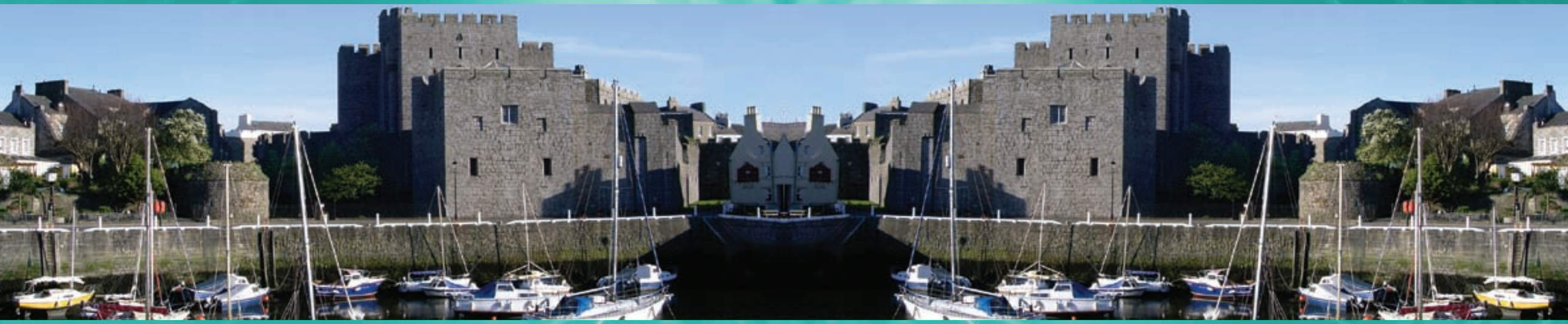
re_defining waste management



SITA ISLE OF MAN
ANNUAL REPORT 2006

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SITA ISLE OF MAN ANNUAL REPORT 2006

Contents

Foreword

Welcome to SITA Isle of Man's third annual public report.

2006 was a year of consolidation in which we have built on the achievements of the first two years since operations began at Richmond Hill. Our work is generating further gains – in terms of efficiency, the environment and the wider community.

The island's energy-from-waste (EfW) plant, which underpins the Manx waste management strategy, was designed to operate to the highest environmental standards. These were maintained during 2006 as we processed more waste – both household and, notably, animal wastes.

In all, we dealt with just under 60,000 tonnes of waste. Operating closer to capacity, we were able to boost efficiency, reduce our reliance on burning gas oil, and increase our output of electricity – securing environmental as well as operational benefits.

In the case of power generation, for example, we exported over 30,000 megawatt-hours (MWh) of electricity – 11 per cent more than in 2005. This achievement, which reduces our society's reliance on the burning of fossil fuels, is attributable to a series of energy-saving measures at the plant as well as the increased throughput of waste and operating efficiencies.

An important development that set the seal on our approach to environmental management came in October with registration to EMAS – the European Union's rigorous Eco-Management and Audit Scheme. SITA Isle of Man is the first branch of SITA UK to achieve this standard, which will reinforce our drive for continuous improvement.

We have set ourselves challenging targets for the coming year, and launched initiatives – on chemical and water management, for example – where we recognise that we can do more to reduce our environmental footprint.

It is also pleasing to be able to report that we have sustained our exemplary health and safety record. An annual check by SITA UK's audit team confirmed the high compliance levels that prevail on our site.

We are also proud of our wider contribution to the island in 2006. On the Government's behalf, SITA Isle of Man baled and shipped more than 1,400 tonnes of waste paper to the UK for recycling.

In partnership with the Isle of Man Chamber of Commerce, we carried out a major study of the island's hazardous waste arisings, which will help manufacturing companies manage this most complex waste stream. And the use of our newly refurbished education centre, enabled us to step up our programme to raise awareness of environmental issues, especially among schoolchildren. This report is meant to provide a broad and informative overview of our operations and performance over the past year for all our stakeholders. We welcome your feedback on our progress and plans.

Per-Anders Hjort
Chief Executive Officer
SITA UK

Jeffrey Robinson
General Manager
SITA Isle of Man

section one
Introduction

Key points

- SITA UK's commitment to openness
- The strategic role of EfW
- European and global expertise

This is SITA Isle of Man's third annual report, and it covers our operations throughout 2006.

The Annual Public Report serves several purposes. First and foremost, it honours our commitment to the local community and our client, the Manx Government, to keep the public informed about the operations and environmental performance of the island's energy-from-waste (EfW) plant.

As in previous editions, we explain the EfW process used within the Richmond Hill facility, its role in the island's strategy for managing waste, and the plant's key impacts on the environment, which are quantified with supporting data.

The report provides comparative figures to allow readers to assess our progress in each area and against the targets and objectives outlined a year ago. One change in format is designed to simplify such comparisons. All information – environmental and operational – covers the same calendar year, whereas previously the operating year ran from April to end of March.

A second, important purpose of this report is to meet the disclosure requirements of EMAS – the European Union's standard for environmental management, to which we gained registration during the year.

This publication also supplements the daily emissions data posted on the company website (www.sita.co.im) and is designed to present the year's data in a straightforward and reader-friendly format.

We aim to be open and informative in our dealings with all stakeholders – the public, customers, neighbours, and the Isle of Man Government. This approach is in keeping with the corporate philosophy and ethics of SITA UK, and our ultimate parent, SUEZ. If you have any queries or comments on the report, please use the contact details printed on the back cover to get in touch.

About SITA Isle of Man and SITA UK

SITA Isle of Man is a wholly owned subsidiary of SITA UK. Part of global services group SUEZ, the company delivers integrated solutions – through recycling, composting, energy recovery, and other innovative technologies – for municipalities, industry and commerce.

SITA has operated in the UK since 1988, and is now its leading provider of recycling and waste services, including refuse collection and street cleansing.

All branches of SITA UK are fully committed to materials recovery and recycling along with energy recovery, composting, and the development of innovative technologies. Drawing on this expertise and experience, SITA UK devises the most cost-effective and environmentally sustainable solutions for its customers.

SITA UK facilities 2006

Number of landfill sites:	
Operating	**28**
Closed	**69**
Number of transfer stations	**62**
Number of composting sites	**12**
Number of material recovery facilities	**15**
Number of civic amenity sites	**114**
Number of energy-from-waste sites	**4**[1]

[1]Includes one EfW plant 50/50 per cent joint venture company London Waste Limited

The SUEZ Group

As part of the SUEZ Group, SITA Isle of Man shares in the resources and know-how of a global enterprise.

SUEZ employs more than 140,000 people worldwide and has earned a reputation for responsible and successful operations in energy, water, waste and communications.

The activities of the environment division, includes SITA UK's waste management operations, as well as the collection and treatment of wastewater, and the production and supply of drinking water. More than seven million people receive their daily water supplies from facilities built by SUEZ.

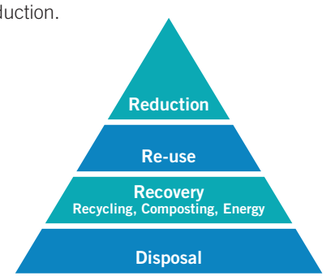
The SUEZ energy division develops solutions that support sustainable development in the electricity and gas sectors. Renewable sources, such as wind power, are providing a growing share of the energy generated.

Waste management on the island

The British Isles is grappling with rising levels of waste and the challenge of finding environmentally sustainable and economically viable ways of dealing with it.

Landfill, though traditionally cheap, is not sustainable as suitable land becomes increasingly scarce and – more importantly – due to its environmental impact. Chief among them, the methane gas released as biodegradable material breaks down is a major 'greenhouse gas' driving climate change.

The European Union's landfill directive is phasing out landfill for most wastes, and policymakers in the UK and Ireland are promoting the alternatives. Our Government adopted a new strategy in 2000. The Waste Plan, approved by Tynwald, echoes the successful approach of many continental European states by pursuing a combination of waste-to-energy, recycling and waste reduction.

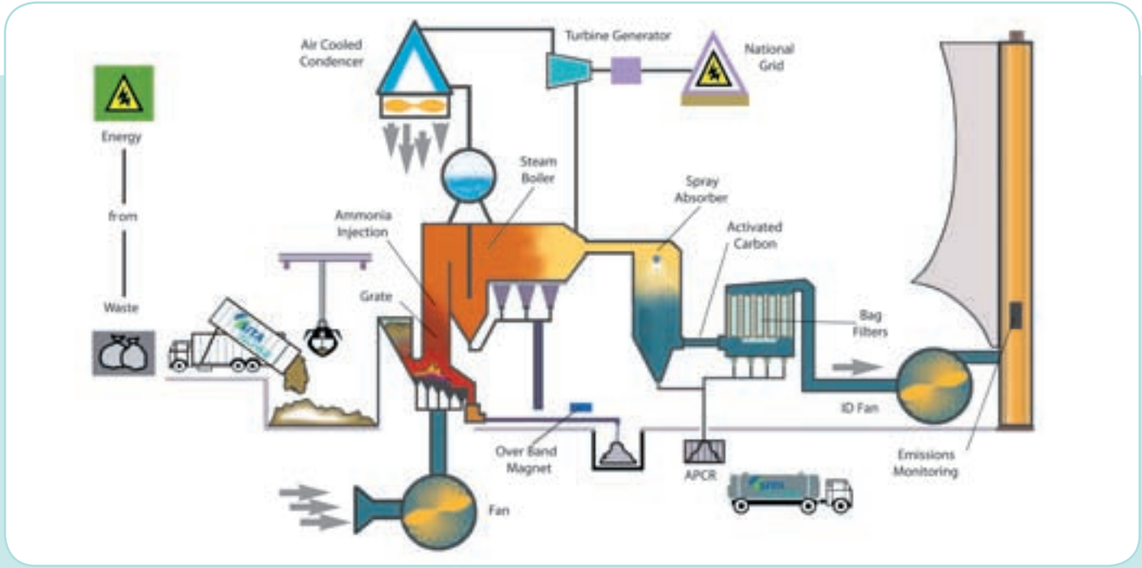


Designed to satisfy the latest European Union emission standards, our EfW plant is equipped to process all the island's 'base' output of 60,000 tonnes a year of municipal and commercial waste, while also disposing safely of animal and clinical waste. This capacity guarantees the island's self-sufficiency in the medium term, with the added benefit of exploiting a renewable energy resource. The plant acts as a power station, generating 7.6 per cent of the Isle of Man's electricity needs in 2006.

section two
Managing waste

Key points

- Waste throughput up on 2005
- 40 per cent rise in animal waste processed
- Higher operating efficiencies
- Electricity exports up by 11 per cent
- Oil consumption reduced



The EfW process

Our facility comprises two incineration lines. The primary line can burn up to 60,000 tonnes per annum of municipal and commercial waste. Our second line, designed for animal and clinical waste and waste oils, has an annual capacity of 5,000 tonnes.

The plant and the entire treatment process (illustrated opposite) are designed for maximum efficiency and safety.

On arrival, waste vehicles use an automatic weighbridge set back from the site entrance to avoid queuing on the public highway. Waste type, amount, and customer details are securely recorded and the driver is directed to the appropriate despatch bay.

Reception hall

A large reception hall allows refuse collection trucks to manoeuvre and tip safely. Air needed for combustion is drawn into the furnace from here 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. This is big enough to hold 16 days' waste so that tipping can continue when the plant is shut down for maintenance. A shredder, for bulky items such as mattresses, also discharges directly into the bunker.

Control room

The plant's control room centralises the operation of all equipment, including the grab crane used to mix and load waste into the hopper that feeds the furnace. All on-site functions are monitored automatically and manually. Its systems verify in real time that equipment is functioning properly, continuously monitor the combustion gas, and maximise the efficiency of the entire EfW 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 to super-heated steam. At high pressure, this steam drives a turbine-alternator – to generate electricity.

Electricity generation

Electricity is generated at 11kv. Up to 1.5MWh is used to power the plant, leaving around 4MWh for export to the Manx Electricity Authority, which distributes it around the island. The plant'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, to a storage bunker. A magnet above the conveyor extracts ferrous material for recycling. The remaining bottom ash is taken off-site for disposal.

Air-cooled condensers

After exiting the turbine, the air stream 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 (SNCR), 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 (APCR)

The cleaned gas is passed through fine-fabric bag filters to remove solid particles before it is released to the atmosphere through the stack. The resultant APCR residue, or fly-ash, contains particles from the incineration process, lime used in the spray absorbers, salts and carbon dust. It is stored in a sealed silo until tankered away for treatment and disposal.

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.

Waste management in 2006

Last year saw the treatment of approximately 56,000 tonnes of waste in the primary incinerator, while the secondary line processed around 3,400 tonnes of waste. This was a rise of some 2,000 tonnes overall on 2005. Animal waste accounted for more than half the increased throughput, which rose by more than 40 per cent for this line.

The primary incinerator operated at 93 per cent of capacity with municipal waste making up 96 per cent of the incinerators throughput. Waste from the construction industry remains the next-largest stream. At just over 1,710 tonnes, it increased by more than 60 per cent on the previous year. The rest was made up from packaging, tyres and waste screenings (see table, page 20).

Our primary incinerator's high-performance moving grate is equipped with water-cooling that enables it to burn tyres safely with municipal waste. Following modifications to the plant's shredder, this was the second year that energy was recovered from tyres, and the amount processed almost tripled to more than 80 tonnes. This avoids the illegal dumping and burning of waste tyres, which are major problems in the UK, or the need to ship waste tyres to the mainland for re-treading or disposal.

Operations

Our EfW facility is designed to operate 24 hours a day, seven days a week with two planned shutdowns per year for routine maintenance.

Utilisation of the main incinerator averaged a creditable plant 84 per cent over the year after scheduled and unplanned stoppages. In September, utilisation reached 100 per cent for first time with no unplanned stoppages.

A 15-day scheduled shutdown occurred in May, and a 7-day shutdown in October/November, when all annual and six-monthly maintenance was carried out on both lines.

Major repairs were completed in the primary line's furnace and cooling system. A large area of the refractory tiling in the furnace was replaced with a new system under warranty from Aker Kvaerner, the construction contractor for the plant. Our engineers also made modifications to prevent future problems with grate hoses and ash handling systems.

There were several breakdowns of the waste reception hall crane. The intermittent faults were traced to dust entering the control unit of the hoist. The filter change interval has been increased to one per week to prevent a recurrence.

In the secondary stream, refractory repairs were also carried out and new dampers were fitted to the burners to raise the plant's efficiency.

Energy

SITA IOM's EfW facility uses waste as a renewable resource to generate electricity, reducing the need to burn fossil fuels and the associated greenhouse gases. We have the capacity to generate up to 6.8MW an hour, exporting enough to power about 6,500 homes, or 7.6 per cent of the island's electricity needs (assuming an average household uses 4.2MWh per annum).

In 2006 the plant exported over 30,600MWh of electricity – 11 per cent more power than the year before. This increase in generation reflected the greater throughput of waste and fewer stoppages, but also increased efficiencies. The amount generated per tonne of waste burned rose from 0.48 to 0.5MWh, and energy consumption was reduced by a third.

The ongoing power management programme at the plant saw a number of measures to reduce the site's 'parasitic load' and maximise energy exports. These included the installation of motion sensors for lighting in offices and toilets, a timer for the waste reception hall lights, light-sensitive controls for outside lighting, and switching off non-essential lights where people do not routinely work, such as the turbine hall. Every megawatt exported reduces not only the Isle of Man's dependence on imported fuels, but also our community's contribution to global warming.

Recycling

This was the first full year for which the plant was licensed to sort paper for recycling on behalf of the Department of Local Government and the Environment. The waste paper is collected from local recycling points, sorted, and stored at the plant before shipment to paper mills in the UK. Plastics and card are separated for disposal in the plant. The proceeds from selling the paper go to the Government. During the 12 months of 2006 more than 1,400 tonnes of paper were baled and shipped to the UK for recycling.

Confidential waste

2006 saw the launch of a new Secure Destruction Service for the specialist handling and incineration of confidential and other sensitive wastes. It is designed to help all organisations comply with the requirements of the Data Protection Act, and also businesses for whom secure disposal of data and commercially valuable information is vital. This covers a diverse range of materials including confidential paper, computer disks, CDs, videotape, and product recall or off-spec goods. Our customers can place their confidential waste in secure, lockable containers supplied by SITA Isle of Man, which can be delivered to site or collected.

Bottom ash

The EfW process reduces the volume of waste by 90 per cent, leaving a residue to be dealt with. For every 100 tonnes of waste incinerated, about 25 tonnes of bottom ash and four tonnes of air pollution control residues (or fly-ash) are produced. Other by-products include ferrous materials, which are recycled.

Bottom ash is sampled for contaminants, and typically, 96 per cent is comprised of harmless compounds such as silica, essentially sandy soil. Compounds such as arsenic, chromium and other naturally occurring elements make up the rest. Their concentrations in bottom ash are well below the thresholds considered to pose a risk to public health or ecology. The ash is disposed of at the Turkeylands site for inert wastes at Ballasalla. We have previously reduced the amount produced by preventing process water from collecting in the bottom ash pit. Output in 2006 was stable at just over 250 tonnes.

The equivalent ash from SITA UK's EfW plants in Britain is recycled as an aggregate replacement and used in applications such as road building and footways. As exporting the material is not financially viable, we are investigating the feasibility of recycling the ash on the island. Once independent testing has confirmed it can be safely recycled, we will seek partners to invest in a project to process the ash, probably as an additive in asphalt or concrete.

Fly-ash

The air pollution control residue (APCR), is a by-product of the gas-cleaning process. It contains particles left after incineration, lime from the spray absorbers, salts and carbon dust.

This is also routinely sampled and analysed for contaminates, but it remains hazardous mainly due to the amount of lime in the APCR after the gases are cleaned. Compounds such as lead, chromium and arsenic are found in the APCR as activated carbon is also injected into the flue gas stream to encapsulate these compounds as part of the cleaning process. The levels of these compounds can vary due to the disposal of batteries in the municipal waste stream, and are significantly higher than those found in the bottom ash.

Output of fly ash was also stable at just over 40 tonnes. It is transported in sealed containers to the UK for disposal. Mixed with waste chemicals from industry, APCR is neutralised so it can be safely disposed of, along with other waste in a non-hazardous landfill.

Ferrous material

The ferrous material automatically recovered from the bottom ash is sent to steel mills in the UK for recycling. In 2006, the tonnage recovered increased by more than two thirds to around 940 tonnes – more than 15kg per tonne of waste processed. This material still has value, but it is reduced during incineration and ferrous materials can interfere with the smooth operation of the plant.

We are encouraging our customers to separate metals at source, as this is the better option both economically and environmentally.

Water

Our plant, unlike many EfW facilities, does not discharge this process water to watercourses. Water is used to cool the grate of the furnace, for the production of super-heated steam to drive the turbine, and for general cleaning and other, non-industrial purposes. Further more, Rainfall on the Richmond Hill site is stored and re-used, and the plant has also been designed to recycle water within the EfW process. This reduces our consumption of town's water by up to 34 per cent.

Both the recycled water and rainwater holding tanks were out of commission for periods of the year due to pump failures. This led to a 24 per cent increase in the amount used per tonne of waste processed. Pump reliability issues are being addressed and a water management plan will be drawn up to conserve this resource in the future.

Water discharged from a storm outfall and our on-site sewage treatment plant is continuously monitored for pH and conductivity.

Gas oil

During both the start-up and shut-down phases of the incineration process, gas oil is burnt to ensure that correct temperatures are maintained in the furnaces. This carries environmental as well as financial costs, which decreased in 2006 along with the number of stoppages, minimising consumption of gas oil is an ongoing technical challenge.

The licensing of the secondary incinerator for disposal of waste oils means some virgin fuel can be replaced by burning waste oils that otherwise have to be stored by the waste producer and exported abroad for disposal. Although waste oils were in short supply during the first half of the year, gas oil use fell in 2006 overall by almost 10 per cent due to greater operating efficiencies. The amount burnt for each tonne of waste fell by 12.4 per cent to 24 kg.

section three
Managing environmental performance

Key points

- Commitment to environmental protection
- EMAS registration achieved
- Environmental incidents reduced
- New targets set for 2007

Environmental policy

As a part of SITA UK we strive to achieve the highest standards of operational efficiency and environmental performance.

Our SITA Isle of Man environmental policy (see right) commits us to full compliance and, where we can, to exceeding the standards set down in legislation and regulations.

The management board of our parent company ensures that responsibility for environmental matters is clearly defined and understood throughout the company. Local managers and staff are required to carry out all activities in a manner designed to ensure compliance and protect the environment from the risk of pollution.

We are accountable to all our stakeholders – employees, the public, contractors, and customers, as well as shareholders. We communicate our environmental policy to stakeholders, engage with them to understand and inform their expectations, and report annually on the environmental performance of SITA Isle of Man.

We measure our environmental performance and monitor our progress against objectives and targets designed to spur continuous improvement.

Our environmental policy

We recognise that how we manage our customers' waste and our own has an impact on the environment that we must strive to minimise.

Management responsibility

SITA UK and SITA Isle of Man management will ensure that responsibility for environmental issues is clearly defined and understood by all employees and that all activities are conducted in a manner designed to protect the environment from the risk of pollution.

Environmental legislation

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

Stakeholder relations

We recognise the importance of our relationships with stakeholders – employees, the public, contractors, customers and shareholders. We will communicate this policy to them, report annually on our environmental performance, and engage with stakeholders so that we can take account of their expectations in the way we manage our business.

Continuous improvement

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

Through all aspects of our operations we will:

- 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 reuse, recycling and energy recovery from waste.
- Use suppliers or contractors that have environmental standards compatible with our own wherever possible.
- Implement ISO 14001 and other appropriate benchmarks for environmental management systems, such as EMAS.
- Continually reassess our policy and operations in the light of changing technology, legislation, the precautionary principle, business requirements and best environmental practice.

Management systems

Environmental management systems (EMS) underpin our commitments to compliance and continuous improvement.

Certification of EMS to international standards provides a valuable check on a company's performance and spurs continuous improvement. Achieving certification, and retaining it, involves extensive internal auditing and external verification.

Our management system gained registration to EMAS – the Eco-Management and Audit Scheme (EMAS) – in October 2006. Backed by the European Union, EMAS sets rigorous requirements for continuous improvement, public reporting of performance, and annual external validation. The Isle of Man operation is the first within SITA UK to achieve this standard.

EMAS registration was one of the key objectives we set ourselves in 2005, when we had gained certification to the other international standard, ISO 14001:2004. At the same time, our quality management system was certified to the comparable standard, ISO 9001:2000.

SITA Isle of Man's successful registration under EMAS was warmly welcomed by the European Commission:

"On behalf of the Directorate General for the Environment of the European Commission, I would like to congratulate your organisation on this important achievement, which shows the highest commitment to the improvement of environmental performance. I would like to encourage you to continue along the path of EMAS development in order to make a lasting, positive impact on the environment."

– Pavel Misiga
European Commission, Directorate-General Environment, Brussels

Our EMS procedures govern every aspect of the plant's operations – from the training given to drivers delivering waste, through the inspections made to identify non-conforming material, to how we report our activities to the regulator. This system is monitored under our parent company's Quality and Environmental Management System (QEMS), as well as being reviewed and audited locally.

SITA UK monitors and controls the integrated systems so as to standardise the company's approach to environmental and quality management and its implementation through local work instructions and records.

Jeffrey Robinson – General Manager


Certificate of Registration

SITA (IOM) Ltd
Douglas
Isle of Man

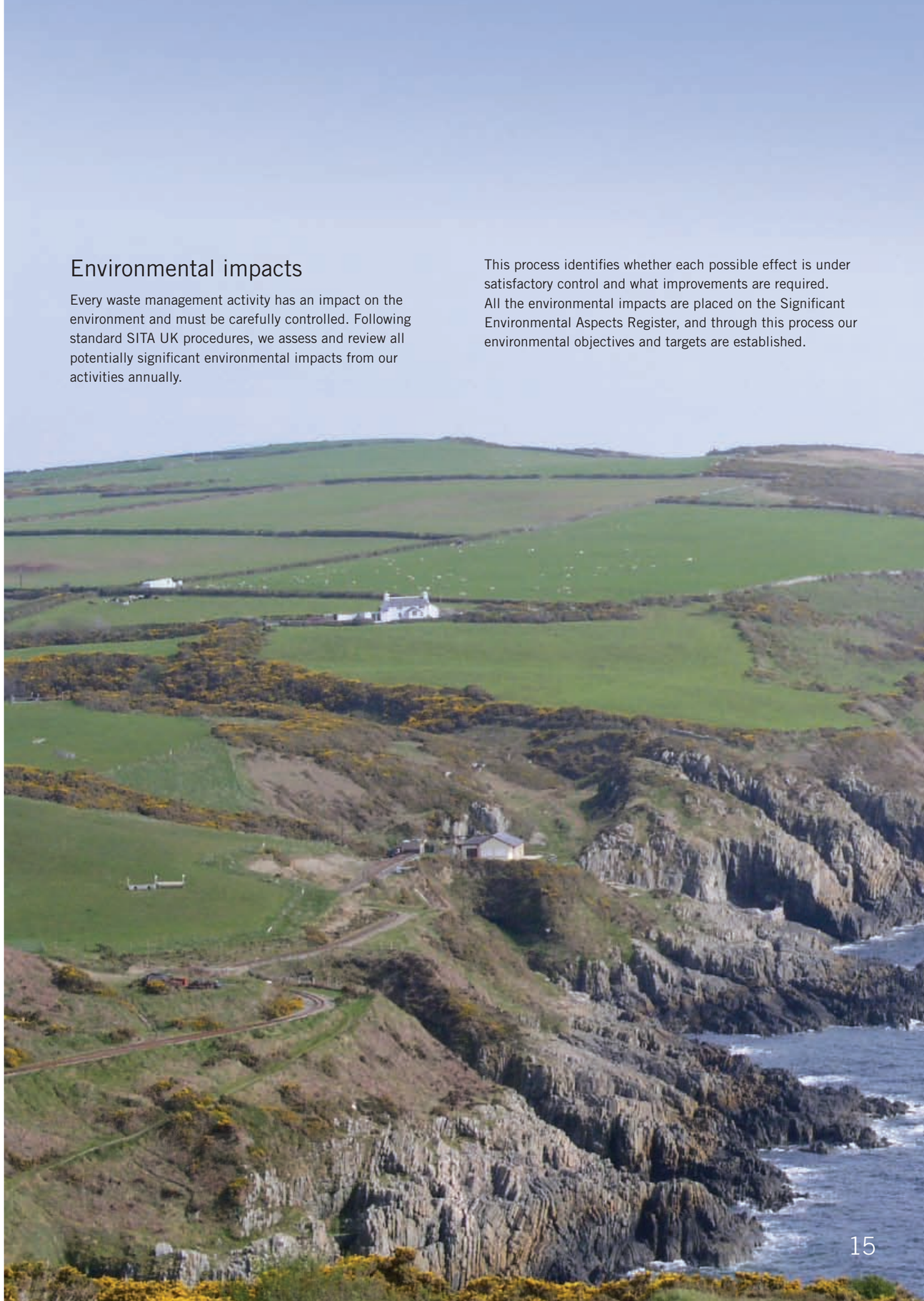
EMAS

VERIFIED ENVIRONMENTAL MANAGEMENT
REG. NO. UK 000148

Environmental impacts

Every waste management activity has an impact on the environment and must be carefully controlled. Following standard SITA UK procedures, we assess and review all potentially significant environmental impacts from our activities annually.

This process identifies whether each possible effect is under satisfactory control and what improvements are required. All the environmental impacts are placed on the Significant Environmental Aspects Register, and through this process our environmental objectives and targets are established.



Register of significant environmental aspects

Aspect	Environmental impact	Activities to control/reduce risk
Waste control	Negative impact: Pollution of land, air and water arising from incorrect receipt, storage or disposal of waste. Positive impact: Paper sorting for recycling. Reduction in waste to landfill.	Procedures in place including education of delivery companies and drivers, with spot checks on waste loads. EMS requires investigation of incidents and monitoring of corrective action.
Residue handling	Negative impact: Contamination of land, water, and air from bottom ash and APCR. Positive impact: Potential recycling of bottom ash resulting in a reduction of natural resource consumption and reduction of waste to landfill.	Procedures to minimise pollution risk during storage and handling. Bottom ash is assessed on-site to ensure suitability for disposal to landfill and results reported to the regulator. APCR disposal point also assessed and audited.
Emissions to air	Negative impact: Air pollution from waste incineration.	Procedures and gas cleaning systems in place including continuous monitoring of combustion gases and real-time feedback via the Control Room to optimise emissions control.
Surface water/Effluent control	Negative impact: Pollution of aqueous environment. Positive Impact: Recycled water and rainwater used on site to reduce the use of town's water by 34 per cent.	Process water is reused within the EfW processes and not discharged into the river. Any discharge, including that from the on-site sewage treatment plant, is subject to monitoring and quality control.
Delivery and storage of fuel and chemicals	Negative impact: Chemical release to land, water or air.	Procedures provide for safe handling and preventative maintenance. Spill kits available and employees trained in their use. Spillages are contained and not discharged to ground or river.
Consumption of chemicals, water, fuel and electricity	Negative impact: Contribution to climate change, resource depletion. Positive impact: Recycling of water and use of rainwater. Production of electricity.	Procedures provide for monitoring and management of consumption.
Noise	Negative impact: Nuisance detracting from local amenity.	Preventive maintenance plans identify potential problems.
Litter, dust, odour and pests	Negative impact: Nuisance detracting from local amenity.	Procedures in place, for waste reception, and handling to minimise risk.

Environmental performance

Emissions

Waste incineration is among the most tightly regulated industrial processes in the western world. Our EfW plant anticipated the exacting standards that came into force under the EU's Waste Incineration Directive at the end of 2005. Its tighter limits and higher reporting standards for emissions were enshrined in the Waste Disposal Licence issued by the Department of Local Government and Environment.

The licence sets average daily and half-hourly emission limits for six parameters. Cleaned flue gases are monitored by the plant's Continuous Emissions Monitoring System (CEMS) for:

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

The SITA Isle of Man facility also has continuous sampling for dioxins and furans. We regularly monitor flue gases for a range of other compounds – such as cadmium and mercury – that cannot be continuously measured, but are subject to emission limits.

The results of all monitoring – including discharges to water, bottom ash and other solid residues – are reported to the Department of Local Government and Environment.

The facility can operate in full compliance with its licence conditions when an air emission goes over the half-hourly limit. Under these circumstances, however, the operator must take steps to bring the emission back under control within certain time limits or shut the plant down.

Every exceedance is reported to the department's Environmental Protection Unit (EPU) under a three-stage procedure. Our compliance staff investigate the reasons for the exceedance and, where appropriate, implement corrective action. The outcome of these investigations must be reported to the EPU before the event is closed.

We also post daily emissions data for the continuously monitored parameters on the SITA Isle of Man website. Visitors can view the emissions profile for the previous 90 days for both the primary and secondary incinerators. A graph shows the daily readings for the chosen parameter and the emissions limit.

Emission limits

Emissions to air	Half hour average	Daily average	Other limit
Particulate matter (as Total Organic Carbon)	30 mg/m³	10 mg/m³	
VOCs	20 mg/m³	10 mg/m³	
Hydrogen chloride	60 mg/m³	10 mg/m³	
Carbon monoxide	100 mg/m³	50 mg/m³	
Sulphur dioxide	200 mg/m³	50 mg/m³	
Oxides of nitrogen	400 mg/m³	200 mg/m³	
Hydrogen fluoride (and their compounds)			2 mg/m³
Cadmium and Thallium (and its compounds)			0.05 mg/m³
Mercury (and their compounds)			0.05 mg/m³
Sb, As, Cr, Co, Cu, Pb, Mn, Ni, and V			0.5 mg/m³
Dioxins and furans			0.1 ng/m³
Ammonia			*
Polyaromatic hydrocarbon (PAH)			*
Dioxin like PCBs			*
Emissions to water surface water		Limit	
pH minimum		6	
pH maximum		9	
Visible oil		Nil	
Conductivity		*	
Suspended solids		*	
Chemical Oxygen Demand		*	
Sulphides		*	
Sb, As, Cd, Cr, Co, Cu, Pb, Mn, Hg, Ni, Tl, and V		*	
Emissions to water sewage treatment plant		Limit	
pH minimum		6	
pH maximum		10	
Visible oil		Nil	
Suspended solids		60 mg/l	
Biochemical oxygen demand		40 mg/l	

*Parameter does not have a limit stated in the Waste Disposal Licence, but is required to be measured and reported to the EPU

Measuring our performance

In line with our commitment to open and transparent reporting, all the key environmental data for the year 2006 are summarised in the following tables (pages 20-21). Other data on our operations – such as the breakdown of wastes processed, raw material consumption and energy production – are also included here for convenience.

In section two of this report we noted the higher operating efficiencies achieved during the year, the associated 11 per cent increase in electricity exports, and sharp reductions in the consumption both of electricity and gas oil.

We also managed to reduce many of our plant's air emissions in 2006 – in absolute terms as well as the amount emitted for each tonne of waste burned. Volatile organic compounds, carbon monoxide, and ammonia were all down on the previous year. In the case of particulate matter, the reduction was in the order of 59 per cent.

There were increased emissions of several other gases, including hydrogen chloride and fluoride, sulphur dioxide and oxides of nitrogen. The reasons for exceedances of the daily limits are set out below (page 22-23). But it is important to note that the overall number of exceedances was down on the previous year.

Environmental data

The emissions data has been obtained from daily average readings by the plant's continuous emission monitoring systems (CEMS), periodic readings taken by an external contractor, and from annual mass calculations approved by the Department of Local Government and the Environment. Other information comes from plant operating systems, such as the weighbridge data and electricity meters. Where appropriate, data is expressed per tonne of waste incinerated to ease comparisons with the previous year.

Waste processed

Wastes incinerated in the primary incinerator	2005	2006
Wood	1.7 tonnes	
Packaging	292 tonnes	336 tonnes
Construction waste	1,057 tonnes	1,710 tonnes
Waste screenings	62.5 tonnes	572 tonnes
Municipal waste	53,451 tonnes	53,945 tonnes
Tyres	29.1 tonnes	817 tonnes

Wastes incinerated in the secondary incinerator	2005	2006
Animal waste	1,975 tonnes	3,032 tonnes
Waste oil*	270 tonnes	161.9 tonnes
Clinical waste	183 tonnes	206.6 tonnes

*Estimated

Consumption of raw materials

	2005		2006	
	Kg per tonne of waste	Total tonnage	Kg per tonne of waste	Total tonnage
Gas oil	27.4	1,575.5	24	1,427.7
Water	327	18,789	407	24,239

Energy consumption and energy production

	2005		2006	
	MWh per tonne of waste	Total MWh	MWh per tonne of waste	Total MWh
Electricity consumption	0.02	1,137	0.013	779.5
Electricity exported*	0.48	27,607	0.5	30,642

*2005-6 report figure was total electricity production, which consisted of electricity exported and used on site.

Waste disposal and recovery

	2005		2006	
	Kg/tonne of waste	Total tonnage	Kg/tonne of waste	Total tonnage
Bottom Ash (landfill)	252	14,479.9	252	15,027
APCR (landfill)	40	2,290.7	41	2,422
Ferrous metal (recycled)	9.8	562.7	15.9	943.7

Air Emissions

	2005		2006		
	Kg/tonne of Waste	Total tonnage	Kg tonne of waste	Total tonnage	Tonnes allowed under waste licence*
Particulate matter	0.00094	0.054	0.00036	0.022	5.4
VOCs	0.0056	0.32	0.0048	0.29	5.4
Hydrogen chloride	0.047	2.71	0.064	3.8	6.1
Hydrogen fluoride	0.00063	0.036	0.00178	0.106	0.72
Carbon monoxide	0.075	4.31	0.067	4	20.2
Sulphur dioxide	0.21	11.95	0.23	13.7	22.7
Oxides of nitrogen	1.08	61.81	1.43	85.2	90
Ammonia	0.025	1.43	0.005	0.32	
Cadmium and Thallium	0.0001	0.0056	0.0001	0.0057	0.018
Mercury	0.0001	0.006	0.00012	0.0069	0.018
Sb, As, Cr, Co, Cu, Pb, Mn, Ni, and V	0.00059	0.034	0.00127	0.075	0.18
PAH	2.6×10^{-5}	1.5×10^{-3}	1.2×10^{-4}	7×10^{-3}	
Dioxins and furans	8.7×10^{-11}	5.0×10^{-9}	2.7×10^{-11}	1.6×10^{-9}	
Dioxin like PCBs	2.2×10^{-9}	1.3×10^{-7}	7.3×10^{-11}	4.3×10^{-9}	

*Tonnages allowed under licence conditions calculated using the Waste Disposal Licence limit, average flow rate, and hours the plant has operated in 2006

Water emissions

	2005		2006	
	Kg/tonne of waste	Total tonnage	Kg/tonne of waste	Total tonnage
Suspended solids*	0.008	0.48	0.012	0.7
Biochemical oxygen demand*	0.0006	0.035	0.0006	0.034
Chemical oxygen demand*	0.006	0.35	0.026	1.52

*Calculated from estimated flow rate

Environmental incidents

Our site's waste licence has set performance parameters that, if reached, trigger certain operational conditions, which may include shutting the plant down. All environmental incidents over the year have been documented and reviewed and we have taken all practicable actions to avoid their recurrence.

The Department of Local Government and the Environment was notified of all breaches of the licence limits and the remedial action taken. When such an event occurs all details of the incident are recorded, and a 'Part A' notice is submitted to the regulator outlining the measurement results and any immediate measures taken to reduce the environmental impact. A detailed investigation follows, and then a 'Part B' report is submitted to the regulator, outlining the findings and any actions taken to prevent a recurrence of the incident.

During 2006 a total of 32 incidents were reported to the Department of Local Government and the Environment. This was three less than the previous year and represents a reduction of 8.5 per cent. These incidents, their causes and the steps taken are summarised as detailed.

Carbon monoxide and volatile organic compounds emissions: 13 incidents

Emissions of carbon monoxide and volatile organic compounds (VOCs) rise when there is incomplete combustion. These losses of combustion control were associated with failures of equipment and non-conforming waste.

A key output in the operation of the plant is the tonnes of steam produced per hour. A rapid reduction or increase could signal a loss of combustion control and result in carbon monoxide emission. A procedure to reduce and increase steam rate gradually has been implemented.

The grate system in the furnace failed on several occasions, and resulted in a build-up of waste. During the maintenance shutdown our engineers were able to inspect and repair the grate system. Adjustments to the combustion control system and improved waste pit mixing have also helped reduce carbon monoxide and VOC emissions.

Sulphur dioxide and hydrogen chloride emissions: 12 incidents

High sulphur dioxide (SO_2) levels were detected on several occasions in the raw gas prior to it entering the gas cleaning system. Despite high usage of lime in the spray absorbers, the limits for SO_2 and for hydrogen chloride (HCl) were exceeded.

The problems were traced to lime milk blockages and stoppages. Modifications to the lime milk supply tubes have been completed, along with changes to the lime plant cleaning procedure.

Several plant failures, necessitating repairs, also contributed to the stoppages in lime milk flow.

The sulphur dioxide analysers have been replaced, as they were indicating false emission exceedances. A fault on the water analyser was falsely elevating the emissions data.

Oxides of nitrogen emissions: four incidents

Several minor exceedances in the level of oxides of nitrogen were traced to failures of the SNCR ammonia delivery system.

Various emissions: three incidents

The primary and secondary analysers where exchanged during the investigation of the primary sulphur dioxide exceedances. The exchange caused false high emission readings on the secondary incinerator.

Overheating in an electrical cabinet caused the plant's internal displacement fan, which maintains negative pressure in the furnace, to shut down. A routine cleaning schedule of the cabinet's filters has been implemented to prevent further overheating.

A virus caused the plant's control computers to fail. Using back-up systems independent of the computers, the operations team carried out a controlled shutdown of the plant, following the set emergency procedure. The virus has been removed and an improved firewall installed.

Waste licence amendments

The plant's waste disposal licence was granted on 14 November 2003. It authorises the sorting, storage, processing and incineration of waste. It also defines operating conditions and sets the emission limits – in line with the Waste Incineration Directive 2000/76/EC.

Our regulators granted four amendments to the waste disposal licence in 2006 following risk assessments:

- 23 March 2006: The limits for biochemical oxygen demand (BOD) and suspended solids from emission point W1 at the sewage treatment plant were increased due to the low and irregular flow rate. There was no damage to the environment.
- 5 May 2006: The temporary storage of bagged APCR in the primary waste reception hall was agreed 'in principle' pending a public consultation. A trans-frontier shipment of the ash was blocked after a problem at the nominated UK landfill site temporarily prevented its use for disposal. The licence change would allow us the flexibility to store APCR should such problems, which are beyond our control, recur.
- 30 October 2006: A licence change adding fat material from the island's creamery to the Permitted Waste Types list was agreed 'in principle' pending a public consultation. The material has had to be stored in a tanker due to difficulties in finding an alternative disposal route.
- 10 November 2006: An amendment to the licence was agreed 'in principle' pending a public consultation to include Category 12 Waste Oils on the Permitted Waste Types list. These oils are used in the cutting and shaping of metal, such as high-precision parts for the aerospace industry. The secondary incinerator was already licensed to dispose of waste oils from the motor trade. This route avoids their storage at local premises for extended periods, the associated fire risks, and the costs of shipment to the UK for disposal. As they are incinerated at high temperatures with energy recovery, this is an environmentally sound solution.

Environmental objectives and targets

SITA Isle of Man is committed to improving its environmental performance year on year. This drive for continuous improvement is a requirement of EMAS and our environmental policy. To spur and focus our efforts, we set objectives and targets and report on our progress in achieving them.

Our objectives and targets are set after the annual review of the Significant Environmental Aspects Register. A target has not been set for each environmental impact listed in the register, but all are closely monitored to ensure compliance with legal requirements and the company's policies and procedures.

Last year's objectives targets set for end of 2006	Achieved	How we did	Target – by the end of 2007
Ensure continuous improvement in our environmental performance. Attain registration to EMAS.	✓	Continuous improvement is part of EMS, ISO14001 and SITA UK policy Registration obtained in October 2006.	Retain EMAS registration and ISO14001.
Ensure all activities are undertaken in a compliant manner.	✓	Internal and external audits ensure compliance with waste licence requirements.	Maintain compliance.
Reduce emission limit exceedances by 10 per cent.	✗	Emission limit exceedances reduced by 8.5 per cent.	Further reduce emission exceedances by 10 per cent.
Reduce the quantity of waste to local landfill by investigating the suitability of bottom ash for recycling as an aggregate.	✗	Due to the delay in the commissioning of the plant, this improvement programme completion date has been extended, with the approval of the EPU.	Investigate suitability and viable options to recycle bottom ash.
Minimise the use of natural resources by reducing the consumption of fuel, water and electricity by 10 per cent.	✗	Water consumption increased by 24 per cent per tonne of waste.	Implement water management plan.
	✗	Fuel consumption reduced by 9.3 per cent.	Reduce fuel consumption by a further 5 per cent.
	✓	Electricity consumption reduced by 31.4 per cent.	Reduce electricity consumption by a further 5 per cent.
Implement a chemical management plan.	✓	Chemical management plan implemented. Chemical consumption monitored and trended with target levels recorded against.	Achieve target levels for chemical consumption.

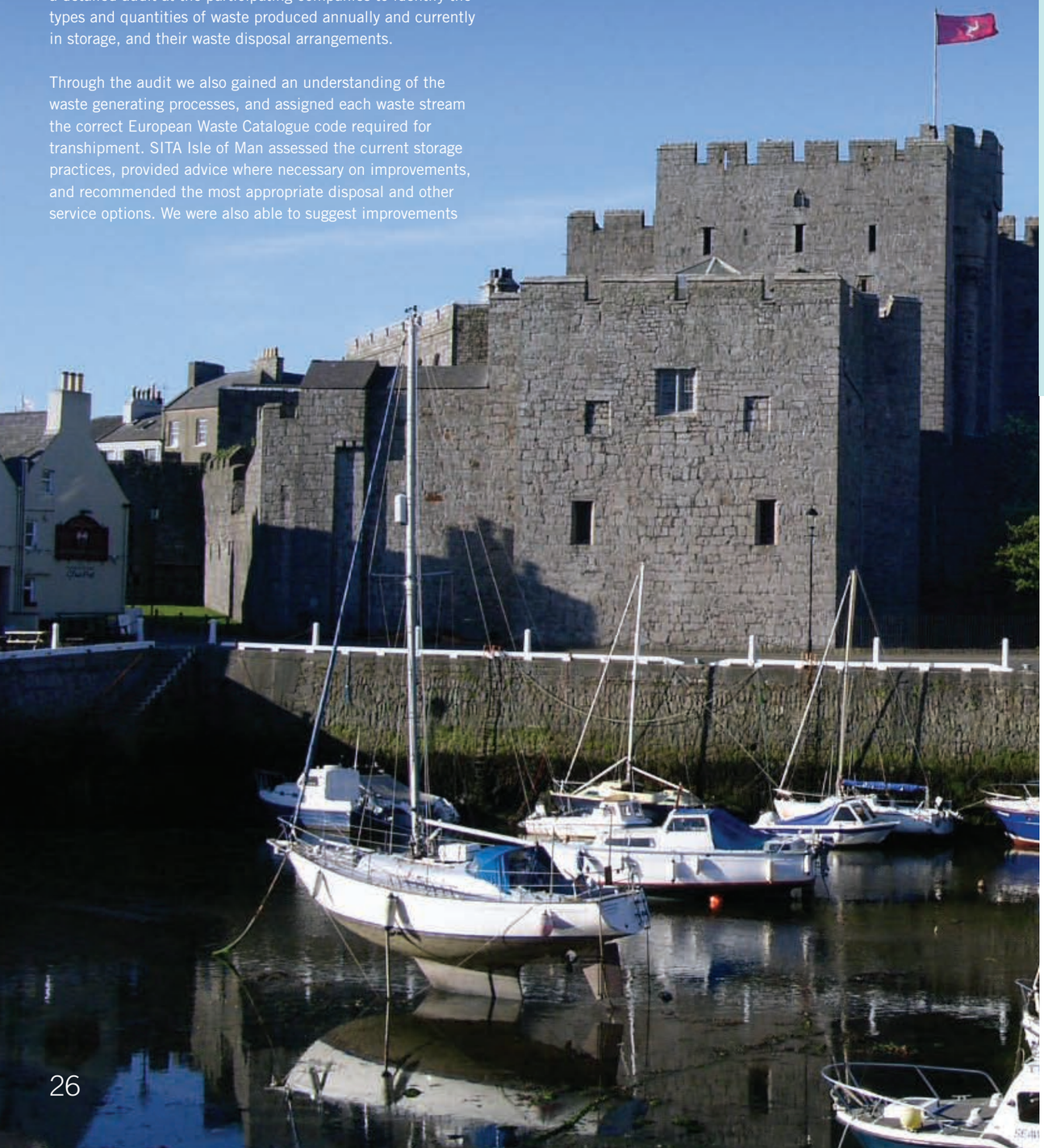
A major study of waste management practice and challenges on the island was undertaken by SITA Isle of Man in 2006.

Commissioned and part-funded by the Isle of Man Chamber of Commerce, the study focused on hazardous wastes, which are typically the most difficult and costly to handle.

Working closely with the Chamber's Manufacturers and Technology Group, we approached the island's biggest manufacturers as these companies could be expected to produce the largest volumes of hazardous wastes. We then carried out a detailed audit at the participating companies to identify the types and quantities of waste produced annually and currently in storage, and their waste disposal arrangements.

Through the audit we also gained an understanding of the waste generating processes, and assigned each waste stream the correct European Waste Catalogue code required for transhipment. SITA Isle of Man assessed the current storage practices, provided advice where necessary on improvements, and recommended the most appropriate disposal and other service options. We were also able to suggest improvements to the 'Duly Motivated Request' agreement between the Isle of Man and UK governments permitting the shipment of waste to Britain, and advised on the trans-frontier shipment paperwork companies must complete to satisfy the Environment Agency.

Each company received its own report, while the Chamber's consolidated report will help spread best practice among its other members, benefiting the island's economy as a whole. We are engaged in further work that would enable several producers to streamline their management of hazardous waste by availing of a single consolidated transhipment.



section four

Social responsibility

Key points

- Commitment to social responsibility
- Audit confirms health and safety compliance
- Comprehensive training and development
- Education programme expands

Social responsibility

As a responsible company and employer, we owe a duty of care to our local community and our employees as well as to the environment. In this section of the report we outline how we are changing these responsibilities to our employees, neighbours and other stakeholders.

Our employees

There have been few changes in the team during 2006. This stability helps ensure the smooth running of the plant, but we do encourage internal mobility within the workforce. Two shift engineer posts were filled internally during the year. One shift operator position was vacant at the time of writing, so the workforce total was 26 at the year's end.

We have systems in place to provide for the ongoing training and development of the whole workforce and to manage their health and safety.

Health and safety

Our approach to managing health and safety is founded on standards set by SITA UK, which requires a framework of risk assessment, training, incident reporting and investigation, and auditing.

A SITA UK team conducted an audit of the EfW facility towards the end of 2006. They reported a 99.7 per cent compliance level with SITA UK health and safety policy and procedures. One minor non-conformity was identified and remedial action has been taken.

Our health and safety system requires that all incidents, including near misses, are recorded and reviewed.

Incidents in 2006

There was one incident reportable to the Health and Safety Inspectorate under the Reporting of Injuries and Dangerous Diseases and Occurrences Regulations (RIDDOR) during the year and ten other minor injuries.

- RIDDOR incident: An operative sustained a cut to his finger while replacing a metal walkway grating after maintenance work. Following this incident, the wearing of gloves was re-communicated to all employees.
- Three minor eye injuries: These incidents, involving dust and other fine particles, all occurred away from the areas where goggles had been considered essential. The whole plant has now been made an 'eye protection site'. This should have the added benefit of reducing the risk that employees will forget to wear goggles when entering areas prone to airborne dust.
- A minor arm burn: While emptying part of the plant's system of hot water, an operative scalded his arm. This plant system – the deslagger where bottom ash is cooled – has been modified to ensure the controlled release of hot water from the system.
- Two minor sprain injuries: These occurred on the secondary line where waste bins are moved manually to the conveyor for weighing before the contents are discharged into the incinerator. A weighing system has been installed at the customers premises to ensure that the wheeled bins do not exceed safe handling limits.
- A minor finger injury: This occurred during routine tasks and was attributable to human error rather than shortcomings in operating procedures, equipment or training.
- Two minor injuries: The protective gear worn by employees has been reviewed and amended to require heavy boots and a visor for specific tasks to prevent injuries.
- A minor bruising injury: This occurred during safety inspection ahead of repair work on the furnace by contractors. A loose board on a low-level scaffold erected for access caused a member of staff to trip on exiting the furnace. The temporary scaffold was checked and its board properly secured.

Near misses in 2006

Research shows that near misses in the workplace tend to outnumber injury incidents. Underlying all such events is unsafe behaviour, which should be the primary focus of efforts to protect the workforce and improve health and safety. By analysing these incidents, we can identify generic failings and rectify them so as to prevent future injuries. We recorded and investigated four near-miss events during the year. Each was associated with what would have been a minor incident and all appropriate revisions to procedures have been made.

Training and development

SITA Isle of Man aims to provide comprehensive training and development programme for employees at all levels. We recognise that this is essential for a competent and well-motivated workforce, and for a safe and compliant working environment.

A varied programme of training was provided during the year, covering issues ranging from fire fighting and fire awareness safety training to disciplinary procedures, advanced Excel, team management, and goods delivery procedure. Refresher training on operational activities is ongoing.

Our individual training records document progress, training needs and opportunities and they are reviewed regularly. On an annual basis, all employees meet with their line manager to discuss their personal development within the company, providing further opportunity to identify any training requirements and career opportunities.

We encourage our people to contribute to the management of the plant through safety meetings and daily morning meetings. Feedback on the issues raised is communicated via e-mail and notice boards.

Mastering fly-ash

Rita Greenwood, SITA Isle of Man's Compliance Manager and Chemist, successfully completed a Masters degree during the year with support from the company. The MSc dissertation assessed the feasibility of encapsulating APCR (Air Pollution Control Residue, or fly-ash) in cement-based sea defence blocks. We provided funding for the cost of the project analysis and Rita's time in the site laboratory conducting experiments for her research. Rita passed with merit, and attended the Open University graduation ceremony in September.

Our stakeholders

At SITA Isle of Man we take a wide view of our responsibilities to stakeholders. This involves listening closely to what our neighbours and community representatives have to say, being as open as possible about our performance and plans, and pursuing an active social and education programme.

Liaison committee

SITA UK policy is to promote formal liaison arrangements at all major sites to help maintain an open channel of communication with local communities.

In the Isle of Man, a statutory body created by Tynwald fulfils this purpose. The Richmond Hill Consultative Committee – whose brief is to guarantee openness and transparency in the operation of the EfW plant – meets quarterly during the year.

The committee works in partnership with the Department of Local Government to ensure that the plant operates within the terms of its licence and planning consent. Members have access to all relevant information, may raise any issue of concern, and make recommendations to the Department.

There are five local government representatives nominated by: Bradden Parish Commissioners (2), Douglas Corporation, Onchan District Commissioners, and the Isle of Man Municipal Association. The Department is represented by the chairman of its Environment, Safety and Health Division, who also chairs the committee. Environmental health and technical specialists from the Department also attend meetings as required.

Public communication

The plant and its operating procedures have been carefully designed to minimise impact on the environment and the local community. But we recognise that we need to be sensitive to the concerns of the public and act promptly and appropriately to allay them.

We take complaints very seriously. All complaints are recorded and investigated whatever the source. We take corrective action as soon as practicable and report back to the complainant.

During 2006 we received two complaints from members of the public relating to the same issue; both observed smoke from the stack. This occurred in January during commissioning of the stack burners, which are used to reduce the visibility of the water vapour plume that can arise in cold weather. The plume suppression system burns oil, thereby generating emissions, including greenhouse gases.

In keeping with our corporate commitment to openness, SITA Isle of Man has been committed from the outset to maximising public access to information on our environmental performance by posting daily emissions data on our website.

The site remains popular and both the level of traffic and number of unique visitors has continued to increase.

Last year's annual public report was made available as a download from the website and we intend to provide this year's publication in the same way – as well as distributing copies to every local authority, government office and library on the island.

Social programme

It is SITA Isle of Man policy not only to explain the role and workings of our plant to as wide an audience as possible, but also to promote understanding of waste and environmental issues generally.

During 2006 we continued to host visits and scheduled tours of the plant involving a wide range of guests, from local and UK politicians – including a delegation from Cornwall County Council – to schoolchildren and special interest groups. The latter included the Women's Institute, Cub Scouts and Brownies and Isle of Man Photographic Society.

We completed the conversion of the plant's reception area to an education centre with visual displays that promote waste reduction, reuse and recycling and explain the EfW process. We also continued to make use of an innovative education pack produced by SITA UK that explains issues around the 3Rs to primary schoolchildren in a practical and fun way.

Geography at work

In March children from St Ninians secondary school visited the education centre to take part in a special Year 8 geography project. This involved learning about the workings of the plant, an inspection of the furnace and a presentation on the 3Rs by an officer from the Waste Management Operations Unit of the Department of Local Government. The children also monitored waste movements and took part in a tailored lesson with their class teacher, before choosing to complete a project on waste, EfW, or renewable and fossil fuels. Four winners were chosen by SITA Isle of Man and will be invited back to the plant in 2007 to operate the waste reception hall's crane as a prize. One of the winners was a poem about the EfW. Such was its success that we have agreed to make this an annual event.

THE ENERGY FROM WASTE PLANT

by Charlie Williams – St Ninians High School

I stood and watched the wagons come from island far and wide, Their loads were emptied in a pit, eight metres deep inside;

I wondered why a huge crane moved the waste far out of sight, Into a furnace, one thousand degrees, that burned all day and night;

I puzzled why the heated gas turned water into steam, Which turned to electricity, whatever could it mean?

So much energy was made here, it did not seem quite real, The turbines generated power, enough for all of Peel!

Then toxic gas was filtered and made safe to go in air, The Government had made strict rules to make the process fair;

At last I'd learned the principle on which the Plant was based

REDUCE, REUSE, RECYCLE AND MAKE ENERGY FROM WASTE!

The year also saw the release the feature film, Stormbreaker, in which the plant played a major supporting role. Stormbreaker scenes were filmed at Richmond Hill over four days during a planned shutdown the previous summer. Several weeks' preparation was required for the project, which was co-financed by Isle of Man Film. Further external shooting took place on a Sunday so as avoid disrupting daily waste deliveries to the plant. The film was well received in cinemas and, in lieu of payment for the rescheduling of repairs and accommodating the production team, the film makers funded a small gym for staff at the site.

The external verifiers' EMAS verdict

"Further to consideration of the documentation, data and information resulting from the company's internal procedures examined 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 Regulation 761/01 (The EMAS Regulation)".

Signed:

Date: 24.08.07

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

Verifier number UK - V – 0007

Glossary

APCR – Air Pollution Control Residue: particles from combustion gases, 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 left on the furnace grate when waste materials are incinerated.

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.

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

EA – The 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.

EfW – energy from waste: The incineration (burning) of waste at high temperatures to reduce its weight, volume and toxicity. The energy from the incineration process is converted into electricity.

EMAS – The Eco-Management and Audit Scheme: a EU-backed scheme designed to recognise and reward organisations that go beyond minimum legal compliance and continuously improve their environmental performance.

EU Waste Incineration Directive – Issued by the European Union the directive relates to standards and methodologies required by Europe for the practice and technology of incineration. The aim of the directive is to minimise the impact of negative environmental effects on the environment and human health resulting from emissions to air, soil, surface and ground water from incineration.

Fly-ash – See APCR.

Furans – See dioxins.

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 most harmful wastes to people and the environment.

ISO 14001 – The international standard for environmental management systems.

ISO 9001 – The international standard for quality management systems.

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 land filling.

Landfill site – 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 be used for another purpose.

Leachate – Water that has come into contact with waste within a landfill site.

Methane – An odourless gas and principal component of natural gas and landfill gas, produced as biodegradable waste breaks down. 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 (ie, wastes from municipal parks and gardens, beach cleansing, and fly-tipped materials).

MWh – Mega Watt hours, equivalent to one million Watt hours, and a unit of energy (one Watt is equivalent to one Joule of energy per second).

Recycling – The direct re-introduction 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.

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.