Group EMS Manual

Environmental management system, EMS

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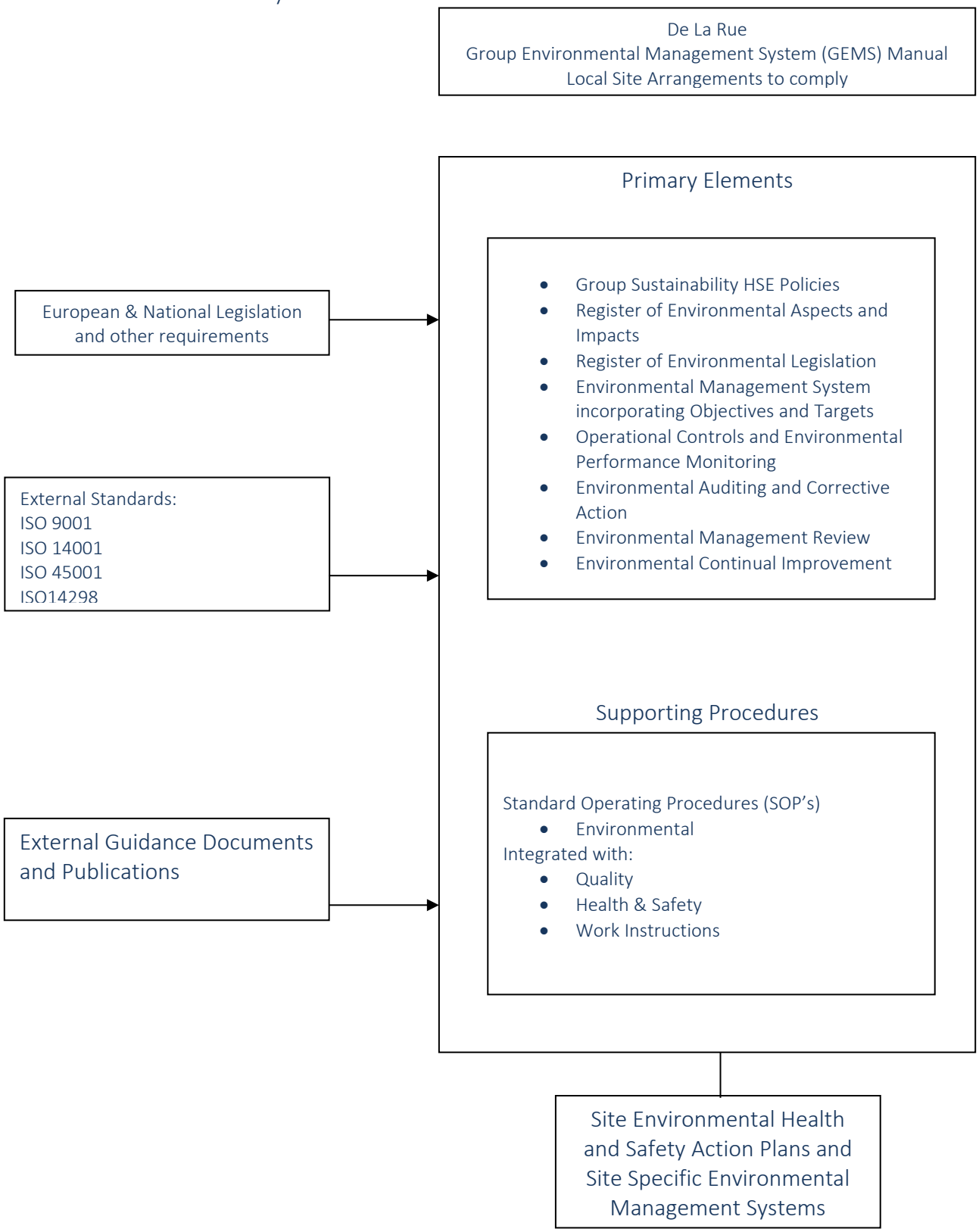
Rev.11.0	A Watson	Insurers added to interested parties	26/06/2018	A Watson
Rev.12.0	A Watson/TW	Organograms updated	29/06/18	A Watson
Rev.13.0	A Watson	Review date superseded & job titles	24/09/2018	A Watson
Rev.14.0	A Watson	U/D Org Chart & Ref Appx.B added Linking document held and maintained at site level by Env. Coordinator	05/02/2019	M Lycett

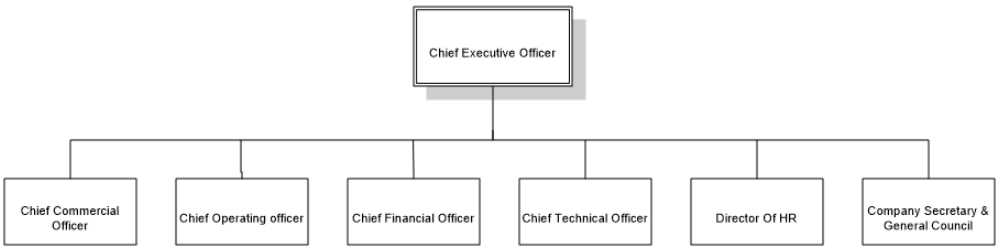
Group Environmental Management System (GEMS) Manual - Contents

Document Hierarchy

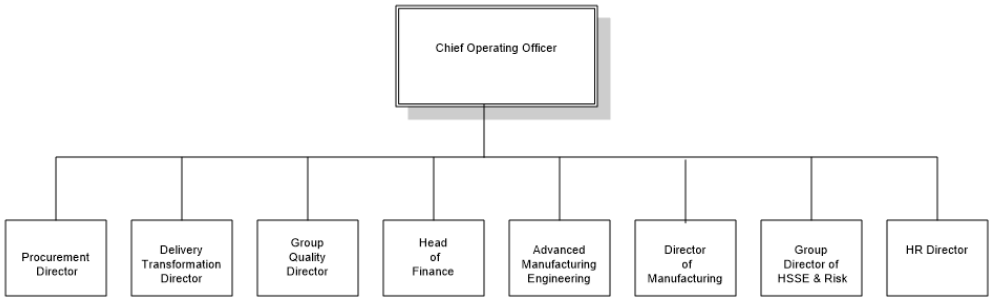


Organisational Charts

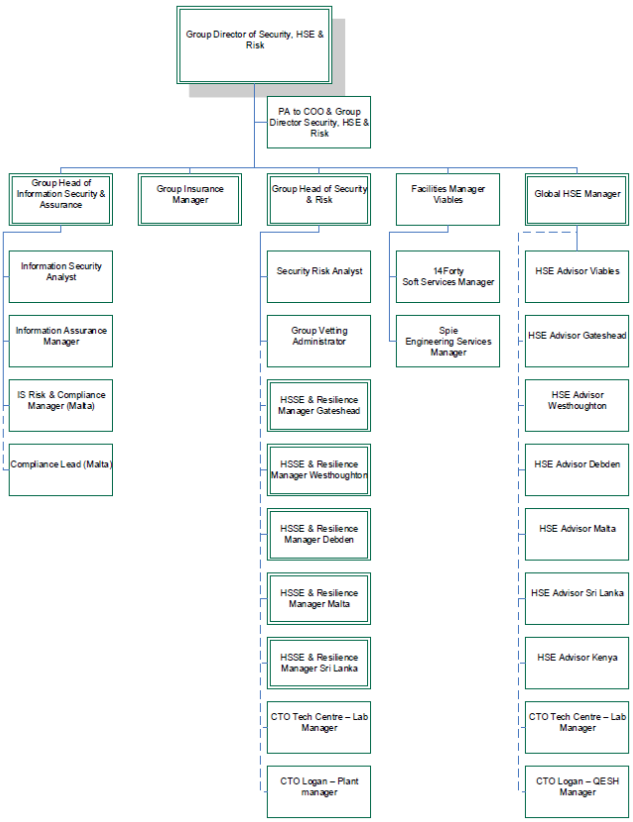
Executive Leadership Team



Delivery Leadership Team



Group HSSE Team



1.0 Scope (ISO 14001:2015 -1.0)

The scope of the Environmental Management System is Design, Holography, Security Printing and associated systems including passport production and personalisation, finishing and office functions. For a full listing of the scopes against the individual sites see Appendix A.

2.0 Normative References (ISO 14001:2015-2.0)

Not applicable

3.0 Terms and Definitions (ISO 14001:2015 -3.0)

A glossary of terms and definitions is attached to the end of this document

4.0 Context of the Organisation (ISO 14001:2015 -4.0)

The Company operates in the high end security manufacturing market (for example banknotes, passports, product identification and some digital solutions). Many of these products or digital solutions are related to governmental customers. The company currently has 2700 employees. The company's environmental responsibilities can be affected by product or solution changes such as, paper to plastics in banknote affecting their life cycles and other moves towards digital solutions relating to national identity, visa controls and cashless transactions. Other developments in security enhancements to products that reduce the likelihood of counterfeiting can sometimes affect areas of business processes and our products. The company works closely with our customers and other stakeholders to ensure that CSR issues including the environmental impacts and supply chain aspects are understood in line with customer expectations and acted upon as appropriate.

In our Annual Report we consider our alignment with United Nations Global Compact Sustainability Development Goals and see how we can improve our processes to align with these year by year.

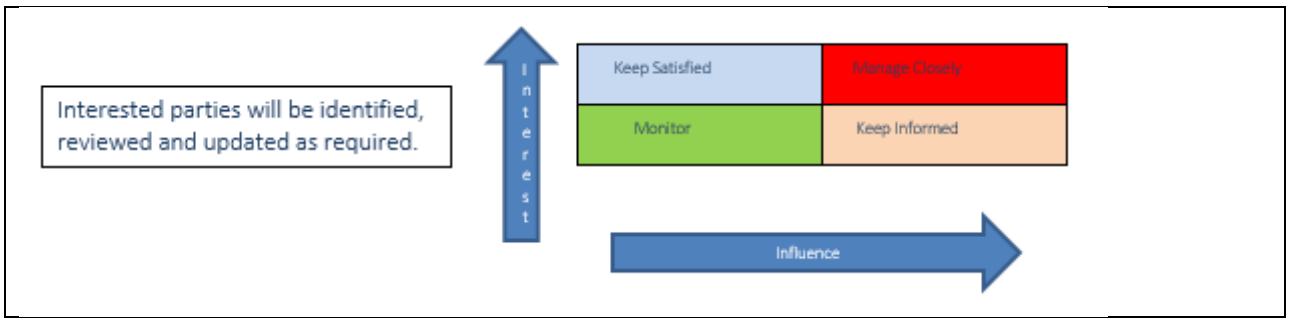
Internally, relating primarily to our manufacturing operations, energy use, waste generation and disposal routes, and water usage are significant environmental issues that are measured and have focus. Environmental permitting arrangements may also have an impact when they are updated or any of the controls tightened.

Many of the Company's customers and stakeholders have an interest in the way our business operates and we have a Code of Business Principles booklet that we require all employees to read and comply with, that includes HSE responsibilities.

4.1 Understanding the organisation and its context (ISO 14001:2015 - 4.1)

Group will establish an EMS to document, implement, maintain and continually improve an environmental management system in accordance with the requirements as above.
In our Annual Report we consider our alignment with United Nations Global Compact Sustainability Goals and see how we can improve our processes to align with these year by year.
Internally, relating primarily to our manufacturing operations, energy use, waste generation and disposal routes, and water usage are significant environmental issues that are measured and have focus. Environmental permitting arrangements may also have an impact when they are updated or any of the controls tightened.

4.2 Understanding the needs and expectations of interested parties (ISO 14001:2015 – 4.2)



Interested Party	Needs and Expectations	How do we communicate/monitor	Priority
Shareholders and Investors	Deliver strategic objectives. Deliver expected profitability. Transparency.	6 Monthly Board updates. Annual report. FTSE4Good. Carbon Disclosure Project.	
Government agencies and regulatory bodies (EA, HSE, LA)	Compliance with permits and legal requirements. Applying best practice (BAT). Carbon Reduction	Periodic reporting, site visits by regulator. Internal and External Audits. Regulatory reporting. Permit compliance.	
Direct customers	ISO Standards. Customer visits, Sustainable material sourcing.	Tender and bid submissions. ISO Certification, Customer visits.	
Suppliers	Continuity of relationship, mutual benefits in supply chain, supplier assurance audits, mutual sustainable sourcing.	Supplier assessments, meetings, 3rd party audit.	
Outsourced Contracted work	Suitable material delivery (OTIF), technical support, Audit.	Tender/contract, verification audit and quality certification for product.	
Employees	Ethical assurance, responsible use of raw material and resource.	Team briefs, Environmental campaigns, Newsletters, Annual report, intranet and recruitment.	
Other interested local organisations and groups	Assurance of environmental compliance, Noise monitoring, support to local interested groups. Company Insurers and Loss Prevention Advisors	Support local environmental groups, site visits, perimeter surveys, prompt response to complaints. Picked up in BCP reviews and Loss Values.	

4.3 Determining the scope of the EMS (ISO 14001:2015 – 4.3)

The EMS will cover all main manufacturing sites including Head Office, with relation to emissions to Land, Air and Water within their functional boundaries.

4.4 Environmental management system (ISO 14001:2015 – 4.4)

The EMS is fully integrated with core business needs in protecting the business, delivering security products and delivering value. Changes to the EMS are planned, monitored and any lessons learned are fed back into the management system to ensure continual improvement. This is confirmed during both Group and site management reviews. Changes to business processes, equipment and products are reviewed to identify any significant environmental impacts to ensure early recognition and implementation of remedial actions are completed.

5.0 Leadership (ISO 14001:2015 – 5.0)

5.1 Leadership and commitment (ISO 14001:2015 – 5.1)

There is an appointed Board Member for Environmental aspects supported by the Group Director of Security, HSE & Risk with HSE Advisors at all sites. HSE aspects are integrated into the Group strategy. An annual Board update is completed to review policy, performance and continual improvement of the EMS. At ELT level the strategy is reinforced with suitable resources including capital expenditure. Local site Senior Leadership Teams (SLT) review performance and continual improvement twice per year.

5.2 Environmental Policy (ISO 14001:2015 – 5.2)

APRIL 2018

DeLaRue

Group HSE Sustainability Policy

The Board of De La Rue plc is committed to:

Developing our journey of becoming a more 'sustainable enterprise'. By continually improving our products and processes and thereby improving our long-term profitability. As part of this journey we aim to maintain high standards for our Occupational Health and Safety and Environmental management systems.

Occupational Health and Safety Aims:

- We aim to prevent accidents and ill health in all aspects of our operations and continuously improving our processes and practices relating to OHS. We also recognise the effective implementation of this policy requires the cooperation and active involvement of employees at all levels and in all areas and positively encourage this.
- We require as an integral part of our processes that all our businesses be operated and managed so as to ensure a high level of protection for the health and safety of our employees, contractors, customers and the public. In addition we will work with our main suppliers and main contractors to ensure their health and safety processes are robust and we will advise on improvements where appropriate.
- We will identify, control and wherever possible reduce or eliminate health and safety risks associated with our activities and when developing and changing business activities, processes and products.
- We will maintain a formal Occupational Health & Safety Management System ("OHS-MS"), compliant with the requirements of OHSAS18001.
- We will comply with all applicable H&S legislation and other local requirements

Employees are required to:

- Cooperate with the Company to ensure compliance with applicable statutory requirements by working in accordance with the safety management system and safe working procedures
- Work safely to ensure their health and safety and that of any other persons who could be affected by their acts and omissions and to report any areas where the existing safety arrangements fail to reduce risks to an acceptable level

Environmental Aims:

- To operate in a manner that protects the environment and continuously reduces the business's environmental impacts and prevents pollution.
- We aim to comply with all applicable environmental legislation, other requirements and any environmental permits.
- We will maintain a formal Environmental Management System ("EMS") compliant with the requirements of ISO14001.
- We aim to identify the best environmental options to drive continuous improvement.
- We aim to improve our internal environmental measurement and reporting.

Sustainability aims overall:

- We will ensure adequate resources are made available to fulfil all aspects of this policy.
- The company EMS and OHS-MS processes identify and measure significant impacts and risks of our security component, printing and finishing operations and include energy consumption, effluent discharges, water and chemical usage and any waste generation.
- We aim to reduce the HSE impacts of our operations, products and services by using HSE good practice solutions.
- We will set our objectives and targets on HSE using a 'material' risk based process.
- We will report publicly on our HSE performance via our Annual Report and public website.
- To achieve our sustainability policy aims we will also:
- Consider HSE when changing business activities and business processes, and when developing new products.
- Continually develop and improve our internal corporate HSE audit processes.
- Ensure that our main suppliers have proper HSE processes and policies.
- Train and inform all employees of their individual and collective responsibilities contained regarding HSE.
- Providing a clear definition of HSE responsibilities throughout the Group
- Conduct annual managerial reviews of our HSE performance and review our policies

The Chief Executive, supported by the Executive Leadership Team, the Risk Committee and the Group HSE Committee, is responsible for implementing and reviewing this policy and overseeing the improvement of the Company's sustainability performance.

This policy will be displayed on notice boards at each business location, on the Company intranet and internet sites and is also publicly available to all interested parties.

Martin Sutherland
Chief Executive

Plant Manager

5.3 Leadership and commitment (ISO 14001:2015 – 5.3) see Organisational charts

Chief Executive Officer – Overall environmental strategic direction

Chief Operating Officer – Monitoring overall EMS performance

Procurement Director - Identify requirements for suppliers and sourcing sustainable solutions.

Quality Director - Environmental responsibility for documents and links to IMS's

Chief Technical Officer - Environmental responsibility for innovation and development.

Chief Commercial Officer – Identify customer expectations.

Chief Finance Officer - Environmental responsibility for providing financial resources for projects, managing the EMS system, ensuring environmental levies are met.

General Counsel & Company Secretary - Environmental responsibility for business statutory compliance.

Group Director HR - Environmental responsibility for support of training provision and recruitment

Group Director of Security, HSE & Risk – Responsibility for ensuring Group Environmental compliance and audit and links to the risk programme.

Group Director of Risk – Responsibility for Site Facility Environmental surveys and highlighting business risk

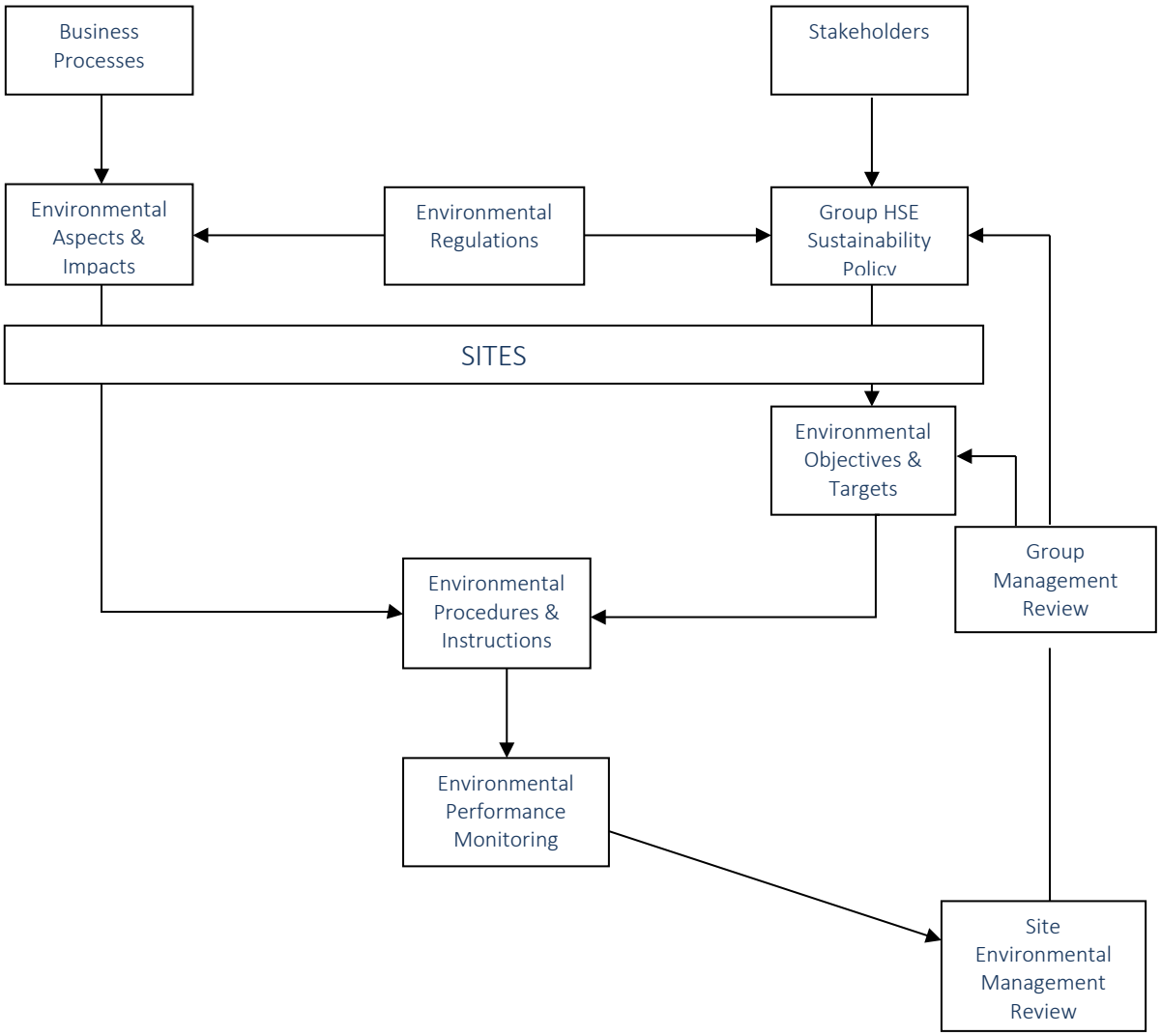
Plant and operational managers – Ensure conformity of all compliance obligations and promote continual improvement.

Site HSSER Manager – ensures day to day compliance, monitoring, review, reporting and coordination of the EMS and ensures adequate local HSE resource is available.

All other persons working under the organizations control or on behalf of the organisation – conform to EMS requirements.

6.0 Planning (ISO 14001:2015 – 6.0)

6.1 Actions to address risks and opportunities (ISO 14001:2015 – 6.1)



Group has an established business planning cycle which is reviewed annually by the Executive Leadership Team. The plan identifies objectives and targets and provides an indication of the timescale for achievement for the same. The Executive Leadership team meets monthly to review progress

6.1.2 Environmental Aspects (ISO 14001:2015 – 6.1.2)

De La Rue has conducted an assessment of the environmental aspects of its activities, end product, services and have logged all aspects which pose a significant impact on the environment.

The Global HSE Manager/Site EHS Advisors are responsible for assessing the significance of environmental impacts, using external expertise when required. They are also responsible for ensuring the site log of aspects and impacts is maintained and updated. The significance of aspects and impacts is to be evaluated using a scoring methodology.

Identified significant environmental impacts shall be taken into account when setting annual environmental objectives and targets and in the prioritization of action plans.

6.1.3 Compliance obligations (ISO 14001 2015: 6.1.3)

Key legislation that could affect Group activities and operations are detailed in the Register of Environmental Legislation and other requirements held at each site. Each site's log will contain variations dependent on local activities performed on their specific site.

The register is reviewed and updated following the introduction of new environmental legislation or other requirements, at regular periods and no less than annually.

De La Rue subscribe to environmental publications and an environmental legislation and regulatory tracking service that highlight regulatory changes. The information fed in from these sources is taken into account in establishing, implementing and maintaining the Group environmental management system.

6.1.4 Planning Action (ISO 1400:2015 – 6.1.4)

The organisation has a Business Continuity system which continually identifies threats and risks, relating to significant environmental aspects and compliance obligations.

The organisation subscribes to relevant bodies in order to identify opportunities at an early stage in development in order to enhance its technical or commercial solutions. For example: Polymer substrates, chemical substitution, fibre recovery, digital/3d printing etc..

6.2 Environmental objectives (ISO 1400:2015 – 6.2)

Group has established implemented and documented environmental objectives and targets at functional and organisation levels within the Group. Local sites can go over and above these.

These objectives and targets are SMART and consistent with our Policy and include commitments to prevention of pollution, compliance to legislation and continual improvement

Environmental objectives and targets are established and reviewed on an annual basis and the process of setting those takes into account:

- Group Policy
- Significant environmental aspect
- Results from audits and reviews
- Legislative requirements
- Financial, operational and business requirements
- Views of interested parties
- Taking into account future technological advancements.

De La Rue has established and implemented a system for achieving, sustaining and monitoring the environmental objectives and targets, to which the site specific targets and objectives will be added.

7.0 Support (ISO 1400:2015 – 7.0)

7.1 Resources (ISO 1400:2015 – 7.1)

The CFO will ensure that adequate resources are provided in a timely and efficient manner in order to maintain the EMS.

7.2 Competence (ISO 1400:2015 – 7.2)

Specific roles relating to EMS or the selection of personnel working on behalf of the company will be required to demonstrate competence within the relevant field. The organisation will ensure sufficient training, information and instruction to support the EMS.

7.3 Awareness (ISO 1400:2015 – 7.3)

De La Rue shall ensure that personnel performing tasks for it or on its behalf that have the potential to cause a significant environmental impact are competent on the basis of appropriate education, training or experience and shall retain associated records

7.4 Communication (ISO 1400:2015 – 7.4)

The Group communications structure provides a basis for two-way communication on environmental matters throughout all the sites. It enables management and other employees to monitor performance and discuss ways to improve operational practices. It provides direct feedback to senior management on issues requiring attention and ensures the executive and senior leadership teams are informed of material issues that require monitoring and for enhancing the EMS. Environmental reviews operate as an integral part of other management meetings (e.g. HSE) with a wider focus.

De La Rue have made a conscious decision to publicise environmental data and information to their external stakeholders this is carried out through the Company's Annual Report, through the website and through the Carbon Disclosure Project and Group will occasionally provide environmental information upon request. The Policy statement document is a classed as a public document. De La Rue actively works with other stakeholders to promote sustainability.

ELT

- ELT team meet on a monthly basis to discuss all functional areas and any 'material' matters
- Global HSE Manager updates the ELT team on environmental measures as appropriate and on any key issues arising

SLT

- Teams meet on a regular basis to discuss all functional areas at an operational level
- HSSER Manager updates these teams on environmental issues through the Site Environmental Contact
- Key material issues are to be escalated to the Manufacturing Director, COO & Global HSE Manager
- Site Management Reviews are led by Senior Site Managers and are minuted.

HSE Committee

- Site HSE Committee's meet on a periodic basis (usually monthly or bi-monthly) and review environmental matters affecting the site. Legislation updates and their impact are reviewed here.
- Site HSE Committee's are attended and normal led by a Site Senior Manager or appointed deputy
- Staff contacts carry out periodic site inspections

7.5 Documented Information (ISO 1400:2015 – 7.4)

The EMS documentation requirements include:

Inputs

- Group HSE Sustainability Policy Statement
- Group Environmental Management System manual
- Objectives and Targets
- Register of Environmental Legislation and other requirements
- Register of Environmental Aspects and Impacts
- Operational controls and Environmental Performance Monitoring
- Environmental Auditing and Corrective Actions
- Environmental Management Reviews
- Other documents deemed necessary to ensure effective planning, operation and control that relate to its significant environmental aspects.

Documents will be controlled, updated and reviewed in accordance with the organisation Quality Management System. This will include the correct media format as published on the organisation SharePoint.

8.0 Operation (ISO 1400:2015 – 8.0)

8.1 Operational Planning and Control (ISO 1400:2015 – 8.1)

All company operations are controlled from the planning stage through to operational procedures and training. When or if process controls vary or when unexpected variability in output results are noted then formal problem-solving processes are followed to identify the causes and to prevent recurrence by carrying out corrective actions.
Outsourced processes are controlled and under contracts set up by Procurement with support from the technical and quality teams. Environmental Management System standards of outsourced partners or suppliers are reviewed by the Procurement team. If an aspect is identified and the impact is likely to be significant relative to the 'volume of supply' these may require a formal review.
Change Management, both in planning and with regard to processes is controlled and documented. There is a documented Change Management procedure relating to EHS aspects that is based on EEM principles and checklists.
Within the business, aside from, but relating to Operational Controls the company has two formal process considering EMS and environmental impacts, these are:

a) Relating to Expenditure Authorities (EA) and capital projects there is an EHS review and sign off process early in the financial approval process.
b) Relating to R&D and product development a technical checklist is used to identify EHS aspects and potential impacts alongside identifying any statutory requirements.

Aside from these two processes and overall there is a stand-alone EHS Changes checklist that can be used for other general changes used to review EHS requirements post or prior any planned or even unplanned changes.
Inductions are provided to new employees and contractors and these cover EMS and any significant Environmental aspects, such as waste disposal etc.
Some detailed lifecycle studies have been carried out relating to our main product streams and we have also worked with customers to assist them regarding lifecycle comparisons.
Overall, there are three main environmental aspects relating to Operational Planning and Control that may have significant impact in direct correlation to the products produced:

a) Adding security features may have a significant impact for example printing double sided intaglio as opposed to single sided intaglio is known to have a significant impact. Adding other additional security features may also add additional machine processes. Thus using more energy and perhaps generating more waste. Combining processes within one machine may have a beneficial effect, this is being developed within the industry, for example letterpress and varnishing processes.
b) Quality defects or customer complaints that have been missed during production operations may have a significant effect by creating both rework and increasing spoilage, waste or transport costs.
c) Finally, shipping from different locations around the world to our customers can have an environmental impact depending where the products are manufactured and this may be connected with planning constraints or required delivery timelines. This area is particularly sensitive with regards to customers and DLR and the processes used for transport e.g. flying, shipping or road transport. This area is not publically disclosed under normal circumstances.

8.2 Emergency Preparedness and Response (ISO 1400:2015 – 8.2)

With regards to Environmental Management Systems and environmental impacts the company has a number of environmental aspects which it considers and has emergency plans and controls for, already in place. These are primarily fire risk, floods, chemical/oil spillages and other potential pollution incidents. These are all considered within our Business Continuity Plans and employee training provision. Sites have emergency spill training and spill kits in place where required and sites test these emergency procedures periodically.
The Business Continuity Plan process also considers environmental aspects and reviews these controls as appropriate.

Procedures have been established as appropriate, to prevent and mitigate the environmental impacts that may arise from emergency situations

The procedures specify responsibilities and actions to be taken and include contact and communication details within the company and with external organisations.

Emergency procedures will be subjected to review and revision usually annually, and after an occurrence of an emergency situation. Procedures are tested periodically by simulation of incidents as part of training exercises or drills.

Emergency situations include, but are not limited to:

- Fires
- Spills
- Floods
- Abnormal Discharges (breaches of consents or permits)

9.0 Performance Evaluation (ISO 1400:2015 – 9.0)

9.1 Monitoring, Measurement, Analysis and Evaluation (ISO 1400:2015 – 9.1)

De La Rue has established, implemented and maintained procedure(s) to monitor and measure, on a regular basis the key elements of its operations and activities that can have a significant environment impact. This will include the documenting of information to monitor performance, applicable operational controls and conformity with environmental objectives and targets.

This information will be reported and reviewed monthly for analysis and evaluation to support continual improvement of the EMS system. Key annual performance will be published in the Annual report.

Any monitoring and measuring equipment used in this function will be calibrated or verified and maintained with records retained as proof.

9.1.2 Evaluation of Compliance (ISO 1400:2015 – 9.2)

Periodic evaluation of compliance with environmental legislation and other requirements is carried out annually and outputs are reviewed during environmental management reviews. Site management reviews feed into Group management review.

Records of all evaluations are kept in accordance with documentation procedures.

9.2 Internal Audit (ISO 1400:2015 – 9.2)

All Sites shall ensure internal audits of the EMS are conducted at planned intervals to determine whether the Environmental Management System conforms to planned arrangements for environmental management including the requirements of ISO 14001:2015 and has been properly implemented and is maintained.

Audit programs will be planned, established implemented and maintained taking into consideration the environmental importance of the operation(s) concerned and the results of previous audits.

Selection of competent auditors will ensure impartiality and objectivity of the audit process.

9.3 Management Review (ISO 1400:2015 – 9.3)

Management reviews will be held at least annually and will include:

- Review of Minutes of previous meeting, actions & matters arising from previous Group Mgt Reviews
- Review of relevant external and internal issues relating the Group EMS & GHSES Policy
- Review of the needs and expectations of interested parties & new compliance obligations
- Review of significant/material aspects and impacts across the Group
- Risks & Opportunities that may be 'material' for the Group including Group developments
- Review progress against Group environmental objectives & targets by site performances
- Overall DLR environmental performance in the year: NC/CAPA MJ/M&M results, compliance
- Internal Audit Results / Audit Plan for the next period
- External ISO14001 Audit Results during the year (BSI/SGS)
- Resources review to run EMS effectively covering all requirements
- Complaints and other formal communications received from external interested parties

- Review group environmental legal and other compliance and any concerns or breaches
- Identify opportunities for continuous improvement

Outputs

- Conclusions on EMS suitability, adequacy and effectiveness for DLR

Decisions taken on:

- CI Opportunities including training needs (e.g. leaders, auditors, managers etc)
- Changes or updates required to the EMS and resources (Note: ISO14001:2015)
- Actions to take regarding EMS objectives & targets that were not achieved
- Opportunities regarding integration of EMS elements into other business processes
- Implications for our EMS factors for our strategic direction as a business

10.0 Improvements (ISO 1400:2015 – 10.0)

10.1Non Conformity and Corrective Action (ISO 1400:2015 – 10.1)

Non-conformances may arise as a result of deviations from environmental procedures, actual or potential environmental incidents, failure to meet regulatory requirements or non-conformances identified during environmental management system audits

Non conformances associated with environmental incidents or failure to meet regulatory requirements should be recorded, investigated and corrective action implemented.

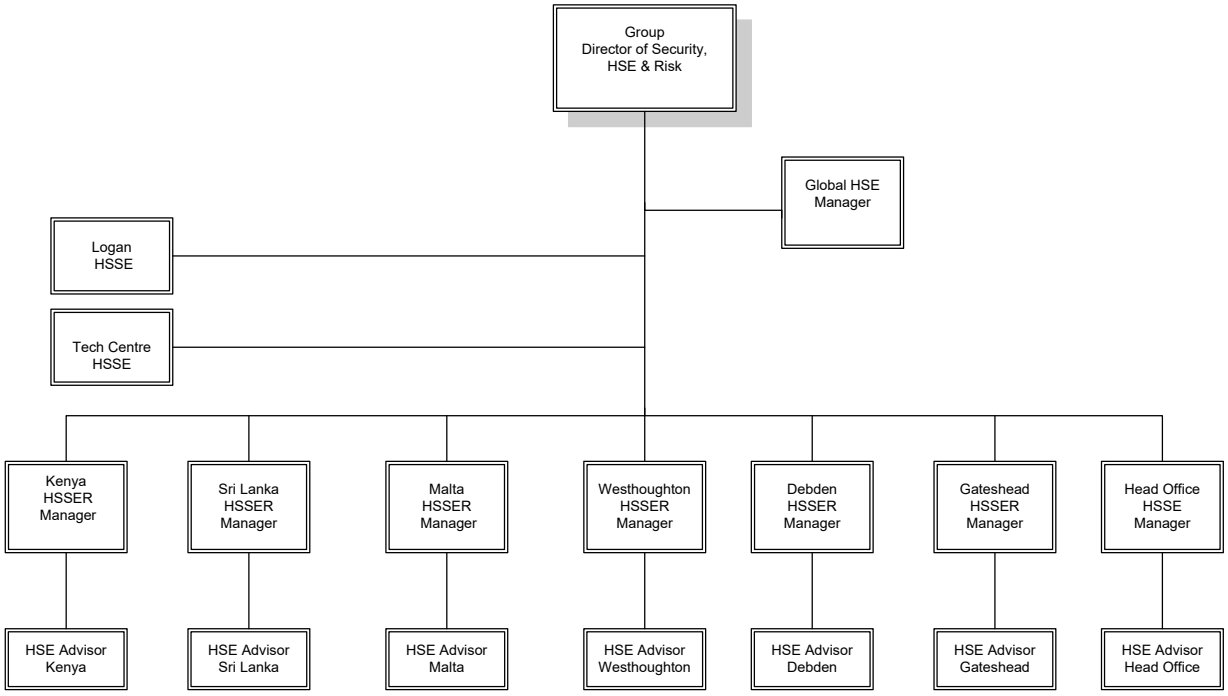
10.2 Continual Improvement (ISO 1400:2015 – 10.2)

The organisation aims to continually improve the EMS to enhance environmental performance.

Appendix A - Sites covered by Manual

Site & Address	Scope	Comments
DLR Head Office De La Rue House Jays Close Viables Basingstoke RG22 4BS 01256 605000	Security Print, Design , Holography, Facilities and Office Functions	Group Certificate EMS 631632
DLR Debden Debden Printing Works Langston Road, Loughton IG10 3TN 0208 5024 200	Security Printing and Associated Systems	Under Group EMS
DLR Gateshead Kingsway South Team Valley Industrial Estate Gateshead, Tyne & Wear NE11 0SG 0191 487 8181	Security Printing and Associated systems including passport production	Under Group EMS
DLR Westhoughton Unit 2004, Wingate Industrial Estate, Elland Close Westhoughton, Bolton Lancashire BL5 3XE 01942 845800	Security Printing and Associated systems	Under Group EMS
DLR Malta B40-43 Bulebel Ind Estate, Zejtun ZTN 08 Malta 00356 2169 3775	Security Printing and Associated Systems	Under Group EMS
Sri Lanka & Kenya		Alignment to be scheduled likely 2018/19
CTO – Sites Prelims (Part of Viables) Holographics (Part of Viables) Technology Centre (no 14001) Logan (in Group Certification)	Design	Under Group EMS

Appendix B – Refer to Linking Document at Sites linking GEMS to site processes & procedures



Appendix C - Glossary of Terms and Definitions

A

Abatement

Reducing the degree of intensity of, or eliminating, pollution. (Source: US EPA)

Acid

A corrosive solution with a Ph of less than 7 (Source: US EPA)

Air pollution

Air is made up of a number of gases, mostly nitrogen and oxygen and, in smaller amounts, water vapour, carbon dioxide and argon and other trace gases. Air pollution occurs when harmful chemicals and particles are emitted to the air – due to human activity or natural forces – at a concentration that interferes with human health or welfare or that harms the environment in other ways.

Air quality

A measure of the level of pollution in the air.

Amenities

Benefits of a property, such as nearby playgrounds, swimming pools, community centre's or parks.

B

Biodegradable waste

Organic waste, typically coming from plant or animal sources (for example food scraps and paper), which other living organisms can break down.

Biodiversity

A short form of the phrase 'biological diversity', which means the variety of life on this planet and how it interacts within habitats and ecosystems. Biodiversity covers all plants, animals and micro-organisms on land and in water. See also ecosystem, habitat and organism.

C

Carbon dioxide (CO_2)

A colourless gas that is naturally produced from animals and people in exhaled air and the decay of plants. It is removed from the atmosphere by photosynthesis in plants and by dissolving in water, especially on the surface of oceans. The use of fossil fuels for energy is increasing the concentration of carbon dioxide in the atmosphere, which is believed to contribute to global warming. See also greenhouse gases and photosynthesis.

Carbon footprint

A measure of the impact our activities have on the environment, especially climate change, often reported as the units of tonnes (or kg) of carbon dioxide each of us produces over a given period of time.

Carbon monoxide

A highly poisonous, odourless, tasteless and colourless gas that is formed when carbon material burns without enough oxygen. Carbon monoxide is toxic when inhaled because it combines with your blood and prevents oxygen from getting to your organs. If a person is exposed to carbon monoxide over a period, it can cause illness and even death. Carbon Monoxide has no smell, taste or colour. This is why it is sometimes called the "Silent Killer". The most common causes of carbon monoxide poisoning in the home are house fires, faulty heating appliances such as boilers, blocked chimney or flues, and rooms not properly ventilated. Carbon Monoxide alarms can be used as a backup to provide a warning to householders in the event of a dangerous buildup of carbon monoxide.

Carbon neutral

A situation that arises when the amount of carbon dioxide released into the air equals the amount of carbon dioxide removed from the air, for example by planting trees, or the amount saved by using renewable energy sources to produce the same amount of energy. See also renewable energy.

Carbon offset

A unit, equal to one ton of carbon dioxide, that individuals, companies or governments buy to reduce short-term and long-term emissions of greenhouse gases. The payment usually funds projects that generate energy from renewable sources such as wind or flowing water. Individuals can choose whether to buy an offset (for example to compensate for air travel), but governments and large industries are sometimes required to buy them to meet international targets aimed at reducing greenhouse gases.

CFCs

Short for 'chloroflurocarbons', which are chemicals used in manufacturing and, in the past, in aerosol cans and refrigerators, which can damage the ozone layer.

Climate change

A change in the climate of a region over time due to natural forces or human activity. In the context of the UN Framework Convention on Climate Change, it is the change in climate caused by higher levels of greenhouse gases in the atmosphere due to human activities as well as natural climate changes. See also global warming, and UN Framework Convention on Climate Change.

D

Deforestation

The reduction of trees in a wood or forest due to natural forces or human activity such as burning or logging.

Development plan

A public plan that sets out the development objectives and policies of a local authority for its area. It covers a six-year period and states the local authority's goals for a range of areas such as maintaining and improving roads and parks, preserving and enhancing amenities (such as playgrounds or swimming pools), zoning land for homes, businesses, factories and farming and providing services and facilities such as waste disposal and sewerage. Members of the public have opportunities to make submissions on the plan before it is agreed.

E

Ecosystem

A community of organisms that depend on each other and the environment they inhabit.

Effluent

Liquid wastes such as sewage and liquid waste from industries.

Emissions

In the context of the atmosphere, gases or particles released into the air that can contribute to global warming or poor air quality.

Energy efficiency

Actions to save fuels, for example better building design, changing production processes, developing better transport policies, using better road vehicles and using insulation and double glazing in homes.

Environmental impact statement

A statement about the expected effects on the environment of a proposed project or development such as a new road or waste water treatment plant, including how any severe effects on the environment will be addressed.

F

There are no terms starting with the letter F.

G

Greenhouse gases

Gases such as carbon dioxide and methane, which tend to trap heat radiating from the Earth's surface, so causing warming in the lower atmosphere. The major greenhouse gases that cause climate change are carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (NO_2). See also greenhouse effect and global warming.

Ground water

Water that collects or flows underground in the small spaces in soil and rock. It might be a source of water for springs and wells and then used for drinking water.

H

Hazardous waste

Waste that poses a risk to human health or the environment and needs to be handled and disposed of carefully. Examples include oil-based paints, car batteries, weed killers, bleach and waste electrical and electronic devices.

I

Insulation

In this guide, material such as foam or glass wool that is used in homes and other buildings to prevent heat loss, reduce noise and improve comfort.

J

There are no terms starting with the letter J.

K

There are no terms starting with the letter K.

L

Landfill

A site that is specially designed to dispose of waste and operates with a license granted by the Environmental Agency (EA). The EA reviews licenses and, with local authorities, monitors landfills around the country for emissions.

M

There are no terms starting with the letter M.

N

Noise pollution

Noises that disturb the environment and people's ability to enjoy it, for example continually sounding house alarms, loud music, air conditioning or other electrical units and aircraft or motor engines.

O

Oil spill

The harmful release of oil into the environment, usually through water, which is very difficult to clean up and often kills birds, fish and other wildlife.

Ozone layer

The thin protective layer of gas 10 to 50km above the Earth that acts as a filter for ultraviolet (UV) radiation from the sun. High UV levels can lead to skin cancer and cataracts and affect the growth of plants.

P

Particulate matter

Fine solid or liquid particles that pollute the air and are added to the atmosphere by natural and man-made processes at the Earth's surface. Examples of particulate matter include dust, smoke, soot, pollen and soil particles.

Pesticides

A general term for any chemicals that are used to kill weeds, fungi, insects or other pests.

Permits

In the context of waste, certificates or other documents granted by local authorities to private companies to collect and manage waste or to operate waste management facilities such as recycling centers.

Planning permission

Permission granted by a local authority for new buildings or for extensions, once nobody objects to the plans.

Q

There are no terms starting with the letter Q.

R

Radiation

A form of energy that is transmitted in waves, rays or particles from a natural source, such as the sun and the ground, or an artificial source, such as an x-ray machine. Radiation can be ionising or non-ionising. Ionising radiation includes ultraviolet rays, radon gas and X-rays. Too much exposure to ionising radiation can be harmful, leading to increased risk of cancer. Non-ionising radiation includes visible light, radio waves and microwaves. This type of radiation is less risky to health because it contains less energy, but it can still be harmful at high levels for a long time.

Recycle

To break waste items down into their raw materials, which are then used to re-make the original item or make new items.

S

Sewage

Liquid wastes from communities, which may be a mixture of domestic effluent from homes and liquid waste from industry.

Smog

Air pollution consisting of smoke and fog, which occurs in large urban and industrial areas and is mainly caused by the action of sunlight on burned fuels, mostly from car exhausts. Smog can cause eye irritations and breathing problems and damage plant life.

T

Toxic

Poisonous or harmful to the body (ecotoxic relates to damage to the environment).

U

There are no terms starting with the letter U.

V - Ventilation

In this guide, the movement of air between the inside and outside of a building usually through windows, doors and air vents built into the building's walls or ceilings.

W - Waste management

The management of waste collection, handling, processing, storage and transport from where it is produced to where it is finally disposed. See waste prevention.

Waste prevention

An aspect of waste management that involves reducing the amount of waste we produce and minimising the potential harm to human health or the environment from packaging or ingredients in products.

WEEE

Short for Waste Electrical and Electronic Equipment (WEEE), which are any unwanted devices with a plug or battery – from a remote control or digital camera to a vacuum cleaner or fridge freezer. These devices must be disposed of carefully to avoid damage to the environment. To get rid of an unwanted device, you can bring it to a civic amenity site or leave it with a retailer when you are buying a new device. All WEEE left in retail outlets and civic amenity sites are collected for recycling.

X/Y/Z - There are no terms starting with the letters X, Y or Z.