the essential works that did proceed were properly – and safely – executed. The team sustained the facility's high standards of asset management and efficiency despite the setbacks, and outstanding works have been rescheduled for 2021.

Above all, maintaining continuity of an essential service to the island (not least the treatment of clinical waste) without compromising safety was no mean feat.

As the Department of Infrastructure noted, the entire team showed great professionalism in operating the facility throughout the pandemic and we join our client in thanking them for their dedication and commitment.

John Scanlon

Chief Executive Officer
SUEZ recycling and recovery UK

Jon Garrad

Plant Manager
SUEZ Isle of Man

Introduction

Welcome to our latest public report
on the island's energy-from-waste facility.

As in previous years, this annual publication provides an overview of our operations along with all supporting data – both for 2020 and a five-year period – as well as a commentary on the related activities of our company.

The year brought new challenges, not least the COVID-19 pandemic. Throughout the crisis, SUEZ Isle of Man and the facility remained operational. What this meant for daily operations, maintenance and waste flows, and how the team managed the risks and impacts, is described in the relevant sections.

It is SUEZ group policy to be open and accountable to all stakeholders in the communities we serve. Our annual reporting is also a contractual commitment to the Isle of Man Government to keep the public and business community informed about our performance in delivering an essential service to the island.

The information in this report has been verified by the independent inspection and certification company SGS.

This publication is intended to be clear and comprehensive. Should you have any comments, queries or suggestions, we would welcome your feedback.

SUEZ recycling and recovery UK

SUEZ Isle of Man is a subsidiary of SUEZ recycling and recovery UK, which in turn, is part of the global SUEZ group.

Richmond Hill is one of 10 energy-from-waste facilities within the UK energy division. Our island team and colleagues across the UK share best practice, and also have access to the world-leading specialists and technology of the wider group. Across Europe, there are more than 50 SUEZ energy-from-waste facilities in operation.

SUEZ has been providing environmentally-responsible solutions for waste and water to local authorities and businesses across the UK since 1988. The waste management industry has changed significantly in that time and SUEZ has been at the forefront of its rapid development.

Our group was an early champion of the circular economy in which all materials, including waste, will be treated as a valued resource and fed back into the productive cycle. Today, as well as producing power from waste, SUEZ recycling and recovery UK is a manager of resources, manufacturer of alternative fuels, processor of reclaimed wood and a trader in secondary materials.

In May 2020, the SUEZ group adopted a new statement of purpose following extensive consultation with employees, customers, partners, shareholders and other stakeholders over the previous year. We also refreshed and redefined our core values, which guide us and support our purpose – shaping a sustainable environment, now.

UK operations

We are part of a team of more than 5,000 people working across the UK.

SUEZ recycling and recovery UK serves some 12 million residents and 30,000 business customers, handling more than 10 million tonnes of waste each year.

Our water business, SUEZ Water Technologies and Solutions, processes some 26 million cubic metres of wastewater each year and purifies another five million cubic metres for utilities and industry.

To process and treat domestic and trade wastes, SUEZ has developed a network of specialist facilities and diverse solutions. These include recycling, composting, mechanical/biological treatment, as well as processing waste into fuel for industrial and combined heat-and-power plants.

The value recovered each year is significant, as these latest audited figures¹ show:

- » 1.2 million megawatt-hours of electricity from energy-from-waste
- » a further 387,000 megawatt-hours of electricity from landfill gas
- » 8.5 million tonnes of recycled and recovered materials
- » 111,000 tonnes of compost from green and food waste
- » more than 450,000 tonnes of alternative fuels manufactured from other wastes

¹ SUEZ recycling and recovery UK statistics for 2019

The SUEZ purpose

We live in a world of depleting raw materials, water stress and threatened ecosystems, all overshadowed by the climate crisis.

SUEZ is confronting the planet's greatest challenges by working to shape a sustainable environment, now.

We do this by helping our customers make best possible use of their material and water resources, while reducing their carbon footprints, protecting the environment and driving efficiency.

A resource and energy revolution is underway as industry and society move from a linear model to the new circular economy. That means no longer extracting, consuming and discarding residual or contaminated materials. Instead, we must optimise our use of materials while recovering resources (including energy) from waste flows and avoiding environmental harm.

We support customers in this challenging transition, bringing our unmatched experience to bear, innovating, and exploiting new techniques and solutions.

Our people also contribute at industry and national policy level. This takes various forms, including our work with trade and professional bodies, original research, and thought leadership.

Our values

—

RESPECT



**CUSTOMER
FIRST**



**PASSION FOR
THE ENVIRONMENT**



TEAM SPIRIT

Change at the top

SUEZ recycling and recovery UK began the year with a new Chief Executive Officer. John Scanlon – formerly Chief Operating Officer for Operations – succeeded David Palmer-Jones.

John has held a series of operational and business development roles since joining in 1991, and championed the lean culture we have developed in our operations and a new business system that will be rolled out to the wider group.

Since taking the helm in 2008, David has led the transformation of the UK business, and now oversees the group's recovery and recycling assets across Northern Europe, as Group Senior Executive Vice-President.

Testing and technology

The year was book-marked by two developments reflecting SUEZ's commitment to technical excellence and technological advance.

At the start of the year, SUEZ formed a new global business unit from its three commercial laboratories in the UK, Spain and China. The UK facility, which is in County Durham, carries out a range of testing on soil, waste-derived fuels and other substances for a wide range of clients, including other waste management companies.

A recent £250,000 investment in instrumentation allows the lab to accurately detect down to parts per trillion – the equivalent of a grain of sand in an Olympic-sized swimming pool.

November saw the signing of an agreement with energy giant bp to explore carbon capture solutions at our energy-from-waste facility on Teesside. The SUEZ group will harness its combined expertise in energy-from-waste and CO₂ separation systems to develop a solvent-based system to capture the gas emitted from the flue. It will then be supplied to the bp-led Net Zero Teesside Carbon Capture, Utilisation and Storage project.

The commercial-scale demonstration project aims to remove 90% of fossil and biogenic CO₂ emissions, making the energy-from-waste facility carbon-negative. If successful, this technology could be rolled out to other waste treatment and industrial plants.

The company's infrastructure network across the UK (including Isle of Man) comprises ↘



- 110** household waste recycling centres
- 84** transfer stations
- 5** operating landfills
- 10** materials recycling facilities
- 10** energy-from-waste facilities
- 6** wood processing facilities

The global SUEZ group

Our group has more than 150 years' worldwide experience in water and waste management. More than 80,000 employees across five continents are working with municipalities and industry in recycling, recovery and the production of secondary raw materials and alternative resources – as well as in water purification and wastewater treatment.

A worldwide network of 17 research and expertise centres supports these activities and helps solve the challenges facing our customers with advanced technical and scientific know-how.

The global challenges of demographic and urban growth, the climate crisis and depletion of natural resources require a resource and energy revolution. Shaping a sustainable environment now is at the very heart of the SUEZ strategy.

Our group's ambition is to be the worldwide leaders in environmental services, restoring and conserving natural capital of water, air, soil and the earth's resources.

Capturing the value in waste through the creation of secondary raw materials and energy recovery is central to that effort and to the new circular economy.

SUEZ publishes an integrated report each year, outlining both its financial and environmental performance.

All parts of the group follow a Sustainable Development Road Map, which has set challenging targets for the period 2017-2021. These include:

- » **a 10% increase in production of renewable energy**
- » **doubling biogas production**
- » **helping customers avoid more than 60 million tonnes of greenhouse gas emissions**

This commitment to sustainability was reinforced in the SUEZ strategy², which is aligned with the Paris Agreement and recommendations of the IPCC (Inter-government Panel on Climate Change) to limit the global temperature rise to 1.5°C. By 2030, the group aims to:

- » **reduce CO₂ emissions by 45%**
- » **save industrial and city authority customers 20 million tonnes of CO₂ per year**
- » **devise 100% sustainable solutions – with a positive environmental footprint in terms of CO₂, water and biodiversity – for customers**

6 **composting sites**

12 **refuse derived fuel facilities**

2 **solid recovered fuel facilities**

2 **street sweepings recycling facilities**

1 **mechanical biological treatment facility**

1 **anaerobic digestion facility**

1 **gasification facility**

² <https://www.suez.com/en/who-we-are/a-committed-group/fight-climate-change>

Manx waste management

The Richmond Hill facility continues to play a central role in the waste management strategy of the Isle of Man.

Its capacity to treat the incinerable wastes left after recycling supports the self-sufficiency essential for an island community. We process residual waste from households and businesses, while also safely disposing of clinical wastes from hospitals and clinics. The capability to handle other challenging waste streams – including vehicle tyres and sewage bio-waste – also avoids the need for their export or landfilling.

Meanwhile, the electricity exported from the facility enhances the energy security of the island.

The Isle of Man Waste Strategy, approved by Tynwald in 2018, is reviewed annually.

Subject to continued compliance with emission and operational standards, Richmond Hill's capacity will retain its strategic importance in the island's waste infrastructure hierarchy after August 2029, when the current contract for the facility ends.





Managing waste

Disruption to the activities of the island's businesses and households due to pandemic control measures was reflected in the flow of waste to the Richmond Hill facility. Over the year, total throughput was down, yet we managed to increase electricity exports, while dealing with changes in the waste stream and coming offline due to lack of waste in April.

Our management team introduced new COVID-secure safety procedures and had to reprogramme maintenance works, taking special measures to risk-manage essential activities by off-island contractors.





This chapter reports on our operations during 2020, what we processed, the raw materials consumed and residual by-products.

It begins with an overview of the energy-from-waste process.

The energy-from-waste process

The technology used in the facility, and our management regime, are designed to ensure it operates efficiently and, above all, safely.

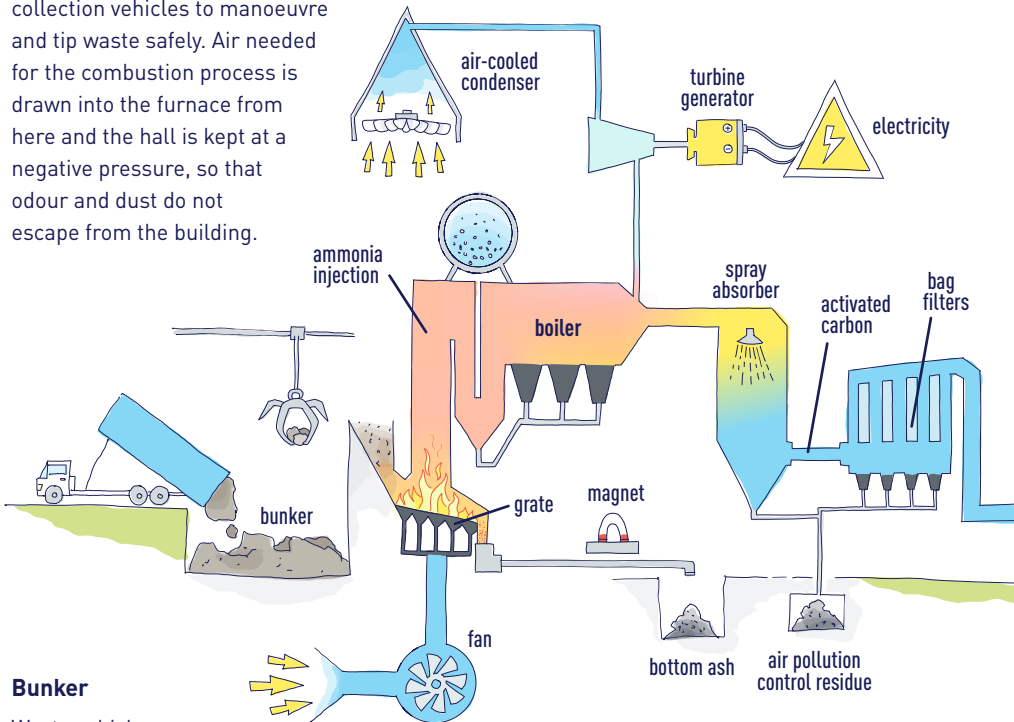
The Richmond Hill facility has two lines for treating waste. The primary line can process up to 60,000 tonnes per year of municipal and commercial waste. Our second line – designed for clinical waste and waste oils – has an annual capacity of 5,000 tonnes.

Waste is burned at temperatures of over 850°C in the furnace of the primary line. On the secondary line, the minimum operating temperature rises to 1,000°C in its secondary chamber, where volatile gases are incinerated. These thresholds are set out in the EU Industrial Emissions Directive, which is designed to ensure the safe operation of processing facilities and destruction of waste.

On arrival at Richmond Hill, waste vehicles use an automatic weighbridge set back from the site entrance, so that vehicles do not have to queue on the public highway. Waste type and amount, as well as customer details, are recorded and the driver is directed to the appropriate delivery bay.

Reception hall

A large reception hall allows refuse collection vehicles to manoeuvre and tip waste safely. Air needed for the combustion process is drawn into the furnace from here and the hall is kept at a negative pressure, so that odour and dust do not escape from the building.



Bunker

Waste vehicles reverse to a wheel-stop and tip their loads into a large concrete bunker. At 60,000 tonnes of waste delivered per year, this is big enough to hold 16 days' waste, so that tipping can continue when the facility is shut down for maintenance. A shredder, for bulky items such as mattresses, also discharges material directly into the bunker.

Control room

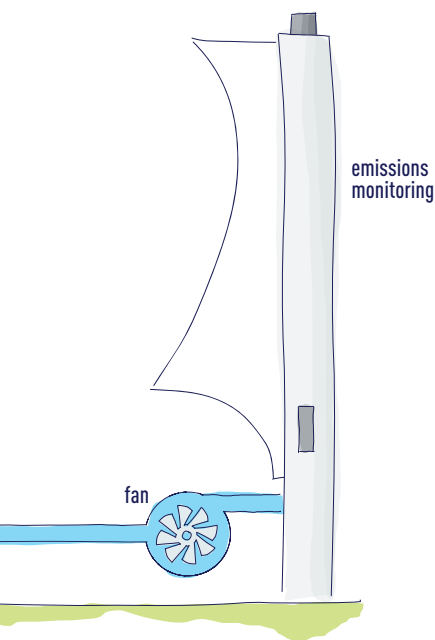
The facility's control room centralises the operation of all equipment, including the grab crane used to mix and load waste into a hopper that feeds the furnace. All on-site functions are monitored both automatically and manually. Control systems verify in real time that equipment is functioning properly, continuously monitor the combustion gas and maximise the efficiency of the entire energy-from-waste process.

Grate and boiler

Combustion air is blown up into the bottom of the water-cooled grate through five computer-controlled zones. The thermal energy released from the burning is used to convert water into super-heated steam. At high pressure, this steam drives a turbine-alternator to generate electricity.

Electricity generation

Electricity is generated at 11kV. At full capacity, around 1.5 megawatts is used to power the facility, leaving up to 5.5 megawatts for export to the Manx Utilities Authority, which distributes it around the island. The facility's switchgear is designed to protect the island's supplies from interruption.



Bottom ash

Ash left on the grate after incineration is carried by conveyor, after quenching, to a storage bunker. A magnet above the conveyor extracts ferrous material for recycling. The remaining bottom ash is sampled for contaminants before being removed for disposal to landfill.

Air-cooled condensers

After exiting the turbine, the steam is cooled and condensed back into water through air condensers. This recovered water is treated and reused in the boilers to produce more steam.

Emission control

The gases from the furnace are subject to a rigorous cleaning process involving selective non-catalytic reduction, spray absorbers and active carbon injection. This removes oxides of nitrogen, acidic gases, dioxins and heavy metals from the gas stream.

Air pollution control residue

The cleaned gas is passed through fine-fabric bag filters to remove solid particles before it is emitted through the stack. The resultant air pollution control residue, or fly-ash, contains particles from the incineration process, lime used in the spray absorbers, salts and carbon dust. It is analysed for contaminants and stored in a sealed silo or bags (approved under international rules for the carriage of dangerous goods) until it is collected for disposal in specialist, authorised facilities.

Emissions monitoring

As they pass through the stack, the residual flue gases from the process are continuously monitored before release. This data is relayed automatically to the control room and to a secure recorder.

Emissions data for 2020 can be found in the tables at the end of this report, while the systems for controlling emissions are described in the next chapter (section three).

Our operations

Despite the challenges posed by the pandemic, the team at Richmond Hill managed to sustain the facility's high standards of operational performance through 2020.

The first priority was to devise safe working procedures to protect our staff (see health and safety – section four) and contractors from infection. These included prescribing mandatory PPE for specified tasks and areas where we identified a risk of infection from both general waste and clinical waste streams. The latter warranted additional precautions.

Another problem was the sudden drop in waste deliveries following the island's first coronavirus lockdown in April. Waste volumes fell by around 30%, so the facility was taken offline for 20 days.

On 01 May 2020, following the reopening of civic amenity sites and most businesses – not least those in building and construction – the facility resumed operations as waste deliveries approached normal levels. At that stage, the volume of delivered waste was only about 5% down on the comparable period the year before. This recovery and an unplanned stoppage led to a build-up of waste in the pit. It was necessary to operate the facility at full capacity for several weeks to reduce waste storage ahead of a planned shutdown for major maintenance, which had to be rescheduled.

As previously reported, an initiative to avoid blockages – mainly caused by unsuitable items of waste – resulted in a new record for uninterrupted operation in 2019. This run was interrupted, along with the operation of the main incineration line, by a series of blockages in the deslagger. A blockage in May 2020 resulted in the plant being shut down as it was cleared, and three successive blockages in November 2020 also required the facility to come offline. We stepped up spot-checks and extended checks to all incoming skip waste in December 2020. In line with the new policy approved by the Department for Infrastructure in 2019, we also levied reloading charges for prohibited waste, which increase for repeat offenders, as a deterrent to those who flout the facility's clear acceptance rules for waste.

Unplanned stoppages, such as those described, result in higher oil usage, which is necessary to ensure complete incineration of waste remaining on the grate during shutdown, and to achieve operating temperature before introducing waste when starting up again.

Clinical waste review

As the coronavirus began to spread in Europe and the UK, a meeting was held with the Isle of Man's hospital incident controller and lead nurse for infectious diseases to review procedures for controlling clinical wastes.

Materials contaminated by COVID-19 were classified as a Category B waste by the UK government, the same as the standard clinical waste delivered to the facility in yellow bins with no special identification.

New safe working procedures were set up to minimise the risk from COVID-contaminated items in the normal clinical waste stream, as well as in general waste (see section four).

Scheduled maintenance

Scheduled maintenance is vital to keep the facility operating smoothly, and all the more so as the plant ages. We have two scheduled shutdowns each year for these preventative works on the primary line. At other times, so long as there is sufficient waste to process, the line is designed to operate around the clock every day. On the secondary line, clinical waste and waste oils are processed in batches over several days.

Shutdowns also allow for checks on the level of wear of components – such as the furnace grate, refractory walls and conveyors – along with regulatory inspections of the boiler, cranes and certain other plant.

Normally, major maintenance is planned months in advance, based on servicing schedules, our ongoing monitoring of equipment condition, and the availability of group resources – such as planning engineers and technical experts – and specialist contractors.

The pandemic impacted not only the timing and duration, but also the scope of works, our use of off-island contractors and the controls needed for COVID-secure working. As SUEZ in the UK cancelled scheduled shutdowns, we were unable to bring over contractors to site for our scheduled June/July 2020 outage.

In our April 2020 shutdown – forced by the reduction in waste deliveries – local contractors performed maintenance on critical equipment. A further outage was then required in July 2020 to conduct statutory pressure system inspections and refractory works.

The second planned outage had to be brought forward at short notice when boiler tube leaks forced another shutdown in October 2020. As a result, much of the year's planned maintenance work was postponed to 2021.

- » The team took advantage of the extended 20-day outage due to lack of waste in April 2020 to carry out minor repairs to the grate and furnace and replace hydraulic cylinders. As well as completing numerous inspections, there was time also for works to replace control valves for flue gas treatment, change the resin in our demineralised water plant, and modifications to process water pipework.
- » The first rescheduled maintenance outage took place between 15 July and 10 August 2020. Works were planned that could be executed by our in-house technicians and local contractors. These involved repairs to the ducting of the bag filter bypass and the furnace feed step cooling pipework. The waste pit crane had a detailed inspection. Meanwhile, failure of a superheater in a pressure test meant it had to be replaced immediately. This was a significant task that could only be accomplished by mobilising specialist contractors from the UK.
- » The second planned outage for maintenance had to begin on 19 October 2020, a fortnight earlier than scheduled due to an unexpected tube leak. This required a colossal effort to reschedule contractors and obtain COVID exemption certificates in a matter of days. Due to these constraints, it was not possible to carry out all the intended work. Repairing the thinning tubes of the boiler's first pass was the immediate priority. Other activities included work on the furnace refractory, servicing hydraulics and turbine oil systems, replacement of a chain conveyor, and the annual inspection of the steam turbine generator. To allow this work to take place as waste deliveries continued, waste materials had to be baled for some days before the facility could be brought back online.
- » An additional step was introduced in 2020 ahead of our extended furnace warm-up procedure. By following an Inspection and Test Plan (ITP), we ensure that all works are checked and signed off to minimise the risk of technical problems during the start-up phase.

Contractors and COVID controls

Delivering major maintenance programmes within the facility's two scheduled shutdowns requires a large contingent of contractors and specialist technicians from the UK and sometimes further afield. Given the increased risk of importing the coronavirus to the island, SUEZ Isle of Man decided to curtail these works to the minimum required for continued safe operation.

Our Government issued certificates of exemption to essential workers to meet this need, after reviewing our risk assessments and infection control procedures.

All off-island contractors received a special COVID briefing before their arrival, including instructions to stay at a designated hotel and avoid all travel, except for journeys to and from Richmond Hill.

On site, they were required to wear gloves and masks at all times, along with pink-coloured hi-vis jackets for easy identification.

The set of additional control measures imposed was comprehensive, and included:

- » physical separation of local and off-island personnel
- » use of phones instead of face-to-face communication with SUEZ staff
- » relocation of the office for work permits to the ground floor to reduce footfall through the building
- » warning tape and signs to barrier off work areas
- » designated heavy-duty plastic bags for waste
- » an intensive decontamination regime for toilets, workplaces and non-disposable equipment

Adherence to these procedures was monitored and well observed. There were no known cases of COVID transmission by off-island contractors or off-site infringements reported by police or health authorities.

Operational efficiency

Since the facility first opened in 2004, we have developed our maintenance regime with a view to minimising equipment failures and enhancing operational efficiency.

Proactive maintenance is informed by measuring vibration in pumps, motors, fans and other plant with rotating components, and analysing the readings to assess these assets and identify deterioration. We also review maintenance schedules to help pre-empt equipment failures, and track all maintenance works and repairs on our Mainsaver computer system.

Two main targets are set each year to benchmark maintenance performance.

Availability and downtime for critical items of plant and equipment is gauged by a score for overall equipment effectiveness (OEE). At the beginning of 2020, we set a target for the year of 61.88%. We surpassed this with an outcome of 63.53% – a creditable performance despite the pandemic disruption.

Our other indicator – first introduced for 2019 – is the balance between reactive maintenance and preventative maintenance. The stretch target for 2020 was to complete 80% of all preventative maintenance tasks by the year's end. Despite the disruptive effects of the pandemic restrictions, we managed to hit our target.





Spot on grate savings

Besides our performance targets and lean initiatives, SPOT 2023 is a further spur to increase efficiency across all SUEZ activities. SPOT stands for SUEZ Performance and Operational Transformation.

In energy-from-waste facilities, a prime target for the SPOT initiative are their moving grates. A critical part of the incineration process, grate movement can be controlled and the speed – along with air feed – affects the efficiency of combustion.

The SPOT 2023 initiative focused on the maintenance of grates and supply of spare parts. A team of specialists in procurement, asset management and operations scoped standards and quality control plans to identify the best outcome for each SUEZ facility, ranking suppliers by technical ability, experience and commercial offer.

They also devised a more efficient programme for inspections and both major and minor overhauls, the latter obviating the need to remove the entire grate bed. Significant savings in operational lifecycle costs will be made at the first two facilities examined, which we hope to replicate at Richmond Hill.



Asset tests

Standards for the management of assets are another benchmark for assessing the effectiveness of maintenance and value for money. All SUEZ energy-from-waste facilities are audited each year against these standards. During the year, SUEZ recycling and recovery UK gained accreditation to ISO 55001, the international standard for asset management, for its facilities in Teesside, Suffolk, Severnside and Kirklees. Cornwall, Wilton and the Isle of Man facility will be audited against the ISO 55001 standard in 2021.

In 2020, there were five audits of our plant assets, involving: the high-voltage system, residue handling, the stack, furnace refractory and grate.

Richmond Hill achieved 100% compliance in four of the audits and 99% in the high-voltage assessment.

Continuous improvement

Previous reports have outlined the team's commitment to continuously improving the reliability and efficiency of the facility, even as it approaches the end of its second decade of operation.

Our continuous improvement strategy adapts the principles and processes of 'lean' thinking developed in manufacturing. As well as sharing best practice with colleagues across the energy division and the wider SUEZ group, staff are trained to identify any wasteful element in our ways of working and encouraged to share ideas.

An independent assessment of lean maturity in 2019 confirmed that our application of these techniques was of a world-class standard. A follow-up audit by our parent company took place in October 2020. We achieved a score of 4.14 out of 5. This was a successful result from an extremely thorough inspection that coincided with an unplanned stoppage – and the second-highest score in the UK energy division.

During the year, the team completed six continuous improvement projects, with others still in progress at the year's end. Our target was to deliver five.

The completed projects involved improvements to:

1

The overband belt transport trolley – the heavy belts required to operate the magnetic separator above the bottom ash conveyor can now be moved more safely.

2

Spare tools storage – new procedures ensure that a full supply of the tools that may be needed for repair or maintenance work is to hand in the reception hall.

3

The trolley for deslagger clearing equipment – less manual handling is now involved when tools are positioned to remove blockages.

4

A clear area for testing invertors was created, including a three-phase power supply and storage area.



An alarm system installed within the combustion control system's atomiser chiller cabinet will now alert operators to any overheating.



A lab has been set up in the lime room for analysis at the point where the slurry sample is taken, so that lime no longer needs to be carried through the facility.

Projects to be progressed in 2021 include investigating the feasibility of using solar panels to provide power during shutdowns, reducing water coolant leakage into the waste bunker, a reverse-osmosis plant for faster and more efficient production of demineralised water for the boiler (replacing the plant that is no longer reliable) and further efforts to speed up the process of clearing deslagger blockages.

Back on board



Following the hiatus caused by lockdown, it was during June 2020 that our lean '5S' auditing got back on track. This is a rolling programme of reviews and reappraisals of every area of the facility and aspect of operations. The aim is to eliminate waste in processes and organise spaces so that tasks are easier and work is more efficient.

We track and share our progress through an audit display showing storyboards for each initiative, 'Kanban' schedules and photos depicting what good looks like in the areas in question. There are also area action lists to track the improvements.

By the end of June, the audit boards were returning to normal, showing the lean momentum that will bring ongoing improvements into 2021.

Other developments

There were several other developments over the course of 2020 affecting our operations, including:

Ash haulage

At the beginning of the year, SUEZ Isle of Man retendered its haulage contract for bottom ash. The aim was to test that our haulage costs were competitive and whether there were more efficient and environmentally-responsible alternatives available to rigid tippers with payloads up to 18 tonnes.

By maximising load per journey, a new three-year contract with Manx Independent Carriers uses articulated tippers capable of carrying 26 tonnes, reducing both costs and the carbon footprint of transportation due to fewer lorry movements.

Significant savings have also been made on a new extension to the contract for transporting lime, which is using a state-of-the-art tanker purchased five years ago by our haulage partner MIC.

Clinical line upgrade

In late 2019, SUEZ Isle of Man and the Department of Infrastructure agreed to explore options for replacing the clinical waste line. This secondary line was originally designed to accept the island's animal waste, as well as clinical waste. However, animal carcasses were diverted to the AWPP when it was built in 2009.

As the clinical line now treats significantly less waste than its design capacity, the facility is less fuel-efficient and more expensive to operate. As the only disposal point for clinical waste on the island, the secondary line plays a critical role in the Manx waste management strategy. It treats all the island's clinical waste, including materials contaminated by COVID-19.

A slightly smaller new plant would provide more than enough capacity to treat all clinical waste, while operating more efficiently, with less fuel. This would bring environmental benefits as well as cost savings for the Department. Discussions continued in 2020, with the aim of finalising a way forward in 2021.

Observation area

Changes were made in the reception hall in March to create a new corral area where staff can observe trucks tipping their loads into the waste pit. It will also allow the Day Operations team to direct HGVs to the spot-check bay while safely separated from the paths of reversing vehicles. A vehicle gate allows deliveries of materials to be stored in the lead-up to outages. Access control systems ensure only authorised staff can enter the reception hall.

Crane overhaul

July 2020 saw detailed inspection and testing of the crane used to mix and load waste into the furnace, following a deterioration in its reliability over the last several years. The work by manufacturer Kone Cranes indicated that the mechanical elements of the crane are in acceptable condition for their service life, but the crane's electrical systems are in a poor state. A major overhaul of the electrics and control systems is scheduled for May 2021. Control cabinets will be moved from their current position on the crane gantry – where they are exposed to vibration and the harsh environment of the waste pit – to a remote room. This will also make maintenance and fault-finding easier. Along with replacement of obsolescent parts, there will be other improvements, including a new catenary system, upgraded hoist, and more accurate weighing and position-sensing systems.



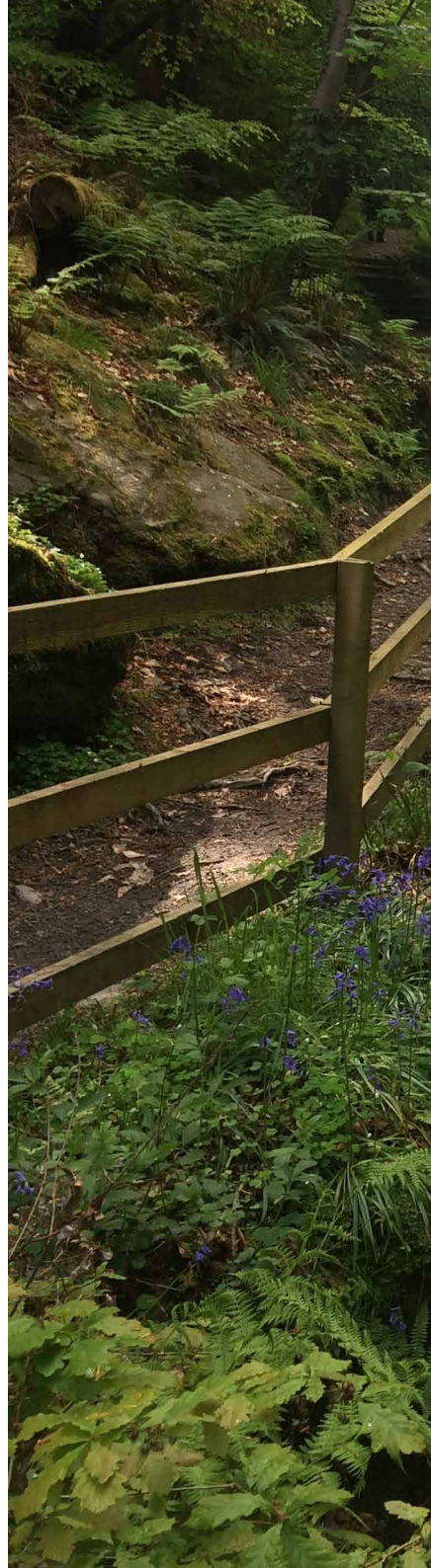
What we processed

As well as the hiatus in deliveries of wastes from businesses and civic amenity sites in the first lockdown, the year saw a fall in total throughput of around 1,000 tonnes – a 2% reduction.

Municipal waste flows increased as people worked from home, but these, and some modest rises in other waste streams, were more than offset by reductions in packaging, construction and wood waste.

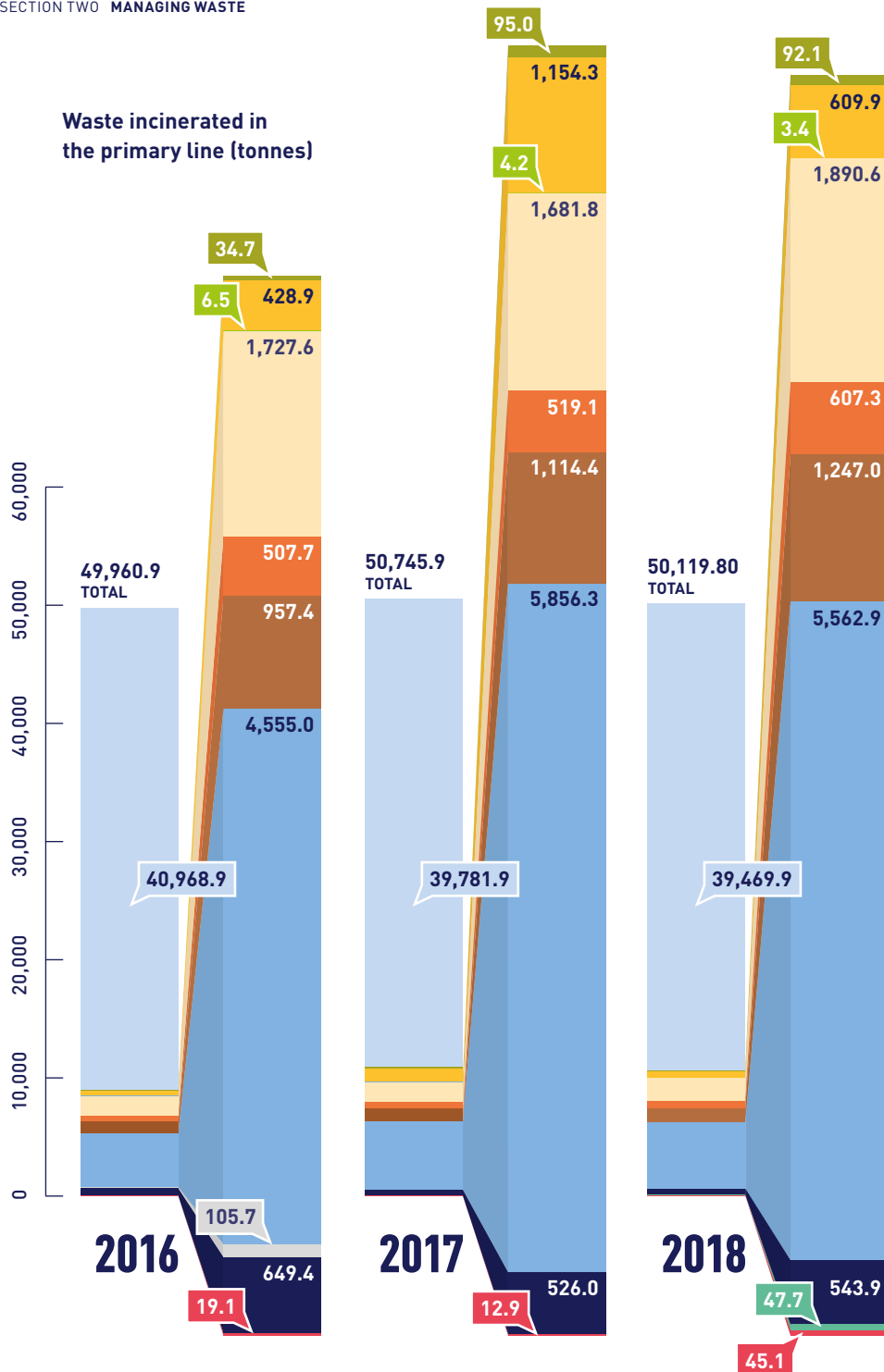
While the volume of clinical waste increased, less waste oil meant that the secondary line also saw a small drop in throughput.

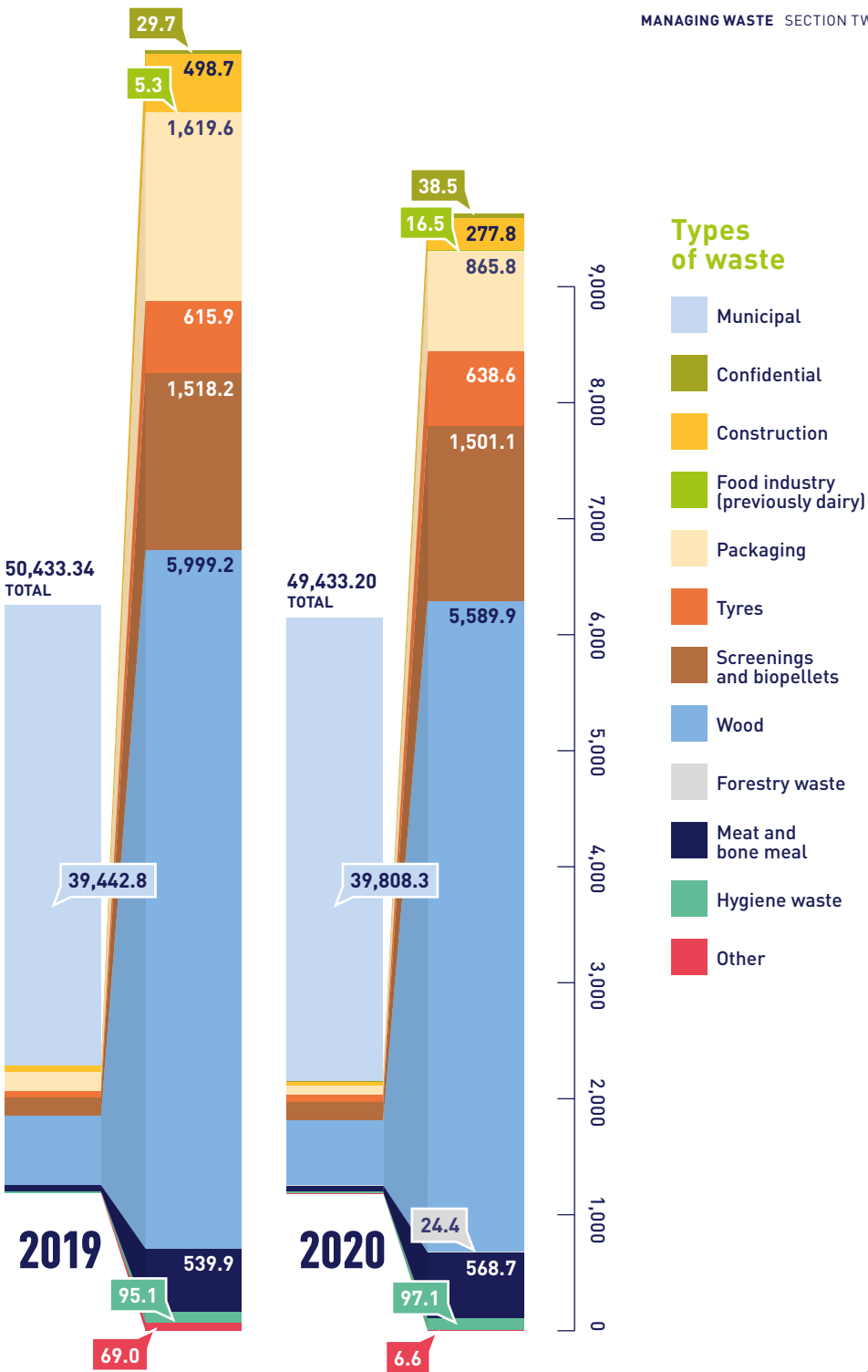
Overall, the amount of waste processed slipped below the 50,000 tonnes mark for the first time since 2016.



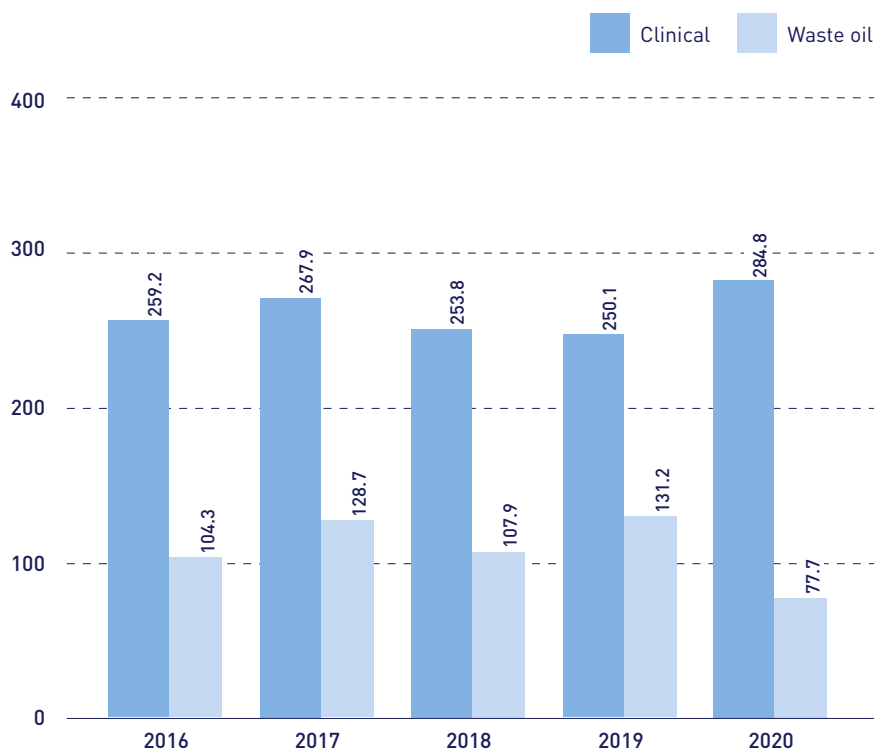


**Waste incinerated in
the primary line (tonnes)**







Waste incinerated in the secondary line (tonnes)

Note: Waste oil figures for 2015 onwards amended in March 2020

Energy generation

Despite the lower throughput of waste, the facility exported the most electricity to the grid in one year since 2017, when there was a spike in waste processed.

Nearly 25,500 megawatt-hours of power was supplied for use in local homes and businesses. A 3.8% rise in the amount of energy generated per tonne of waste reflected the longer period that the facility operated at or near full capacity to clear the waste backlog after shutdown. At high load, megawatt-hour/tonne output is optimised.

However, the trend of reductions in the amount of electricity drawn from the grid in previous years was reversed in 2020 due to the facility being offline for longer. This was due not only to the reduction in waste during lockdown, but also a series of unplanned outages. So, energy consumption rose by 50% to more than 910 megawatt-hours.

Other outputs and inputs

The main by-products of the energy-from-waste process are bottom ash, air pollution control residue (APCR) and ferrous metals. On the input side, gas oil, water and three chemicals (lime, ammonia and carbon) are essential to safe and efficient operations.

Bottom ash

Incinerator bottom ash is by far the biggest by-product of the energy-from-waste process. Yearly output fell by around 310 tonnes to just below 10,000 tonnes – a 3% reduction, slightly greater than the decline in waste processed.

Silica, which is essentially sandy soil, is the main component of the ash. This is sampled for contaminants before removal for disposal in the Turkeylands New Quarry landfill. Other naturally occurring compounds make up the remaining 4-5%.

Air pollution control residue

As polluting gases from the furnace are cleaned, particles in the stream are encapsulated by chemicals and air pollution control residue is formed. Classed as a hazardous waste, this contains lime, salts and carbon dust from the activated carbon sprayed into the flue to capture lead, chromium, arsenic and other heavy metals. Their concentrations vary with the mix of wastes and prevalence of batteries. Samples are analysed each quarter and the residue is shipped to the UK in sealed containers for safe disposal in specialist facilities.

There was a 10% drop in production of this residue in 2020, of 175 tonnes. The rate per tonne also shrank (by 8.8%), mainly due to lower moisture levels following work on the bag house in 2019 and efficient operation of the gas scrubbing process.

Ferrous metals

Pieces of steel and iron are present in the mixed wastes delivered to the facility. These ferrous metals are recovered by an overband magnet as the ash passes along a conveyor.

The volumes vary from year to year depending on the waste stream and availability of the magnetic separator. Just under 300 tonnes were recovered in 2020. This was a doubling of the rate per tonne (to 6kg/t) and almost 140 tonnes more than in 2019, when the magnet system failed and was replaced by a more powerful unit.

After passing through an incinerator, ferrous metals are of less value to reprocessors. It is also far better to divert aluminium – such as cans in household waste – for recycling, as they melt and cannot be recovered using the available equipment at the facility. Otherwise, this metal can be recycled indefinitely.

Gas oil

Compliant and efficient operation of the energy-from-waste process requires close control of the temperature at which wastes are destroyed. To maintain minimum levels during start-up and shutdown it is essential to burn gas oil. Non-compliant waste or other interruptions to the continuous loading of the grate can also cause temperatures to drop, triggering oil burners.

Oil consumption almost doubled in 2020, following reductions in the previous two years and the success of our initiative to pre-empt unplanned shutdowns due to blockages. The annual increase of more than 320 tonnes reflected six unplanned outages over the course of the year, in addition to the two scheduled maintenance shutdowns. These were caused by three blockages in the bottom ash extractor, a conveyor failure, boiler steam leak, and the lack of waste in April 2020. The need to use oil burners while removing waste from the grate and managing emission incidents was another factor.

Having redoubled our efforts to detect and deter non-compliant waste, we will continue striving to reduce reliance on oil burning along with its environmental and financial costs.

Water

Richmond Hill's facility is designed to conserve water and protect watercourses from contamination. We store and reuse rainfall and recycle water within the energy-from-waste process.

The main applications are cooling the grate of the furnace and producing super-heated steam in the boiler to drive the turbine. Water is also consumed in general cleaning, offices and toilets, and the visitor centre.

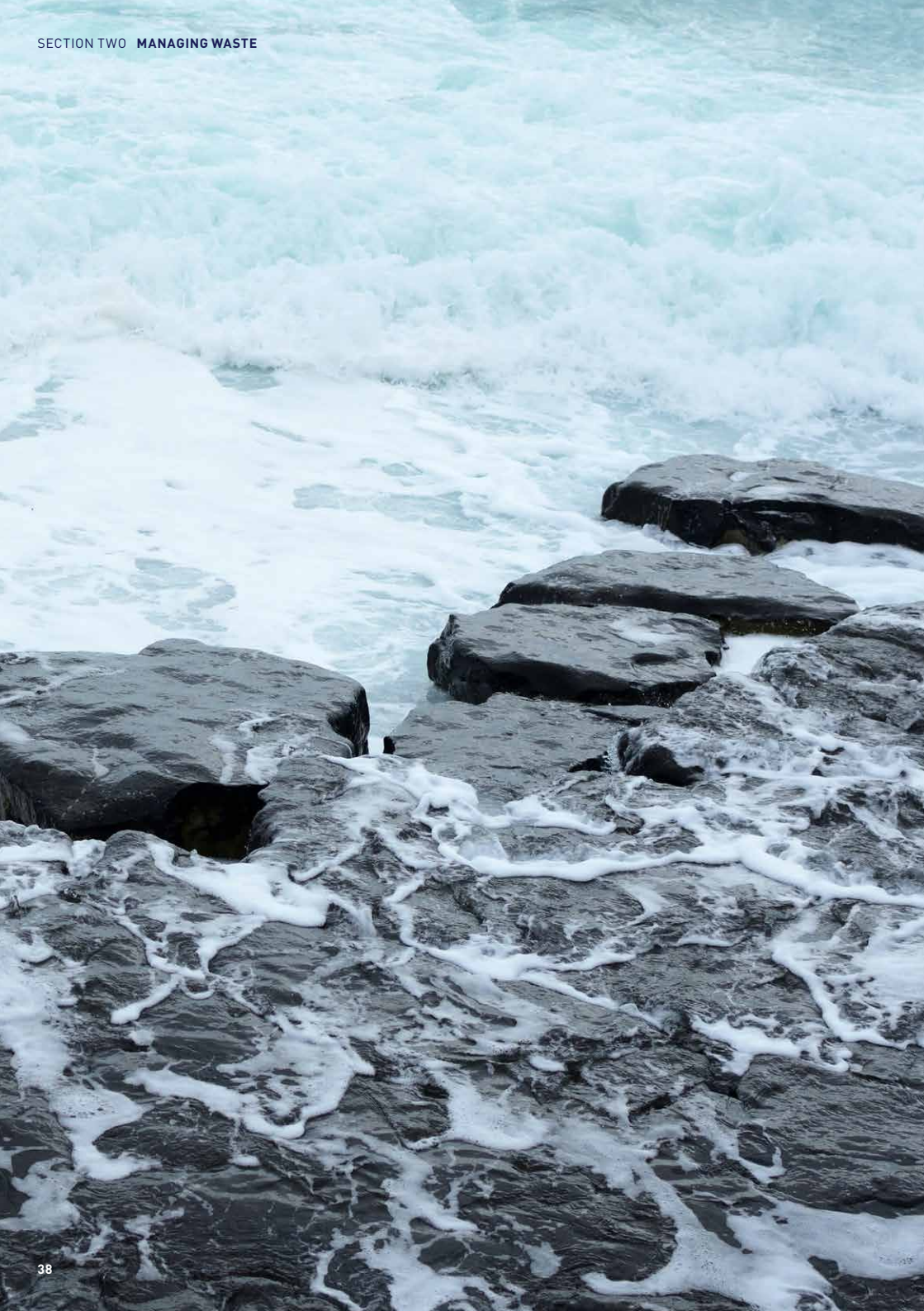
Almost 300 tonnes fewer were consumed in 2020. Supplying and pressure-testing the boiler before and after each outage, leaks in the grate cooling system and valve wear all contribute to water consumption. However, most of the reduction will have been due to the year's exceptional events – with extended downtime, lower numbers of staff and contractors on site, and closure of the visitor centre.

Chemicals

Keeping air emissions within their strict limits is our overriding priority, as we seek to manage the chemicals used in gas scrubbing efficiently. We review consumption rates each month.

Of the three chemicals consumed, lime saw a reduction while ammonia and carbon increased, compared with 2019 levels.

- » Lime neutralises acidic gases, such as sulphur dioxide and hydrogen chloride. The year saw a further and higher year-on-year reduction – of almost 55 tonnes, or 13%. Consumption was less than 370 tonnes, which compares with a historical average of 420–450 tonnes a year. This reduction is largely attributable to a full year's operation of new raw gas analysers installed in 2019. These have improved control of the abatement system, which sprays a lime slurry in the flue.
- » Ammonia is injected into the boiler to control oxides of nitrogen. Consumption rose by some seven tonnes over the year, as the usage rate per tonne of waste treated went up by more than 35%. This was due to meters malfunctioning, so they failed to balance the flow of ammonia, reducing efficiency and increasing usage. Following their replacement, in November 2020, the key performance indicator for this chemical improved.
- » Activated carbon is injected into the gases from the furnace to adsorb dioxins and trace metals. The increase in usage was less than 4.5 tonnes, up by almost a quarter on 2019, again due to over-dosing. The main cause was eventually traced to the eductor pump. When replaced with a new unit, the system performed within specification.





Our other activities

SUEZ recycling and recovery UK provides a range of integrated waste management services across the country. On the island, we manage hazardous wastes and offer a secure disposal service for confidential waste, as well as operating the energy-from-waste facility.

Hazardous waste

Not only is it essential to store hazardous materials safely, strict international regulations must be followed for shipping and disposal.

SUEZ Isle of Man manages this process. We collect hazardous wastes from producers, analyse and classify the substances, and specify the appropriate treatment or disposal option. All substances are held in a purpose-built store on our Richmond Hill site. We raise transfrontier shipment notices for each load, in which various wastes may be batched for efficiency, before shipment to appropriately licensed facilities in the UK.

Households can also request the removal of any potentially dangerous chemicals or substances from their homes, as part of a public service funded by the Government.

During 2020, we shipped six loads of hazardous waste. Three contained flammable paint waste from several customers. These were large consolidated loads that had to be stored on site following the closure of the UK disposal site used in previous years.

An alternative location was identified after discussions with various other hazardous waste disposal specialists. The other three loads were from one customer, which went to two different licensed sites, the second chosen at their request.

Confidential waste


Confidential waste from commercial customers is securely destroyed in the primary line.

During 2020, more than 85 tonnes were processed, an increase of nearly 30% on the year before.

Managing environmental performance

Since it was commissioned, the Richmond Hill facility has maintained high environmental standards of environmental protection. That record has been sustained through 2020.





Our environmental management system and performance monitoring regime, which are crucial in controlling emissions and ensuring safe operation, are outlined in this section. We report on all environmental impacts against the limits set in the facility's operating licence. The supporting data is set out in the tables at the end of the report.

SUEZ environmental policy

Our parent company, SUEZ recycling and recovery UK, sets the policy framework that governs our operations, including management systems and procedures.

This environmental policy requires total compliance with the terms of our site licence and all relevant legislation and regulations. It also challenges us to exceed those standards wherever practicable. Objectives and targets are also set to drive continuous improvement, and our performance is monitored.

All procedures governing environmental protection are set out clearly in our integrated management system, which also encompasses occupational health and safety, and quality of service.

Our integrated policy statement for environment, health, safety and quality

SUEZ Recycling and Recovery UK Ltd recognises that how we manage our customers' and our own waste has an impact on the environment, the health and safety of our employees, persons working on our behalf, and the public. From a position of leadership in the UK's recycling and waste management industry, SUEZ is fully committed to the effective management of all such issues associated with our activities.

Management responsibility

The Management Board will ensure that responsibility for environmental, health and safety, and quality issues is clearly defined and understood throughout the company. All activities will be conducted in a manner designed to: protect the health and safety of our employees, persons working on our behalf and the public; to protect the environment from risk of pollution; and ensure a high quality of service for our customers.

Managers should be aware that a European Health and Safety agreement exists. This sets out the standards that the Company expects in respect of securing the health, safety and welfare of our employees and all other persons that could be affected by our business activities. A copy of the agreement can be found in the policy statement section of the SUEZ policies and procedures.

Legislation

SUEZ will comply with and wherever possible exceed existing environmental, health and safety, fleet and other pertinent legislative requirements at all stages of our business activities and operations.

Stakeholder relations

SUEZ recognises the importance of our relationship with stakeholders: employees, the public, contractors, customers and shareholders. We will communicate this Policy to them, report annually on performance and engage with stakeholders so as to understand and consider their expectations in the way we manage our business.

Continual improvement

SUEZ will monitor and measure progress by setting improvement objectives and targets to ensure continuous improvement in performance.

In order to mitigate the impact on the environment, enhance health and safety management and performance, and ensure delivery of service to all our customers, SUEZ will:

- › Commit to eliminate hazards and reduce occupational health and safety risks in order to prevent injury and ill health and promote a positive health and safety culture.
- › Ensure all of our facilities are managed in such a way as to prevent and minimise pollution and commit to providing safe and healthy working conditions for the prevention of work-related injury and ill health.
- › Seek to minimise the environmental impact of transport use.
- › Seek to reduce the amount of energy obtained through non-renewable resources, use energy efficiently and reduce greenhouse gas emissions.
- › Seek to minimise the volume of waste generated and to maximise re-use, recycling and energy recovery from waste.
- › Use suppliers or contractors that have environmental and health and safety standards compatible with our own wherever possible, and maintain good customer and supplier relationships.
- › Continually reassess all the above in light of changing technology, legislation, the precautionary principle, business requirements and best practice.
- › Ensure adequate resources are provided to meet specified customer and company requirements.
- › Ensure personnel working for and on behalf of SUEZ are aware of their responsibilities and comply with our policies and procedures.
- › Regularly evaluate and review company performance and service provision.
- › Commit to consultation and participation of workers and where they exist, workers' representatives.
- › Evaluate the incident and crisis preparedness, response and recovery protocols to mitigate risk.
- › Drive forward the promotion of health and wellbeing programmes, providing resources to support our employees.

The Management Board will periodically review this policy to ensure that it continues to meet the needs and aims of the business.

Management systems

At every stage of our activities –
from accepting incoming wastes to
how we handle and dispose of process
by-products such as bottom ash
– the compliant course of action
is clear to staff.

Our integrated quality and environmental
system addresses all aspects of operating
the energy-from-waste facility. It also
sets out the procedures for reporting our
performance to the island's regulator.

We have registered our management
system to the relevant international
standards. Continued certification is
subject to an independent assessment of
our procedures and operations each year.

Since we began operations, our system
has continuously met the environmental
requirements of ISO 14001. We also
satisfy the equivalent certification for
quality management – ISO 9001:2008.

In addition to this external verification,
management of the Richmond Hill
facility is audited by the Government's
Environmental Protection Unit and our
parent company. We also perform our
own internal auditing.

Environmental compliance

SUEZ Isle of Man is committed to meeting
and surpassing the standards set in all
relevant UK and European legislation,
as well as Manx laws and regulations.

This local legislation includes:

- » **The Public Health Act 1990**
- » **The Collection and Disposal of
Waste Regulations 2000**
- » **The Import and Export of Waste
Regulations 2001**
- » **The Town and Country Planning Act
1934-1991 (as amended 1999)**

Local regulation is the responsibility
of the Environmental Protection Unit,
which reports to the Department of
Environment, Food and Agriculture.

Compliance audits

Our compliance with the operating licence and other aspects of our operations is subject to a series of audits.

The international testing organisation SGS undertook the annual assessment of our integrated system against ISO 14001 – the international standard for environmental management. Its three-day audit confirmed our continued compliance.

Our certification to the international standard for quality, ISO 9001, was also renewed.

Audits by the central team at SUEZ recycling and recovery UK had to be performed remotely. These checks cover our operational management system, adherence to procedures for managing health, safety, environmental protection and quality, and other aspects of our operations, such as preventative maintenance and lean practice.

Due to COVID travel restrictions, a team from our insurer Allianz also performed a virtual visit via video call to complete its insurance and risk audit. Critical plant and equipment are also subject to regulatory inspections by manufacturers and their agents. In 2020, this involved a review of the fire protection system, fire hazards, and boiler and machinery assessments.

Environmental impacts

Treating waste – as with all industrial processes – has impacts on the environment and the potential to cause harm. The Richmond Hill facility, its management and control systems, and the competency and specialist training of our personnel are designed to minimise those impacts and to ensure safe operation of the energy-from-waste process.

All potentially significant impacts, both negative and positive, are assessed, reviewed and recorded in our site's Significant Environmental Impacts Register. Maintaining the register helps us mitigate these risks and identify possible improvements.

Biodiversity

Many of the procedures we follow daily – as well as the design of the energy-from-waste facility and enhancements made over the years – are geared to protecting local wildlife habitats and biodiversity.

All discharges to watercourses, as well as emissions to air, are controlled. Special measures are in place to manage the risks associated with storing oil, chemicals and hazardous wastes on site. Their handling and transportation are also subject to strict procedures. We test these and our preparedness in emergency drills.

As at other major facilities operated by SUEZ, the biodiversity action plan for Richmond Hill recognises the sensitivities of the local ecosystem and how biodiversity can be conserved and promoted in the area that we influence. Global scientific research showing the grave loss of biodiversity – and multiple species, from plants to pollinators – only underlines our collective responsibility.



Plan bee

In August 2020, we took delivery of our first beehive, after extensive planning and careful consideration of how best to enhance biodiversity on Richmond Hill.

As with other insects, bee numbers have suffered a drastic fall over the last decade, so keeping bees is widely recognised as a necessary and positive step to support this key pollinator of flowers and crops. Hosting a bee colony at the energy-from-waste facility is particularly appropriate as we can extend our knowledge of the local environment to a five-mile radius around the site.

As bees can fly that distance to collect pollen, they provide a good indicator of the health of this local environment. Some SUEZ facilities in the UK have pollen traps on their hives so they can check the levels of pollutants within the pollen.

Once our bees are producing honey – probably next year – we will be able to send samples to a laboratory for similar analysis.



An expert from the Isle of Man Beekeepers Federation advised on a suitable location for the hive and on maintaining the grass banks nearby. These already boast a range of bee-friendly flowers. Mowing frequency is being reduced and an area will be allowed to grow naturally to form a wildflower meadow.

Thanks are due to three of our people who volunteered to be beekeepers and underwent training so that we were allowed to keep bees on site.

Emergency planning

Each year, we test our emergency preparedness in a series of drills. Despite the disruption due to the pandemic in the first quarter, we managed to complete 12 drills over the rest of the calendar year. A target of four had been set for 2020.

The drills are designed to check that staff on duty (who are not forewarned) adhere to procedures. We learn, share and apply any lessons learned to training, equipment or the procedures themselves. Scenarios tested ranged from a pit fire to a plant blackout, and high flue gas temperatures to a caustic spillage.

At the end of July 2020, during our first shutdown for maintenance, a plant fire drill tested the evacuation procedures, including COVID-19 rules designating separate muster points for contractors and in-house personnel. Everyone left the building and assembled correctly within five minutes.

In October 2020, a missing person drill highlighted the need to make proper use of the lone working function on staff radios and respond to 'man down' alarms. A repeat drill in December 2020, following 'toolbox talks' on this topic, showed a greatly improved response and pointed to further improvements to be made in noting when checks are made and how searches should be conducted.

Another drill began with puncturing an intermediate bulk container filled with water to simulate a spillage of sodium hydroxide outside a bunded area. Staff reacted appropriately, rapidly deploying the right equipment to contain this caustic substance. Afterwards, discussion points for improvements included storing a spill kit closer to the area, along with drain covers as well as the standard kit's chemical spill socks.



Our environmental performance

The EU Industrial Emissions Directive governs how emissions from the facility are monitored. This regulatory framework is strict and makes energy-from-waste one of the most tightly regulated industrial processes in Europe.

We monitor all emissions to air, land and water – including solid residues – under the terms of our site licence and report the results to the Environmental Protection Unit.

Emissions

Our operating licence sets air emission limits for a range of parameters.

The facility's continuous emissions monitoring system analyses gases in the flue after the scrubbing process. It measures:

- » **Particles**
- » **Carbon monoxide**
- » **Sulphur dioxide**
- » **Hydrogen chloride**
- » **Oxides of nitrogen**
- » **Volatile organic compounds**
- » **Ammonia**

Other compounds that cannot be continuously measured, but are subject to emission limits, are tested periodically.

Monitoring for metals in flue gases takes place biannually. Particulates from both lines are subject to monitoring each quarter. Testing for dioxin is performed quarterly on both the primary and secondary lines.

Half-hourly limits apply under our site licence to certain compounds, while the limit for carbon monoxide has a 10-minute interval. The facility may continue to operate in full compliance with its licence conditions when these limits are exceeded, but a shutdown is required if the emission is not brought back under control within a specified time.

We are required to report all exceedances to the Environmental Protection Unit and investigate the causes. Our staff inform the Environmental Protection Unit of the outcome of each investigation and the corrective action, where appropriate, before closing the event.

Daily emission data for the continuously monitored parameters are published on our website (www.suez.co.im) along with other updates. Graphs show the daily readings for each parameter and emission limit, and the emissions profile for the previous 90 days for both lines. We also report the quantity of electricity exported.

Licence emissions limits

Emissions to air

	Half-hour average	Daily average	Other limit
Particulate matter	30 mg/m ³	10 mg/m ³	
VOCs as Total Organic Carbon	20 mg/m ³	10 mg/m ³	
Hydrogen chloride	60 mg/m ³	10 mg/m ³	
Hydrogen fluoride			2 mg/m ³
Carbon monoxide		50 mg/m ³	150 mg/m ³ 95 per cent of all 10-minute averages in any 24-hour period
Sulphur dioxide	200 mg/m ³	50 mg/m ³	
Oxides of nitrogen	400 mg/m ³	200 mg/m ³	
Cadmium and thallium (and their compounds)			0.05 mg/m ³
Mercury (and its compounds)			0.05 mg/m ³
Sb, As, Cr, Co, Cu, Pb, Mn, Ni and V (and their compounds)			0.5 mg/m ³
Dioxins and furans			0.1 ng/m ³
Ammonia			*
Polyaromatic hydrocarbons			*
Dioxin-like PCBs			*

Emissions to water

Surface water	Limit
pH minimum	6
pH maximum	10
Conductivity	*
Temperature	30°C
Flow duration	*
Suspended solids	*
Chemical oxygen demand	*
Sulphides	*
Sb, As, Cd, Cr, Co, Cu, Pb, Mn, Hg, Ni, Ti and V	*
Visible oil	Nil
Ammonia (N)	0.6 mg/l

* Parameter does not have a limit stated in the waste disposal licence, but is required to be measured and reported to the Environmental Protection Unit.

Sewage treatment facility	Limit
pH minimum	6
pH maximum	10
Visible oil	Nil
Suspended solids	60 mg/l
Biochemical oxygen demand	50 mg/l

Licence variations

The site operating licence has evolved over the years, mainly to permit treatment of additional waste streams. Licence variations are only granted by the Department of Environment, Food and Agriculture if applications prove that the process is safe, cost-effective and would not compromise the compliance or efficiency of the facility.

Previous variations have recognised the facility’s capacity to treat challenging wastes, such as vehicle tyres and bio-waste.

In 2020, the only licence change was a contingency to allow clinical waste to be processed in the primary incinerator – should the secondary line suffer a failure rendering it inoperable – to avoid waste building up on site or in medical facilities.



Measuring our performance

SUEZ Isle of Man has maintained its exemplary record on emissions. Over the year, cumulative emissions remained well below the maximum levels indicated by the operating licence. This has been the case every year since operations began on Richmond Hill.

There were, during 2020, six incidents in which half-hourly limits for airborne emissions were exceeded.

Hydrogen chloride

On 13 January the hydrogen chloride reading for the secondary line rose rapidly beyond the designated limit. Checks confirmed all systems (controlling the lime plant, slaking temperatures, atomiser and baghouse) were functioning correctly. Bin tipping was suspended, and the atomiser flushed to ensure good lime flow, before shutting the line down. A half-hourly exceedance was recorded. Investigation of the CEMS analysers and atomiser confirmed they were in good working order. It is believed that the type of waste within the sealed bags caused the spike.

Volatile organic compounds

The total organic compound reading – which measures the presence of volatile organic compounds – triggered a half-hour exceedance on 06 April 2020. This followed an explosion in the primary line's furnace, leading to a surge in pressure and drop in oxygen that prevented the complete combustion of the waste in the chamber. The furnace's induced draft fan reacted automatically, bring the pressure down within operating parameters in 16 seconds. Total organic compound readings normalised within five minutes of the explosion.

Hydrogen chloride and sulphur dioxide

On 13 August 2020, a half-hourly limit was exceeded for both sulphur dioxide and hydrogen chloride when the primary line's atomiser tripped, cutting off the supply of the lime milk that neutralises these gases. On inspecting the control panel, the operator noted an unusual alarm and investigated, to discover condensation dripping onto electrical equipment in the panel cooling system. Waste feeding was stopped, and burners used to maintain furnace temperature, while our electrical technician confirmed the cause was a short circuit and rectified the problem. Less than 90 minutes after the trip, the atomiser was running as normal and waste feeding resumed.

A week later, on 20 August 2020, there was a spike in hydrogen chloride again in the primary line. Monitoring screens showed that the atomiser, lime plant and related systems were operating normally. Flushing the atomiser to ensure good lime flow failed to avert the exceedance, so waste processing stopped to allow further checks. The problem was attributed to the type of waste incinerated as the high level in the pit – following an extended outage – prevented effective mixing. With pit levels back to normal, crane operators are able to ensure a more homogenous waste stream.

A similar incident on 15 October 2020 again saw exceedances of a half-hourly limit for each gas despite there being no apparent failure in the scrubbing systems. As soon as waste feeding stopped, settings were adjusted to maximise lime flow through the absorber. Despite these remedial measures, the levels remained high for around 90 minutes, until effective mixing of pit waste was restored.

The final exceedance occurred on 08 November 2020 after the atomiser tripped on the primary line. The problem was traced to a fault in the frequency converter. Further investigation showed the control panel was unresponsive. After several attempted resets, the converter was rebooted. When the atomiser failed to operate at a high enough speed, it had to be replaced. Further investigation with the manufacturer pointed to a fault with the firmware and one of the internal control cards. Spares were ordered and the equipment is being closely monitored.

Climate change

As a recognised corporate leader in the global response to the climate emergency, the SUEZ group has set science-based targets for reducing carbon emissions.

Science-based targets show companies how much they need to reduce their greenhouse gas emissions by, and how quickly, to keep these in line with worldwide reductions required to keep global temperature increase below those outlined in the 2015 Paris Agreement.

These have been increased since our last report in light of the latest research and guidance from the Intergovernmental Panel on Climate Change.

The number-one SUEZ commitment is, by 2030, to reduce direct and indirect greenhouse gas emissions from all group companies' activities by 45% from their 2014 level; this target was previously set at 30%.

The group's new target is aligned with the Paris Agreement's aim of limiting global heating to 1.5°C. SUEZ was one of the first signatories to the United Nations Global Compact's campaign to achieve that goal, en route to carbon neutrality by 2050.

SUEZ's second headline commitment is to help its customers avoid 20 million tonnes of their CO₂e emissions each year by 2030.

SUEZ Isle of Man calculates and reports carbon emissions from our operations in conjunction with SUEZ recycling and recovery UK. These figures are consolidated in group-level reporting.

The wider group's latest 2020 Integrated Report shows that aggregate emissions totalled 9,467,000 CO₂e in 2019. Emissions avoided on behalf of SUEZ customers amounted to 10,217,000 tonnes CO₂e. Almost all of this (97%) was achieved through waste solutions; the remainder through water-related services.

Calculating carbon emissions

Emissions from the Richmond Hill facility are calculated through a carbon balance analysis.

This methodology uses industry-standard conversion factors to estimate the carbon emissions associated with processing waste over the year – including all gases known to contribute to the greenhouse effect – and also those arising from the consumption of fuel in our operations, including the transport of waste and by-products.

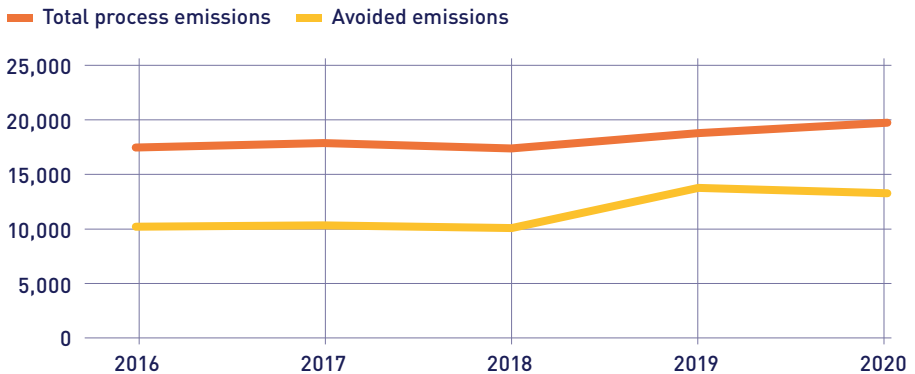
The facility also avoids carbon emissions that would otherwise occur. Electricity exported to the island's grid reduces the need to generate power from fossil fuels. These saved emissions are subtracted from the total to give a net figure, measuring the carbon footprint of the facility.

For 2020, these calculations show that process emissions rose despite the reduction in waste throughput. This was largely due to the increased number of clinical waste runs as a result of the pandemic, requiring more fuel use for the startups and shutdowns.

Other SUEZ facilities are equipped to process incinerator bottom ash for re-use as an aggregate substitute in construction industry applications, generating carbon savings. This does not apply to the Isle of Man, so these are not included in the recalculated graph below.

Although there was a modest increase in electricity exports compared with 2019, this was offset by the need to import more power to run the facility during the year's extended shutdowns. The carbon savings arising from the electricity exported from the site dipped to just over 13,300 tonnes CO₂e.

Total process emissions and avoided emissions (tonnes CO₂e)



	2016	2017	2018	2019	2020
Total process emissions (Scope 1* + Scope 2*)	17,203	17,667	17,106	18,818	19,803
Avoided emissions (energy generation, carbon and metal recycling savings)	10,204	10,438	10,014	13,820	13,318

2019 onward figures updated based on a revised methodology in line with protocol for the quantification of greenhouse gases emissions from waste management activities - version 5 - October 2013. The version 5 of the Waste Sector GHG Protocol has received the "Built on the GHG Protocol" label.

*Scope 1 – All direct emissions from the activities of an organisation or under their control, including fuel combustion on site.

*Scope 2 – Indirect emissions from electricity, purchased and used by the organisation. Emissions are created during the generation of the energy and eventually used by the organisation.

Corporate social responsibility

Our wider responsibilities as a company and employer extend from protecting the environment to promoting the wellbeing of our people and the community we serve.

Here we report on how we have discharged those duties in 2020: safeguarding employees at work, developing skills and career opportunities, being accountable to our neighbours and customers, and contributing to the benefit of the island's society and economy.



Our people

Our people are capable and committed to running a safe facility and a highly efficient service for the island. SUEZ Isle of Man's sustained performance and standing within our industry stem from the strength of our team – supported by our corporate policies, systems and procedures, and investment in equipment and training.

Providing a safe and healthy working environment is our first priority, which was tested in an unexpected way in 2020.

COVID-secure working

The crucial role of our people – and the need to safeguard their wellbeing – was thrown into stark relief by the coronavirus emergency, as we took steps to ensure that our facility continued to operate through the pandemic.

On an island with no backup disposal point for waste, it was critical to avoid an excessive build-up of incoming waste during lockdown, while also maintaining a safe disposal option for clinical waste.

Following guidance from the Government and recommended procedures from our parent company, we put social distancing measures in place around the site and arranged for office staff to work from home.

Additional PPE – including disposable masks, gloves and paper suits – was procured and hand sanitiser stations were set up around the building. As key workers, our operational, maintenance and managerial staff were issued with letters confirming their status and allocated to 'bubbles'.

The maintenance and day operations teams were each split in two, so that if anyone contracted the virus, another team would take over as theirs went into self-isolation.

New procedures specified the PPE required for all tasks that increased the risk of exposure to COVID-contaminated items in general waste – from clearing waste in the hopper to maintenance of the bin lift.

Special infection control procedures were introduced on the secondary line for processing of clinical waste. A changing area was set up for staff to put on and remove their full PPE. Disinfection stations were also created outside and bins sprayed down with bleach.

Many other special measures were required to manage essential maintenance, including segregation of UK contractors and local personnel (see section two).

When social distancing was no longer deemed necessary, regular hand washing and sanitising continued, as did the wearing of face coverings when working in enclosed spaces. Employees were issued with washable masks for this purpose.

These restrictions have been conscientiously observed and our facility has operated reliably through the crisis.

Health and safety

All procedures for safe working are set out in our integrated management system, described in section three. They cover every aspect of operating the energy-from-waste process and related activities. Integrating these rules with our guidance on environmental protection and quality management is seen as the most effective way of embedding safety in everything we do.

We back up this approach to safety management with risk assessment, safety training and auditing. All incidents are investigated and any necessary action is taken before reports are closed.

Checks and procedures are not sufficient to ensure safe working. It is also necessary to foster a positive culture and behaviours. Safety representatives in each of our teams discuss any concerns colleagues may have and relay their views and suggestions to managers. They, in turn, constantly encourage employees and contractors to report 'near misses', so we can investigate, and apply the lessons learned.

Safety in Mind, our industry-leading behavioural programme, was developed by employees across SUEZ recycling and recovery UK. All employees – managers, supervisors and safety representatives – benefit from Safety in Mind training, which raises and refreshes safety awareness among the workforce.

Safety in Mind conversations involve team members discussing any aspect of safety, giving everyone in the group the opportunity to flag concerns or suggest improvements. They promote vigilance and complement what we call Vigiminutes – essentially taking time out to assess tasks and ensure everything is in place to avoid risk to those performing the work or anyone nearby. The coronavirus gave cause for new Vigiminute assessments, for example, of access/exit controls around the site and of welfare arrangements.

Our managers conduct monthly site walks where they look for positive points and hazards and provide feedback, praising staff and prompting corrective actions, as appropriate. The findings are also discussed at the monthly health and safety meeting. There were 12 managerial safety visits during the year, prompting various safety improvements. These included lagging of the super-heater safety valve, replacement of speed switch covers and re-routing of the emissions control system's SNCR hoses to avoid trip hazards.

In February 2020, we launched a new app and website to make it easier to record Safety in Mind conversations, Vigiminutes and managerial safety visits. Our people can quickly upload the details from their mobile phone or use a computer when back at their desk. A total of 9,487 Safety in Mind conversations were logged over the year, 42% more than in 2019.

Incidents in 2020

Over the year, there were 10 personal injury incidents in total. One was a back injury sustained while shovelling ash, sufficiently serious that the employee had to take two days off work.

This was the first time in 222 days that anyone working on Richmond Hill was involved in a lost-time accident.

In 2020, a total of 41 near misses were logged, 16 fewer than the year before. We reinforced our messaging on the importance of capturing these events that might otherwise go unreported.

All incidents and near-miss reports are reviewed by our Safety Manager and investigated so that any improvements to procedures and equipment are made.

Mental health and wellbeing are not neglected. Inspired by our Wellness for All charter, which was drawn up with group employees in 2019, a programme of mental health awareness training and wellbeing webinars was rolled out during the year. These can be accessed online when convenient, and they are backed up with downloadable guides on topics ranging from stress and anxiety management to healthy eating and lifestyles.

Investing in people

The culture SUEZ strives to promote is inclusive and progressive.

As well as investing in training and development, this means consulting employees regularly on their views, encouraging suggestions and ideas, and engaging people in the company's purpose, performance and interactions with the communities we serve.

In February 2020, for the second year running, SUEZ recycling and recovery UK was named among the Sunday Times Top 25 Companies to Work For. It was rated highly for wellbeing and giving something back.

A survey of all 70,000 SUEZ employees across 55 countries took place in May and June 2020. The consultation complements the biannual USay survey of our people in Britain and the Isle of Man. SUEZ donates £5 to charity for every questionnaire completed. The aim was for a 70%-plus response rate globally.

Following the strong results from the 2019 USay employee engagement survey, Best Companies gave our parent company its 'One to Watch' award in recognition of its world-class response rate of almost 85%.

Training and development

Our comprehensive training and development programme underpins the competency of each individual and promotes learning and our people's career paths.

All operations and maintenance staff complete our in-house competence training and are formally assessed. Launched in 2020, a new skills and mandatory training matrix has improved how we go about identifying everyone's training needs and track their progress.

Training and career development are among the topics employees discuss with their line manager at their annual performance review. This process was revamped and strengthened in February and linked to the group's talent management platform.

We also invest in training designed to enhance complementary skills, personal development and career progression. Our aim is to provide fulfilling careers within our company and the wider group and, where possible, we promote from within.

During the year, we provided some 200 person-hours of training in-house, much of it safety-related, including infection control training with respect to the coronavirus. That total was only about a quarter of a typical year's level. Due to the pandemic, we could no longer send employees on courses in the UK. The deficit would have been bigger but for new courses we rolled out through iHASCO, the online health and safety and HR compliance e-training platform. This worked well, with the advantage that operators and maintenance staff can complete their training while on shift, and the inconvenience and cost of travel are avoided.

SUEZ has already demonstrated the value of e-learning. The group's online learning platform allows people to hone new skills in management, communications, leadership and other areas in their own time.

Championing sustainability

In October 2020, John Scanlon, the new CEO of SUEZ recycling and recovery UK, invited colleagues to volunteer for a new role allied to the group's purpose – shaping a sustainable environment, now. In a similar vein to our health and safety representatives, Sustainability Champions are leading by example, contributing ideas and helping their parts of the business make changes that create a better environment for everyone. Mike Valerga, one of our maintenance technicians, stepped up to the plate. He will be designing a sustainability action plan and liaising with a network of champions across SUEZ.

Another green development was the creation of an indoor parking area for bicycles on site, complete with a charging point for e-bikes. We are encouraging more employees to get onto the cycle-to-work scheme.

Our team

2020 saw a changing of leadership at Richmond Hill and the return of a native.

Plant Manager Gerrit du Toit retired at the end of March 2020 and Operations Manager Jon Garrad took over at the helm.

Soon after, Stuart Storrie returned to the island after his time at sea and re-joined as Senior Operator. He left us in 2018 to join the Merchant Navy.

It was July 2020 before we could mark Gerrit's retirement with a dinner and presentation. Gerrit has been part of SUEZ Isle of Man from the start, over 16 years, half that time as Operations Manager.

Chris Hawke, who was a shift manager, stepped up to replace Jon as the new Operations Manager.

At the end of the year, SUEZ Isle of Man employed 34 people in total.

Our community

As well as delivering an essential service, SUEZ Isle of Man aims to be supportive of the local community, a good neighbour and give back to society.

Through our parent company, we became the first social value pioneer in the resources sector in June 2020. On World Environment Day, CEO John Scanlon announced our partnership with Social Value UK and a commitment to measure and maximise the benefits we can bring to communities through our work.

Since 2014, we have been raising funds for SUEZ recycling and recovery UK's partner charity, Macmillan Cancer Support. By the end of July 2020, colleagues had generated more than £18,000, bringing the seven-year total to £305,000. Sponsored activities ranged from walking and running to gardening and yoga. In December 2020, our own volunteers organised a cake sale in aid of Macmillan.

Our neighbours

As part of the SUEZ commitment to openness and accountability, most major sites have a local committee of community representatives. A statutory body – the Richmond Consultative Committee – was set up on the island for that purpose. The committee has since suspended its meetings, but members have the right to convene at any time, raise issues and access any relevant information on the operations of the energy-from-waste facility to help ensure it is regulated in a transparent manner.

Local authorities, neighbours and other members of the public can also make comments directly to SUEZ Isle of Man. We have procedures in place to log and investigate any complaint and report the outcome back to the complainant.

During 2020, there were five complaints:

- » Logged on 26 May 2020, the first complaint concerned a droning sound from the secondary line induced-draft fan, which draws the gases through the furnace, boiler and abatement system. This was running at a higher speed than normal, because the water level in the ash conveyor was low. The fan speed was reduced through its software controls. Should we need to operate the fan at high speeds again, we will arrange a motion amplification survey to determine the exact cause of the noise and how to fix it.
- » A neighbour contacted the facility on 12 August 2020 to ensure we were aware of an alarm sounding at the back of the facility. The ammonia alarm is activated when a leak occurs and vapour exceeds a set threshold. As the site's pump had been loaned to the fire service for a chemical spillage emergency in Tromode the previous day, the bund containing the diluted ammonia could not be pumped out until the morning following the complaint, when the pump was returned, allowing the bund to be pumped out and the alarm re-set. The fire service has since purchased their own pump.

- » Early on 23 September 2020, a complaint was received about a high-pitched noise that had lasted several hours. Our Shift Manager walked the site perimeter, but the noise could not be heard. The maintenance team also checked all operating equipment that could account for the sound and no faults were found. It is believed the noise came from elsewhere, but the complainant was advised, if it recurred, to contact us immediately so it could be investigated.
- » A complaint to the Environmental Protection Unit on 28 November 2020 again concerned the ammonia alarm. This had been triggered by a leak, which was repaired. As this is an important safety system, the alarm cannot be re-set until the problem is resolved.
- » Another complaint concerned material found on the road near Ballasalla. The complainant believed this to be bottom ash from the facility, spilled whilst being transported to Turkeylands Quarry. This spillage was reported following the signing of the new contract for ash haulage. We invited staff from the Environmental Protection Unit and haulier to inspect the new vehicle transporting the material. It was agreed that this new sealed trailer was not leaking and that the spilled material was most likely from a nearby construction site.

We aim to identify all potential nuisance problems promptly and pre-empt them where practicable. A daily task for the Day Operations team is to walk the perimeter and listen for any unusual noises emanating from the facility.

Our visitors

Richmond Hill's visitor and education centre is a resource for schools and community groups. Tours of the facility and presentations for pupils had to be suspended this year. Before March 2020 and the COVID restrictions, we hosted 12 tours and 220 visitors, mostly students. More than 20 tours had to be cancelled, but we managed to hold one in September 2020. We look forward to welcoming back more visitors in 2021.

In the meantime, primary and secondary schools can make good use of a suite of online education resources provided by SUEZ. Launched during Recycle Week in September 2020, they are designed to support STEM learning, boost career aspirations, and instil in young minds the values of reducing, reusing and recycling materials.

The STEM resources can be downloaded at www.suez.co.uk/education.

Our communications

Our website is dedicated to keeping the community informed about the operations of our energy-from-waste facility.

Visitors can view daily emissions data on the site (www.suez.co.im) along with three-month trends on emissions and the figures for electricity generation.

Further information about our group's activities, energy from waste and the circular economy can be found on the SUEZ recycling and recovery UK website (www.suez.co.uk).

Our objectives

Each year objectives and targets are set to drive our performance in areas such as compliance, efficiency and continuous improvement.

The table here shows how we performed against our objectives in 2020, then we set out our performance benchmarks for 2021. The remainder of this final section of the report is devoted to the data underlying our performance reporting in 2020 and the content of the preceding chapters.

How we did in 2020

Our strategic objectives	Targets set for end of 2020
Emergency preparedness	Carry out four emergency preparedness procedures.
Biodiversity	Implement biodiversity action plan, as required.
Hazardous waste storage	Complete hazardous waste shipments, as required.
Compliance and communication	Conduct safety, health, environment and quality meetings.
Environmental protection and compliance	No daily emission breaches during normal operating conditions.
Oil usage	Maintain oil usage at 2019 level.
Staff competency	Maintain competency matrix.
Management systems	Maintain certification to ISO 14001 and ISO 9001.
Reporting	Meet SUEZ internal reporting and carbon monitoring requirements.
Operational efficiency	Meet operational equipment efficiency and preventative maintenance targets.
Continuous improvement	Conduct five continuous improvement projects.

Achieved?	How we performed
✓	12 drills completed, including missing person, chemical spill, pit fire.
✓	Biodiversity action plan in place. Beehive installed on site.
✓	Six loads shipped.
✓	12 meetings held throughout the year (December meeting held at beginning of January 2021).
✓	No daily emissions breach occurred.
✗	Not achieved due to multiple unplanned shutdowns.
✓	Both matrices were compiled and rolled out.
✓	ISO certifications maintained.
✓	All reports completed.
✓	Operational equipment efficiency target of 61.88% met with 63.53% outcome.
✓	Preventative maintenance target of 80% achieved, though some works postponed.
✓	Six projects completed.

Objectives and targets for 2021

Our strategic objectives	Targets set for end of 2021
Emergency preparedness	Carry out four emergency preparedness procedures.
Biodiversity	Implement biodiversity action plan, as required.
Hazardous waste	Complete hazardous waste shipments, as required.
Compliance and communication	Conduct safety, health, environment and quality meetings.
Environmental protection and compliance	No daily emission breaches during normal operating conditions.
Oil usage	Reduce oil usage to 2019 level.
Staff competency	Maintain competency matrix.
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Continuous improvement	Conduct five continuous improvement projects.



Performance data

Waste processed

Wastes incinerated in the primary incinerator (tonnes)	2016	2017
Confidential	34.7	95.0
Construction	428.9	1,154.3
Food industry (previously dairy)	6.5	4.2
Municipal	40,968.9	39,781.9
Packaging	1,727.6	1,681.8
Tyres	507.7	519.1
Waste screenings and biopellets	957.3	1,114.4
Wood	4,555.0	5,856.3
Forestry	105.7	0
Meat and bone meal	649.4	526.0
Hygiene waste	-	-
Other	19.1	12.9

Wastes incinerated in the secondary incinerator (tonnes)	2016	2017
Clinical	259.2	267.9
Waste oil	104.3	128.7

Exceedances	2016	2017
Number of exceedances of licence emission limits	2	0

2018	2019	2020
92.1	29.7	38.5
609.9	498.7	277.8
3.4	5.3	16.5
39,469.9	39,442.8	39,808.3
1,890.6	1,619.6	865.8
607.3	615.9	638.6
1,247.0	1,518.2	1,501.1
5,562.9	5,999.3	5,589.9
0	0	24.4
543.9	539.9	568.7
47.7	95.1	97.1
45.1	69.0	6.6

2018	2019	2020
253.8	250.1	284.8
107.9	131.2	77.7

2018	2019	2020
3	7	6

Consumption of raw materials

	2016		2017	
	Kg per tonne of waste	Total tonnage	Kg per tonne of waste	Total tonnage
Gas oil	8.8	446.2	10.0	512.5
Water	195	9,888	213	10,977
Lime	8.5	430.2	8.7	445.2
Activated carbon	0.4	18.4	0.4	18.1
Ammonia	0.5	24.0	0.7	37.3

Energy consumption and generation

	2016		2017	
	MWh per tonne of waste	Total MWh	MWh per tonne of waste	Total MWh
Electricity consumed	0.021	1,044.2	0.022	1,132.0
Electricity exported	0.493	24,958.5	0.498	25,663.0

Waste recovery and disposal

	2016		2017	
	Kg per tonne of waste	Total tonnage	Kg per tonne of waste	Total tonnage
Bottom ash (landfill)	207	10,457.0	205	10,535.5
Air pollution control residue (landfill)	33	1,650.8	33	1,690.5
Ferrous metal (recycled)	5.6	283.5	5.3	274.0

2018		2019		2020	
Kg per tonne of waste	Total tonnage	Kg per tonne of waste	Total tonnage	Kg per tonne of waste	Total tonnage
8.0	406.7	6.6	336.5	13.3	664.2
179	9,063	212	10,775	210	10,479
8.8	444.1	8.3	424.0	7.4	369.3
0.4	19.5	0.4	18.4	0.5	22.9
0.5	25.1	0.5	23.1	0.6	30.1

2018		2019		2020	
MWh per tonne of waste	Total MWh	MWh per tonne of waste	Total MWh	MWh per tonne of waste	Total MWh
0.016	816.7	0.012	597.4	0.018	911.1
0.492	24,966.3	0.494	25,100.5	0.510	25,448.2

2018		2019		2020	
Kg per tonne of waste	Total tonnage	Kg per tonne of waste	Total tonnage	Kg per tonne of waste	Total tonnage
206	10,462.0	201	10,237.1	199	9,926.6
32	1,599.1	34	1,714.6	31	1,538.7
10.1	514.6	3.2	160.4	6.0	299.1

Air emissions

	2016		2017	
	Kg per tonne of waste	Total tonnage	Kg per tonne of waste	Total tonnage
Particulate matter	0.0146147	0.7406	0.0135868	0.6996
Volatile organic compounds	0.0072	0.36	0.0039	0.2
Hydrogen chloride	0.079	3.99	0.042	2.16
Hydrogen fluoride	0.00012	0.006	0.00004	0.002
Carbon monoxide	0.062	3.15	0.051	2.62
Sulphur dioxide	0.14	7.16	0.14	7.41
Oxides of nitrogen	1.3	65.88	1.1	56.5
Ammonia	0.041	2.08	0.027	1.38
Cadmium and thallium	0.0000038	0.0002	0.0000039	0.0002
Mercury	0.0000021	0.0001	0.0000022	0.0001
Sb, As, Cr, Co, Cu, Pb, Mn, Ni and V	0.00019	0.01	0.00064	0.033
PAH	2.8×10^{-05}	0.0014	1.10×10^{-05}	0.0006
Dioxins and furans	1.7×10^{-10}	8.4×10^{-09}	7.30×10^{-11}	3.70×10^{-09}
Dioxin-like PCBs	2.2×10^{-11}	1.1×10^{-09}	8.70×10^{-12}	4.50×10^{-10}

* Tonnes allowed under licence conditions calculated using the waste disposal licence limit, average flow rate and hours the facility operated in the year.

Water emissions

	2016		2017	
	Kg per tonne of waste	Total tonnage	Kg per tonne of waste	Total tonnage
Suspended solids*	0.008	0.38	0.010	0.49
Biochemical oxygen demand*	0.0008	0.04	0.0008	0.04
Chemical oxygen demand*	0.006	0.28	0.015	0.75

* Calculated from estimated flow rate.

2018		2019		2020		Tonnes allowed under waste licence*
Kg per tonne of waste	Total tonnage	Kg per tonne of waste	Total tonnage	Kg per tonne of waste	Total tonnage	
0.003943	0.2002	0.003389	0.1722	0.0024587	0.1224	2.3
0.0050	0.2533	0.0049	0.2482	0.0024	0.12	2.3
0.048	2.41	0.042	2.14	0.0270	1.34	2.3
0.00001	0.001	0.00000	0.000	0.00003	0.002	0.01
0.052	2.66	0.044	2.24	0.041	2.02	11.5
0.12	5.99	0.12	6.06	0.07	3.66	11.5
1.0	53.3	1.0	51.5	0.66	32.80	46.1
0.007	0.35	0.001	0.03	0.004	0.02	-
0.0000038	0.0002	0.0000049	0.0003	0.0000037	0.0002	0.012
0.0000925	0.0047	0.0000016	0.0001	0.0000031	0.0002	0.012
0.00014	0.007	0.00012	0.006	0.00053	0.026	0.12
2.28×10^{-05}	0.0012	1.89×10^{-05}	0.0010	2×10^{-05}	0.0010	-
7.77×10^{-11}	3.95×10^{-09}	5.61×10^{-11}	2.85×10^{-09}	2.2×10^{-11}	1.1×10^{-09}	-
2.44×10^{-12}	1.24×10^{-10}	5.69×10^{-12}	2.89×10^{-10}	1.8×10^{-12}	8.9×10^{-11}	-

2018		2019		2020	
Kg per tonne of waste	Total tonnage	Kg per tonne of waste	Total tonnage	Kg per tonne of waste	Total tonnage
0.009	0.48	0.016	0.80	0.01	0.32
0.0008	0.04	0.0012	0.06	0.0015	0.07
0.035	1.78	0.005	0.24	0.01	0.26

Glossary

Anaerobic digestion

The process by which organic matter is broken down by bacteria in the absence of oxygen.

Air Pollution Control Residue (APCR)

Particles from combustion gases, heavy metals and dioxins, carbon dust, salt and lime used in the gas-cleaning process, also known as fly-ash.

Biodegradable

Capable of being decomposed by bacteria or other biological means.

Bottom ash

The residue formed on the furnace grate when waste materials are incinerated.

Circular economy

Within a circular economy, the role of resource and waste management is to help prevent waste throughout the whole system, to target materials for harvesting, to manage their logistics in efficient ways, and to treat and return the recovered secondary resources back into the cycle of production and consumption in a compliant and economic manner.

Climate change

The process in which man-made gases are building up in the atmosphere, trapping the sun's heat, causing changes in weather patterns on a global scale.

Deslagger

The system that removes the bottom ash from the incinerator. It comprises a drop-off chute from the final grate, a water filled chamber, a hydraulic pusher and an inclined discharge chute. Also called an ash-extractor.

Dioxins and furans

A large family of compounds – including some of high toxicity – that are by-products of uncontrolled burning, incineration and certain industrial processes, as well as volcanoes and forest fires.

Energy-from-waste (EfW)

The incineration (burning) of waste at high temperatures to reduce its weight, volume and toxicity. The energy from the incineration process is used to generate electricity.

Environment Agency

The UK's waste industry regulator. A non-departmental government public body, set up under the Environment Act 1995 to take an integrated approach to environmental protection and enhancement in England and Wales.

EU Industrial Emissions Directive

Issued by the European Union, the directive commits European Union member states to control and reduce the impact of industrial emissions on the environment. It takes an integrated approach to controlling pollution to air, water and land, and sets challenging industry standards for the most polluting industries. The directive aims to prevent and reduce harmful industrial emissions, while promoting the use of techniques that reduce pollutant emissions and that are energy and resource efficient.

Fly-ash

See Air Pollution Control Residue.

Furans

See dioxins.

Gasification

Gasification is a method for extracting energy from different types of organic material through thermal treatment.

Greenhouse gas

Natural and man-made gases that contribute to the 'greenhouse effect' and climate change, including carbon dioxide, methane, ozone and chlorofluorocarbons (CFCs).

Hazardous waste

Defined by EU legislation as the wastes most harmful to people and the environment.

ISO 14001

The international standard for environmental management.

ISO 9001

The international standard for quality management.

ISO 55001

The international standard for asset management.

Landfill

The deposit of waste into or onto land in such a way that pollution or harm to the environment is minimised or prevented and, through restoration, reclaims land which may then be used for another purpose.

Landfill Directive

The Landfill Directive (Council Directive 1999/31/EC) aims to prevent, or to reduce as far as possible, the negative environmental effects of landfilling.

Mainsaver

A Computerised Operation and Maintenance Management System (COMMS). Used for the management of maintenance and operational tasks, including scheduling of preventative and planned maintenance activities, asset health recording, electronic shift log, raising and recording work requests and detailed maintenance costs.

Methane

An odourless gas and principal component of natural gas and landfill gas, produced as biodegradable waste breaks down in a landfill site. Over 20 times more potent as a greenhouse gas than carbon dioxide.

Municipal waste

Household waste, as well as other industrial and commercial waste similar in nature or composition, such as wastes

collected by a waste collection authority or its agents (i.e. wastes from municipal parks and gardens, beach cleansing, and fly-tipped materials).

MWh

Megawatt-hour, equivalent to one million Watt-hours, and a unit of energy (one Watt is equivalent to one Joule of energy per second).

OHSAS 18001

The international standard for health and safety management.

Recycling

The direct reintroduction of a waste type into the production cycle from which it originates as a total or partial replacement for new material.

RIDDOR

The UK's Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995, which require the reporting of work-related accidents, diseases and dangerous occurrences.

Science-based targets

Science-based targets show companies how much they need to reduce their greenhouse gas emissions by, and how quickly, to keep these in line with worldwide reductions required to keep global temperature increase below those outlined in the 2015 Paris Agreement.

VOCs

Volatile organic compounds: carbon-based compounds that easily evaporate into the atmosphere, commonly used in industry for de-greasing, thinning and dissolving, and found in paint, inks and adhesives.

WEEE

Waste electrical and electronic equipment. The WEEE Directive was introduced in the UK in January 2007 and aims to reduce the amount of electrical and electronic equipment being produced, and to encourage re-use, recycling and recovery.

The external verifiers' verdict

"Further to consideration of the documentation, data and information resulting from the organisation's internal procedures examined on a sampling basis during the verification process, it is evident that the environmental policy, programme, management system, review (or audit procedure) and environmental statement meet the requirements of the Isle of Man Government in providing an annual report and reflects the commitment of SUEZ Isle of Man to satisfy and surpass the standards set in the relevant UK and European legislation as well as local laws and regulations."

Signed:



Date: 14 May 2021

SGS United Kingdom Limited
Rossmore Business Park
Ellesmere Port
Cheshire CH65 3EN

Verifier number UK – V – 0007

**SUEZ Recycling and
Recovery Isle of Man Ltd**
Energy-from-waste facility
Richmond Hill, Douglas
Isle of Man IM4 1JH

01624 695260

isleofman.uk@suez.com

www.suez.co.im

