Oil & Gas sector waste services
connected excellence in all we do
Amec Foster Wheeler is a global provider of consultancy, engineering, project management and related services, with over 40,000 people in more than 50 countries, operating across energy, mining, industrial, environment and infrastructure markets.

In Europe, our multi-disciplinary Environment & Infrastructure business supports public and private sector clients throughout the business cycle: from policy, through strategy and consenting, into design, implementation and operational effectiveness.

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“Our vision is to be the most trusted partner for our customers by consistently delivering excellence – bringing together the knowledge, expertise and skills of our people from across our global network.”
Changing the way we work with waste - delivering the shift to resource management

Waste management-related risks and liabilities are now recognised as a priority issue by the oil & gas sector, comparable to protecting health and safety.

The management of waste is changing greatly as a result of regulatory obligations and targets adopted by forward looking organisations which recognise that it is not sustainable to dispose of valuable resources. Once the fundamentals of minimising health and environmental impacts of waste disposal are achieved, waste producers may be in a position to turn their waste management approach and wastes themselves into assets.

This is leading to the development of new approaches in how we manage our waste, resulting in a new generation of waste infrastructure and contracting arrangements. Without this step-change, the potential liabilities for the Oil & Gas Sector are significant.

Increased investment in waste management in the years to come will have a profound and far-reaching effect on the way that organisations work with waste.

Business and social commitments to embed Environmental Responsibility, Resource Efficiency and Circular Economy thinking will drive investment in infrastructure enabling products, materials and energy to be recovered. As a result waste management will increasingly become a capital intensive and skilled process industry. This will result in strategic and structural changes in the waste supply chain and relationships with waste producers.

Oil and gas exploration and production occurs across the globe, with emerging territories such as Africa, parts of Asia and Russia now making significant contributions to overall supply. Varied waste streams are generated from these activities, requiring careful management in order to minimise environmental impacts. The nature and quantity of the waste produced, combined with changing legislation and limited waste management expertise and infrastructure in many countries, has led to waste becoming ‘stranded’. These waste streams are commonly stockpiled or managed via routes considered sub-optimal.

Much of the investment in waste management that is fit for purpose for the Oil & Gas Sector will be based on technology that is well understood and already in operation. Applied technologies are emerging for particular situations and for specific wastes; however, unless they offer significant economic benefit and are environmentally appropriate they will only be used to manage a small portion of all wastes. There remains a need to globally bring waste management infrastructure up to acceptable minimum standards.

Through the provision of waste related research, advice and consultancy to Oil & Gas producers and industry bodies, our team are familiar with the unique waste management issues faced in the Oil & Gas Sector. Common themes include:

- Managing risks and liabilities;
- Reducing environmental impacts;
- Waste minimisation;
- Developing strategies;
- Data reliability;
- Legacy / long term value;
- Financing and delivering new infrastructure;
- Managing waste as a resource;
- Trans-frontier shipment of waste;
- Delivering consistent waste management standards; and
- Partnerships and upstream reach.

Developing themes for the Oil & Gas Sector also include:

- Zero waste commitments, including reduced marine discharge;
- Territorial regulatory enforcement;
- International treaties;
- Increased collaboration to find solutions to common waste issues;
- Transforming decommissioning into waste recycling opportunities;
- Informed procurement of waste management services and technologies; and
- Supply chain partnerships to bridge the infrastructure gap.
Our approach

In delivering a project we create and work in integrated teams so we can meet the unique demands of each project. By doing this we are able to support our customers’ objectives and ensure the best possible skills are matched to the required project outcomes.

We concentrate on establishing relationships with our customers so that we can improve the value of our service. That is why we spend time ensuring that our people demonstrate the right qualities and we help them to develop personally.

Amec Foster Wheeler’s knowledge of oil and gas (and related industrial) waste management has been built on years of experienced delivery to our customers. Our team is the established Centre of Expertise for waste within Amec Foster Wheeler. As such our experience gained developing waste and resource management strategies, procuring services and facilities, developing infrastructure and optimising operations is now being applied to deliver benefits for customers across all sectors, and around the globe.

Our main service areas comprise:

- Policy and legislation – e.g. assessing alternative waste management options following a change in legislation
- Regulatory advice – e.g. Transfrontier Shipment of Wastes and MARPOL
- Cost benefit analysis – as part of wider strategy reviews
- Risk management – applied to a range of waste streams (including NORM)
- Compliance – including independent auditing of waste facilities
- Contract design and procurement of specialist waste contractors – drawing on our knowledge of the global waste management supply chain
- Collection systems and related logistics analysis – incorporating modelling of optimum waste bulking and treatment locations
- Waste minimisation and process re-design – identifying opportunities to re-engineer waste streams as new products
- Technology reviews – covering separation, recycling, treatment and combustion systems – fixed and mobile
- Front end engineering design (FEED) studies for waste handling, storage and disposal systems
- Waste characterisation and classification of wastes - including Hazardous Wastes
- Site waste management plans
- Project management, including supervision of waste management contractors.
Setting the right strategy for waste management requires reliable evidence, informed consideration of project drivers and boundaries, and a clear understanding of objectives.

Whether you’re looking for sustainable waste management routes within an emerging geography, or seeking to embed good practice at a corporate level, Amec Foster Wheeler has the expertise to help inform your decision making and steer you through the process.

It is important to develop a strategy for the safe and sustainable management of waste at the outset of a project. This should cover the full lifecycle of activities (site clearance, construction, mobilisation, operation and decommissioning). Lifecycle thinking needs to be factored into business models and implementation plans in order to avoid a reactive approach to managing waste-related issues.

Our waste strategy capability is founded on the ability to produce robust models. Examples include producing waste flows over the duration of a waste contract, analysing trends and projections in commodity values, assessing the financial implications of new regulations or estimating resource requirements for waste collection services. Our specialists develop bespoke models that enable users to assess what a change in strategy will mean to them.

As far back as 2007 we worked with Shell evaluating the Best Practical Environmental Option (BPEO) for the safe disposal of the Brent Spar Oil Field platform. This was one of the first studies to look at decommissioning offshore platforms.

More recently Amec Foster Wheeler carried out a BPEO assessment for the management of drilling waste arising in the Uganda Basin. The project required an understanding of the legislation governing the management of drilling wastes in both the Ugandan and International contexts as well as evaluating the ability of a number of waste management options to meet the regulatory requirements.

In 2015 we delivered the findings of a study commissioned by the Petroleum Environmental Research Forum (PERF) to identify potential options for the management of waste streams generated at remote oil & gas facilities which become ‘stranded’ due to the lack of treatment and disposal infrastructure. This work has helped the eight participating companies assess the available options to be considered in the development of their country or location-specific waste management strategies.
**Waste contract procurement**

**Amec Foster Wheeler has a very experienced waste management contract procurement team. Starting at the pre-procurement stage, our expertise includes the development of business cases for funding and procurement risk registers.**

Amec Foster Wheeler works with client procurement teams and their legal and financial advisors to provide technical advice throughout the procurement process. We have supported both public and private sector clients on the procurement of a wide range of contracts. These include integrated (collection and treatment) contracts and contracts for new waste infrastructure.

Our role can be as a critical friend or as a core part of the contract bid team: developing solutions, writing Method Statements and identifying potential sources of project funding and partners. We also work with waste contractors seeking to develop new facilities or bidding for waste contracts, so understand what the market is capable of delivering.

Furthermore, Amec Foster Wheeler has in-depth experience of the design, planning and operation of many different waste management facilities. We have also undertaken numerous technology reviews and exercises to reach out to vendors. Our integrated teams spanning procurement, development planning, environmental impact assessment (EIA) specialists and engineers, work successfully together to maximise the benefit of the procurement process for clients and waste contractors alike, adding value to the overall project and ensuring efficient use of resources.

Our waste management team recently undertook a review of technologies and vendors relevant to the management of 15 commonly stranded waste streams produced by the oil & gas sector. Resulting in a series of waste factsheets applied against the commonly accepted waste hierarchy, our research generated a directory of suppliers (and associated contacts) to help inform future waste contract procurement decisions and associated technology due diligence.
Amec Foster Wheeler is able to provide a complete waste service to our clients including the development and delivery of waste handling, treatment or disposal infrastructure.

Our knowledge, expertise and experience in the waste sector ranges from undertaking feasibility studies through to the design, procurement, construction and commissioning of waste related infrastructure.

Our design and construction experience includes:

- Waste Transfer Stations,
- MRFs Material Recovery Facilities,
- MBT – Mechanical & Biological Treatment,
- IVC – In-vessel Composting,
- AD – Anaerobic Digestion,
- Hazardous waste treatment
- Autoclave,
- EfW energy-from-waste (including incineration, gasification, pyrolysis); and
- Landfill.

World’s largest advanced gasification energy-from-waste facility

Amec Foster Wheeler UK operation executed an EPCm contract for Air Products PLC for an advanced gasification energy-from-waste facility built at the New Energy and Technology Business Park, near Billingham, Teesside, UK. This followed our completion of the basic engineering design in our Americas operations.

The plant uses advanced gasification technology to use waste currently going to landfill to generate electricity. With an approximate capacity of 50 Megawatts, Air Products states that the new facility will be the first of its kind in the UK and the largest of its kind anywhere in the world. The plant will divert up to 350,000 metric tons of non-recyclable waste from landfill per year, helping to meet the UK’s waste diversion targets. This renewable energy facility, which will enter commercial operation in 2015, will produce enough reliable, controllable, and renewable electricity to power up to 50,000 homes. A second unit has also been designed by Amec Foster Wheeler located adjacent to first plant and is currently in the construction phase.

“The establishment of viable alternative energy sources is a fundamental part of UK government policy. Air Products investment in this project and the technology behind it is providing an opportunity in establishing a viable new energy source. Elements of the technology applied to this facility are unique and Amec Foster Wheeler has risen to the challenge of successfully integrating them together.”

“Amec Foster Wheeler has been associated with a number of “world firsts” over its long history. The quality of our technical expertise, our own experience in designing, building and operating waste-to-energy plants, and our project execution track record were all key factors in winning the EPCm contract for this ground-breaking project.”
Amec Foster Wheeler’s waste management team has recently scoped the waste infrastructure support needed on a leading oil & gas operator’s proposed development of 4 sites on the west coast of Central Africa. Integrating with existing and developing municipal waste management sites, planned new infrastructure includes:

- New landfill sites (cells);
- Sewage treatment plants;
- Small scale incinerator for dealing with clinical waste;
- Storage and bulking facility for separately collected recyclable materials;
- Bulking facilities for industrial waste;
- Treatment facilities for oily waste.

Running through design, construction, operation and clean up stages Amec Foster Wheeler’s proposals deploy a combination of experienced waste consultants and contract managers, with local sub-contractors.

Our flexibility means we can deliver waste infrastructure through a Client’s Engineer role. Alternatively we can offer a complete turnkey EPC Contractor service depending on how our clients wish to procure their developments. We have delivered waste infrastructure ranging from Transfer Stations and Recycling Facilities for public and private sector clients through to providing a complete EPC Contractor turnkey package on a waste gasification plant for a major gas manufacturing client.

Our services in the delivery of waste infrastructure includes:

- Feasibility studies;
- Business cases;
- Outline designs;
- Planning and permitting;
- FEED studies;
- Detailed design;
- Specifications;
- Contract documentation;
- Tender & procurement;
- Construction management;
- Commissioning;
- Independent certifier
- Owner’s engineer;
- EPC contractor.
Waste optimisation

The need to balance financial constraints with increased performance requires waste and resource supply chains to be optimised.

Each part of the waste management chain should add value, which can only be achieved through close partnership working, flexible contracting and with all parts working towards shared goals.

Using similar approaches to the development of waste management strategies, we assist organisations with established waste management regimes to review, revise and optimise the arrangements they have in place.

We are also able to undertake waste characterisation and audit studies to identify improvements to current management methods. When combined with our advanced waste modelling capabilities, we are able to optimise waste flows and site network planning based on a range of metrics, including cost and carbon.

We assisted a key Oil & Gas producer with the development of internal company guidelines on minimum standards for waste management, and preferred contractual arrangements for waste management sub-contractors. This guidance has facilitated the adoption of standardised good waste management practice across this global organisation, helping to reduce repeat effort, and optimising management effort.

For another client we audited the facilities of their waste management sub-contractors in the UK and across Europe, this process was used to provide a register of approved suppliers for disposal and processing of waste materials, which ultimately helped the company to minimise and control the environmental liabilities posed by several of the waste streams generated.

As part of a Waste Footprint Study for one of the major Oil & Gas producers our team developed a “Dashboard” to present the status of waste legislation, waste management infrastructure, waste data availability and management arrangements in twenty four countries where they operate. Baseline information in this form facilitates understanding of the territorial issues to be addressed in the development of efficient, effective, and environmentally responsible strategies for managing the wastes generated through the company’s operations.