

WISENVIROENVIRONMENTAL JOB PROFILE

WISEnvironmental has worked on a wide range of projects in its 20 year history, and has proven its expertise in Environmental Consulting countless times. This Job Profile summarises the key aspects of those jobs, detailing the work undertaken, the sector the work was completed for and any additional comments.

1996 - 2013

Introduction

In its 20 year history, WISenvironmental has proven its expertise in a wide range of fields, completing projects on an international scale, both within Europe and further abroad. This Job Profile provides information on the jobs WISenvironmental has accomplished, summarizing the work undertaken, the industry the client operates in and any additional comments. Projects are organized by their service type, within which they are organized in reverse chronological order for ease of reference.

PROJECT MANAGEMENT AND COMMISSIONING	2
SHUT-DOWN MAINTENANCE PROJECT MANAGEMENT	2
RECYCLING FACILITY COMMISSIONING	2
GASIFICATION COMMISSIONING	2
IMPLEMENTATION OF RECOMMENDATIONS FOLLOWING TECHNICAL STUDY	2
RECYCLING FACILITY COMMISSIONING	3
FLUE GAS TREATMENT COMMISSIONING	3
MBT PLANT COMMISSIONING	3
EFW PLANT COMMISSIONING AND PERFORMANCE EVALUATION	3
EFW PLANT COMMISSIONING	3
CREMATORIUM COMMISSIONING	3
WATER-COOLED GRATE COMMISSIONING	3
AMMONIA STRIPPER COMMISSIONING	4
MSW INCINERATOR COMMISSIONING	4
AMMONIA RECOVERY COMMISSIONING	4
EFW COMMISSIONING	4
BURNER COMMISSIONING	4
PERFORMANCE EVALUATION	5
EFW PLANT PERFORMANCE MONITORING	5
EFW HEAT BALANCE	5
PCDD/F ABATEMENT	5
HMS ILLUSTRIOUS REMEDIAL WORK	6
PERFORMANCE TESTING	6
PERFORMANCE TESTING	6
PERFORMANCE TESTING	6
TURBINE PERFORMANCE EVALUATION AND IMPROVEMENT	6
COAL FIRED PLANT EVALUATION	6
EFW PERFORMANCE EVALUATION	6
ENVIRONMENTAL MANAGEMENT SYSTEMS	7
ISO 9001 AND 14001 CERTIFICATION AUDITS	7
DESIGN AND IMPLEMENTATION OF CERTIFIABLE EMS	7
ENVIRONMENTAL MANAGEMENT SYSTEM SUPPORT	7
DESIGN AND IMPLEMENTATION OF CERTIFIABLE EMS	7
DESIGN AND IMPLEMENTATION OF CERTIFIABLE EMS	8
ENVIRONMENTAL MANAGEMENT SYSTEM SUPPORT	8
RESEARCH AND TECHNOLOGY ASSESSMENT	9
CLINICAL WASTE BPEO ASSESSMENT	9
OILFIELD CLEAN-UP TECHNOLOGY ASSESSMENT	9
WASTE TREATMENT TECHNICAL REVIEW	9
SPRAY ABSORBER SYSTEMS TECHNICAL REVIEW	9
INCINERATION STUDY	10
IRON RECOVERY POTENTIAL ASSESSMENT	10
SLUDGE INCINERATION BAT STUDY	10
EFW PROJECT REVIEW	10
ASSESSMENT OF EUROPEAN BEST RECYCLING PRACTICES	10
EFW TECHNOLOGY ASSESSMENT	10
SLUDGE CHP TECHNICAL REVIEW	10
COMBINED HEAT AND POWER PRESENTATION	11
EFW PLANT VISIT ORGANISATION	11
TECHNICAL EDITING OF EFW FACTSHEETS	11
EFW BPEO REVIEW	11
PEER REVIEW OF WISARD LCI TOOL	11
CLINICAL WASTE BPEO STUDY	11

PCDD/PCDF RISK STUDY	11
IPC POST-DEMERGER STUDY	11
E-MAINTENANCE SYSTEM INSTALLATION PREPARATION	12
TECHNICAL ECONOMIC ASSESSMENT.....	12
TRAINING	13
EMS AWARENESS WORKSHOP	13
PLANT INSTRUCTION MANUAL WRITING.....	13
INTERACTIVE TRAINING SYSTEM DEVELOPMENT	13
CREMATORIUM TRAINING.....	13
SYRINGE AND SHARPS DISPOSAL SEMINAR	13
EFW PLANT TRAINING COURSE	13
PCDD/PCDF PRESENTATION.....	13
ENVIRONMENTAL DUE DILIGENCE	14
PHASE I ENVIRONMENTAL SITE ASSESSMENT	14
REVIEW OF HTTU AND DTU	14
PHASE I ENVIRONMENTAL SITE ASSESSMENT	14
PHASE I ENVIRONMENTAL SITE ASSESSMENT	14
PHASE I & II ENVIRONMENTAL SITE ASSESSMENT	14
ENVIRONMENTAL SITE ASSESSMENT CAPACITY BUILDING PROGRAMME.....	15
PHASE I AND II ENVIRONMENTAL SITE ASSESSMENT.....	15
PHASE I ENVIRONMENTAL SITE ASSESSMENT	15
CONTAMINATED LAND VALUATION.....	15
CONTAMINATED LAND INVESTIGATION	15
PHASE I ENVIRONMENTAL SITE ASSESSMENT	16
PHASE I ENVIRONMENTAL SITE ASSESSMENT	16
PHASE II ENVIRONMENTAL SITE ASSESSMENT	16
PHASE I ENVIRONMENTAL SITE ASSESSMENT	16
BIOMASS BOILER EVALUATION	17
BIOMASS BOILER HEAT BALANCE	17
AUDITING.....	18
CLINICAL WASTE PRE-ACCEPTANCE AUDIT REVIEW	18
TECHNICAL/OPERATIONAL AUDIT.....	18
CLINICAL WASTE AUDIT.....	18
ENVIRONMENTAL HEALTH & SAFETY AUDIT	19
ENVIRONMENTAL HEALTH & SAFETY AUDIT	19
LANDFILL CONTRACT COMPLIANCE AUDIT.....	19
EH&S COMPLIANCE AUDIT.....	19
EH&S COMPLIANCE AUDIT.....	19
TECHNICAL/OPERATIONAL AUDIT.....	19
TECHNICAL/OPERATIONAL AUDIT.....	20
TECHNICAL/OPERATIONAL AUDIT.....	20
TECHNICAL/OPERATIONAL AUDIT.....	20
TECHNICAL/OPERATIONAL AUDIT.....	20
OTHER SERVICES.....	21
OJEU PROCUREMENT OF MAINTENANCE PROJECT MANAGEMENT.....	21
EXPERT WITNESS	21
EXPERT SUPPORT IN LANDFILL OPERATING COSTS.....	21
DESIGN OF A NEGATIVE PRESSURE SYSTEM	21
REGULATORY SUPPORT FOR ENVIRONMENTAL PERMITTING APPLICATION	22
ONLINE BOILER CLEANING	22
PREPARATION OF BIDDING DOCUMENTATION.....	22
PREPARATION OF OPERATING MANUALS	22

PREPARATION OF BIDDING DOCUMENTATION	22
REGULATORY SUPPORT FOR PHARE HAZARDOUS WASTE.....	22
BID SUPPORT FOR HONG KONG SHIPYARD DECONTAMINATION	22
INTERACTIVE TRAINING SYSTEM TRANSLATION	23
LOW-COST INCINERATION FOR DEVELOPING COMPANIES.....	23
EXPERT WITNESS	23

Project Management and Commissioning

WISenvironmental has a well-established track record in the project management of both the commissioning of new sites and the supervision of maintenance shutdown periods. We have successfully overseen the commissioning of several sites in recent years, managing subcontractors and ensuring their work is completed as set out in their contracts and in accordance with the relevant codes and procedures surrounding their work. By tailoring a Quality Assurance system specific to the needs of each client, *WISenvironmental* can track the progress of subcontractors and reassure the client that work has been completed in the correct manner.

A similar system is used for overseeing the routine shutdown of plants for maintenance, with *WISenvironmental* managing subcontractors on behalf of the client, organising a maintenance schedule and using a similar Quality Assurance system to monitor the progress of work and compliance with standards and contractual obligations.

Shut-down Maintenance Project Management

EfW Operator, UK

2011 - 2013

In 2011 *WISenvironmental* was contracted by a major international plant engineering and construction company to supervise the boiler cleaning and scaffolding aspects of the annual shutdown of one of three boilers at an EfW plant. A number of complementary methods were employed in order to complete the cleaning: high air flow vacuumation, manual cleaning, grit blasting and coarse cleaning with jack hammers and vibrating pokers. *WISenvironmental's* expertise ensured the projected was completed on time and under budget, resulting in *WISenvironmental* being requested by the client to return for the next 2 years of annual outages.

Recycling Facility Commissioning

Build and Infrastructure firm, UK

2008 – 2009

WISenvironmental gave assistance with technical and documentary aspects of commissioning and performance test on this state-of-the-art MRF in East London.

Gasification Commissioning

Timber Recovery Firm, UK

2008

WISenvironmental undertook a process commissioning review and has assisted with final hot commissioning tests of this innovative timber resource recovery centre. *WISenvironmental* was primarily involved with the commissioning methodology and infrastructure.

Implementation of Recommendations following Technical Study

Ministry of Defence / Engineering Consultancy, UK

2007

Following the technical study *WISenvironmental* undertook on HMS Illustrious, *WISenvironmental* aided with the implementation of the resulting recommendations, bringing the vessel's emissions under MARPOL legislation. This required retro-fitting and commissioning of modified equipment.

Recycling Facility Commissioning

Building and Infrastructure firm, UK

2006 – 2007

WISenvironmental assisted on the commissioning of a recycling site in London, and was responsible for overseeing the installation by contractors of units in accordance with their contractual obligations and the relevant standards and UK codes of practice.

Flue Gas Treatment Commissioning

EfW Plant, Sweden

2005 – 2006

WISenvironmental oversaw the commissioning of the FGT section of an EfW in Uppsala, Sweden. A seven-month presence was required to complete the commissioning, co-ordinate subcontractors, oversee performance testing and conduct operator training. WISenvironmental also observed the performance runs, optimisation set up, trouble shooting and ultimately the hand-over of the equipment. Drawing on our history of experience, WISenvironmental completed the commissioning 1 month before scheduled.

MBT Plant Commissioning

MBT Plant, UK

2005 – 2006

WISenvironmental assisted on the commissioning of a recycling site in London, and was responsible for overseeing the installation by contractors of units in accordance with their contractual obligations and the relevant standards and UK codes of practice. In addition WISenvironmental created a purpose designed Quality Assurance system allowing the client to monitor progress and quality of work carried out by the contractors.

EfW Plant Commissioning and Performance Evaluation

EfW Plant, France

2002

Working for a major EfW contractor near Lille, the purpose of this project was to optimise boiler on line cleaning, ash transport, air consumption patterns, assist with monitoring of gas residence times according to regulatory requirements and a number of other minor but crucially important aspects of the projects. WISenvironmental was contracted in to relieve pressure from the regular site commissioning team.

EfW Plant Commissioning

EfW Plant, France

2001

WISenvironmental over saw the planning, quality assurance testing and execution of cold commissioning tests of an 18t/h EfW plant in Saleise, France. WISenvironmental also delivered a week-long training course for plant operators.

Crematorium Commissioning

Crematorium, Germany

1998

WISenvironmental commissioned 2 cremation units in a Bremen crematorium, and also undertook performance tests.

Water-Cooled Grate Commissioning

EfW Plant, Germany

1999

WISenvironmental commissioned 3 new water-cooled grates for an EfW plant in Bonn, alongside aiding the commissioning of new air intake systems (primary and secondary) and a newly installed economiser.

Ammonia Stripper Commissioning

Sewage Sludge Plant, Holland

1997

WISenvironmental commissioned the ammonia stripper for a 15 t/h sewage sludge plant near Moerdijk.

MSW Incinerator Commissioning

MSW Incinerator, Germany

1997

WISenvironmental was contracted to oversee the commissioning of an activated carbon silo & feed system and a retrofitted cooler for the plant feed chute in an MSW incinerator in Bonn, culminating in rigorous testing to ensure no thermal damage was being wrought by overheated feed stock.

Ammonia Recovery Commissioning

EfW Plant, Holland

1996 – 1997

WISenvironmental was responsible for the commissioning of the ammonia SNCR recovery unit on a 70 t/h EfW plant near Rotterdam.

EfW Commissioning

EfW Plant, Bermuda

1996

WISenvironmental managed the commissioning of an EfW plant in Bermuda, undertaking site supervision, operator training and the planning & implementation of performance tests.

Burner Commissioning

EfW Plant, Norway

1996

WISenvironmental oversaw the commissioning of two auxiliary burners in a Norwegian EfW plant, including the optimisation of the controls and the supply of an infra-red temperature monitor for plant use.

Performance Evaluation

WISenvironmental has a long history of independent performance monitoring of both industrial processes and smaller scale systems, with solutions available for situations of any scale. *WISenvironmental* can use its range of **in-house software and specialist equipment** to monitor heat efficiencies, output gas compositions, and process efficiencies amongst other parameters in order to increase site efficiency and save material costs to clients.

For smaller scale situations, the process monitoring typically consists three stages:

- 1) Operations introduction – the familiarisation of the site operations to the process engineer
- 2) Inspection – the process engineer inspects operations on site and records key parameters
- 3) Report – the process engineer produces a report, verbal or written, of site operations with suggestions for improvement

EfW Plant Performance Monitoring

Several EfW Plants, UK

2011 – Present

In conjunction with KRR ProStream, *WISenvironmental* has produced the Performance Tracker package, used to produce a monthly performance report on the boiler parameters of an energy from waste plant. This included parameters such as boiler pressure drop, heat exchange coefficients, etc., all of which were used to estimate fouling rates and assist with the planning of cleaning efforts in the boiler.

EfW Heat Balance

EfW Plant, UK

2009

WISenvironmental was commissioned by a major UK EfW operator to design and implement a methodology to complete a heat balance verification and design a calorific value calculator for their boiler. The study is pre-requisite for an automatic combustion control system optimisation. The system can produce a continuous real time assessment of the calorific value of the MSW treated.

PCDD/F Abatement

EfW Plant, UK

2008

WISenvironmental completed a research project into the abatement optimisation of PCDD/F releases to air from an operating EfW plant. The project allowed the client to introduce measures which kept emissions reliably below the legally required threshold. This was a detailed problem analysis project based on a tested methodology and the wide-ranging experience of *WISenvironmental* on the subject of PCDD/F abatement.

HMS Illustrious Remedial Work

Ministry of Defence / Engineering Consultancy, UK

2007

Following the modifications done to the HMS Illustrious, *WISenvironmental* aided with the remedial tweaking of the control system and furnace seals to ensure the incinerator could be properly monitored and controlled.

Performance Testing

EfW Plant, France

2001

WISenvironmental ran performance tests on 3 lines of an EfW plant in Rouen, each with a capacity of 15 t/h.

Performance Testing

EfW Plant, France

2000

As part of the commissioning of an EfW plant in Rouen, *WISenvironmental* ran calibration and verification tests on 3 waste lines, with a capacity of 15 t/h each.

Performance Testing

MSW Incinerator, France

1998 – 1999

WISenvironmental designed and implemented the compliance tests of a 9 t/h of and MSW incinerator near Paris at both the 1500 hour and 4000 hour timescales, ensuring a swift and easy handover from contractor to client.

Turbine Performance Evaluation and Improvement

EfW Plant, UK

1999

WISenvironmental investigated the poor vacuum conditions occurring within the condenser of an EfW boiler, which was causing a drop-off in overall plant efficiency. With the problem identified, *WISenvironmental* performed remedial action to rectify the issue resulting in increased operational efficiency and stability.

Coal Fired Plant Evaluation

Brewery, UK

1997

WISenvironmental conducted a day-long analysis of the performance of a small coal-fired power generator operated by a UK brewery. A report was drawn up summarising the results, including recommendations for improving the plant efficiency and a cost analysis of these improvements.

EfW Performance Evaluation

EfW Plant, Switzerland

1996 – 1997

WISenvironmental was involved with troubleshooting the performance of an EfW plant in Turgi, including the optimisation of pH control systems, and the commissioning of two buffer tanks to allow reduced performance during downtime.

Environmental Management Systems

WISenvironmental has helped many companies design and implement an environmental management system (EMS) tailored for their specific needs to receive ISO 14001 certification. By doing so, clients are able to improve their efficiencies, driving down costs and minimising their impact on the environment, and prove their commitment to sustainable development. *WISenvironmental* has experience at all stages in the development of such systems, from initial gap analysis, alerting the client to the difference between current performance and potential objectives, through to annual external auditing to ensure the certification is maintained, acting as lead auditors for DNV Certification, conducting more than 15 EMS compliance audits per year.

WISenvironmental is proud to have developed its own EMS, achieving ISO 14001 certification and is currently working on developing an Energy Management System (EnMS) as it works towards attaining ISO 50001 certification.

ISO 9001 and 14001 Certification Audits

DNV Certification Services, UK

2008 – Present

WISenvironmental employs a registered auditor for both ISO 9001 and 14001, and undertakes audits under DNV. Over 30 sites have been audited, including EfW plants, waste management companies, pharmaceutical companies, and a *WISenvironmental* Principal is a registered EMS auditor with the International Register of Certificated Auditors (IRCA).

Design and Implementation of Certifiable EMS

Pharmaceuticals Company, UK

2009 - 2011

WISenvironmental designed and implemented an environmental management system for a large pharmaceutical company that achieved ISO 14001 certification at the end of 2011. The initial environmental review and register of environmental aspects were both completed in late 2009.

Environmental Management System Support

Administrative Services Company, UK

2009

WISenvironmental produced an accompanying Environmental Management System Manual to support a pre-existing EMS of a UK service centre. The manual specified targets, procedures and corrective actions the company should take when necessary.

Design and Implementation of Certifiable EMS

Waste Recycling Company

2007 – 2008

WISenvironmental provided an interim manager to a waste recycling company to handle the design and implementation of an EMS for several Dorset-based recycling centres. This included the organisation and presentation of information at four EMS training workshops, preparation of an EMS employee handbook and the undertaking of internal audits, resulting in ISO 14001 accreditation in 2008.

Design and Implementation of Certifiable EMS

Automotive manufacturing firm

2005 – 2007

WISenvironmental designed and implemented the environmental management system for 3 facilities of a 1,700-strong automotive products manufacturing company to conform to ISO 14001 standards.

Environmental Management System Support

Green Globe, Jordan & Palestine

2001

WISenvironmental provided support in the development of the destination award programme, following the completion of Green Globe's consultant course. This was carried out in two phases, focusing on two tourist sites within the Middle East – the New Baptism Site in Bethany, Jordan and the Old Town of Bethlehem in Palestine. The first phase involved meeting with key stakeholders of both sites to discuss the development and management of each site and the key issues that influence site sustainability, which formed the basis of the report used in the implementation of the EMS.

Research and Technology Assessment

WISenvironmental has been called upon by many clients to undertake technical research on their behalf, due to the familiarity of specialist topics the company has been working in for 20 years. This research has come in the form of technical reviews, applicability studies of theoretical processes and analysis of testing data to provide recommendations to clients on how to overcome process difficulties.

Clinical Waste BPEO Assessment

Major Oil Producing Company, Georgia

2013

WISenvironmental was sub-contracted to provide specialist incineration knowledge on the treatment of clinical waste in Georgia. This involved the review of an existing BPEO, bringing detailed information of the incineration process to the report, following through to the generation of emissions data as an input into an Environmental Impact Assessment.

Oilfield Clean-up Technology Assessment

UNEP, Nigeria

2010

WISenvironmental participated in the United Nations Environment Programme's project, carried out at the request of the Nigerian government, to independently assess the environmental impact of oil-field contamination in the Ogoni Region of south-west Nigeria. The over-riding objective of *WISenvironmental*'s task was to identify the range of possible full-scale remediation technologies available commercially for oil-contaminated soils and sediments and to present their indicative costs, resource requirements, operational footprint and possible output specifications. Site visits were carried out by the project team process engineers to three locations in Belgium at the invitation of private sector operators to witness and assess the suitability of full-scale soil washing, bioremediation and thermal desorption operations. The principal participated in a 2-day progress workshop convened in Geneva in October 2010.

Waste Treatment Technical Review

Major Oil Producing Company, Azerbaijan

2008

WISenvironmental prepared a technical review of small hazardous waste incinerators capable of treating waste produced by a water treatment plant in Azerbaijan. The output of the study was a short list of potential technologies, with performance indicators and cost analysis.

Spray Absorber Systems Technical Review

EfW Plant, UK

2007

WISenvironmental was commissioned to address corrosion and agglomeration of lime/APC residue of the Spray Absorber in the Flue Gas Treatment unit of a large EfW plant. HCl abatement optimisation was also addressed. The review of the system and the proposed solutions led to the reduction of additive cost, improvement of the system reliability and to a better acid gas abatement quality.

Incineration Study

Ministry of Defence / Engineering Consultancy, UK

2007

WISenvironmental was commissioned to produce a technical study on problems observed in the Advanced Incineration System (AIS) installed on HMS Illustrious. Observations from site visits were the basis for the technical report. From data collected a number of hypothesis were proposed and analysed as to the probable causes for the problems observed. A series of recommendations regarding remedial actions were identified and presented.

Iron Recovery Potential Assessment

Steel manufacturer, UK

2004

This project was designed by *WISenvironmental* to assist in identifying future sources of non-separate collection ferrous metal from MSW. The 3-step program of research started with a search of Environmental Agency Public Register information, followed by an assessment of Local Authority (LA) recycling data (in order to target only areas where recycling is poor and where a larger percentage of MSW consists of ferrous metal). The last step consisted of talking to the major waste management contractors in England and Wales and also of analysing the technical and financial merits of increased ferrous metal extraction from the MSW Stream in dirty MRFs and composting, MBT plants and transfer stations.

Sludge Incineration BAT Study

Large Water Company, UK

2004

WISenvironmental undertook a BAT assessment for the sludge incinerator for a large water company. *WISenvironmental*'s responsibility, as part of an assessor team, was for the combustion and abatement process aspects of the application.

EfW Project Review

Guernsey

2002

WISenvironmental reviewed potential technical problems for an EfW plant on the small, highly populated island of Guernsey, and how this would differ from mainland EfW plants. Several differences in methods were highlighted due to the difference in available resources.

Assessment of European Best Recycling Practices

Resources Recovery Forum, UK

2002

WISenvironmental was involved in the research undertaken by the Resources Recovery Forum investigating best recycling practices in mainland Europe. *WISenvironmental* facilitated the introduction to and site visits of several EfW plants throughout Europe, including plants in Switzerland, Austria, Germany and Holland.

EfW Technology Assessment

LAWDC, UK

2000

WISenvironmental held a number of workshops for a UK Local Authority Waste Disposal Company to inform their decision making regarding the construction of an EfW plant, including a mini-study on CHP planning issues.

Sludge CHP Technical Review

Engineering Consultancy, UK

2000

WISenvironmental undertook a technical review of combined heat and power generation from a sludge waste on behalf of an engineering consultancy firm.

Combined Heat and Power Presentation

Green Park Scheme, UK

2000

WISenvironmental conducted research on the various uses of CHP plants on the scale of domestic to industrial, which was then presented at the Green Park Scheme at the Eden Project.

EfW Plant Visit Organisation

English County Councils, UK

2000

WISenvironmental arranged and reported on the visits of several County Council Officers to EfW plants throughout the UK to provide better understanding of the technical complexity of EfW to help with future decision making.

Technical Editing of EfW Factsheets

Engineering Consultancy Firm, UK

2000

WISenvironmental performed the technical editing of prepared EfW factsheets to verify the information contained within them was accurate and reliable, covering a wide range of EfW methods including gasification, pyrolysis and fluidised beds.

EfW BPEO Review

Engineering Consultancy Firm, UK

1999

WISenvironmental was the secondary reviewer of a pre-written best practicable environmental option review for MSW energy recovery.

Peer Review of WISARD LCI Tool

Department of Energy, UK

1999

In this project *WISenvironmental* reviewed the data acquisition and implementation methods used to develop the WISARD Life Cycle Inventory tool developed by the Department of Energy. In conjunction with another consultancy, *WISenvironmental* completed data-gathering on current EfW plants for the database, which was unveiled in December 1999.

Clinical Waste BPEO Study

Clinical Waste Incinerator, UK

1998-1999

Required by the Environment Agency, *WISenvironmental* undertook a Best Practicable Environmental Option study on clinical waste disposal on behalf of an incinerator, alongside flue gas treatment methods. This study was used by the client to acquire an IPC licence for the incineration of clinical waste, with *WISenvironmental* providing assistance during the application phase.

PCDD/PCDF Risk Study

Private Sector Client, UK

1998

WISenvironmental assessed the risk to office workers from a neighbouring NHS clinical waste incinerator, focusing on the production of PCDD and PCDF.

IPC Post-Demerger Study

Waste Contractor UK

1998

WISenvironmental assisted a UK waste contractor with the contract arrangements necessary to settle IPC shared utility use.

E-Maintenance System Installation Preparation

EfW Plant, Germany

1996

For an advanced computer-based maintenance system in an EfW plant in Bonn, *WISenvironmental* prepared the input data for the plant.

Technical Economic Assessment

Primary Project Financing Institution, Italy

1996

WISenvironmental produced a technical economic assessment for the financial backer of an EfW plant in Northern Italy, detailing the waste trajectory from kerb-side collection, energy recovery and waste minimisation.

Training

WISenvironmental is also proven at providing environmental training for staff, which can be included as part of the commissioning of a plant, or can be used to introduce new systems, such as EMS, to staff. The scope of the training can be tailored to fit the client's needs, to ensure their staff are brought up to speed with all the relevant information.

EMS Awareness Workshop

Service Company, UK

2008

WISenvironmental designed and presented a one-day EMS awareness workshop, training staff and new employees of a major UK service company in the details of the pre-existing EMS, on behalf of DNV.

Plant Instruction Manual Writing

EfW Plant, Sweden

2005

WISenvironmental produced the MCR documents (Logics, Programming Data, Operating Manual, Subcontractor Co-ordination) for the flue gas treatment section of an EfW plant in Uppsala.

Interactive Training System Development

EfW Plant, France

2001

WISenvironmental developed an interactive training system for an EfW plant near Lille designed to train plant operators electronically in combination with individual coaching and training. The system allowed operators to complete their training at their own pace, and culminated in a final examination to prove their competence with the system.

Crematorium Training

Crematorium, Germany

2000

WISenvironmental finalised operational documentation and provided the operating manual and operator training for the operation of a crematorium in Bremen.

Syringe and Sharps Disposal Seminar

World Health Organisation, Kazakhstan

1999

The World Health Organisation requested that *WISenvironmental* presented information on the technical and environmental aspects of syringe and sharp disposal at a seminar in Kazakhstan.

EfW Plant Training Course

EfW Plant, France

1999

WISenvironmental delivered a paper-based training course for plant operators of an EfW plant in Rouen.

PCDD/PCDF Presentation

EfW Plant / Local Authority, France

1998

WISenvironmental gave a presentation to both the operators of an EfW plant and the local authority in Brest regarding the emissions of PCDD/PCDF from incineration and the various methods of abatement.

WISenvironmental, Home Farm Business Unit 7, Loseley Park, Guildford, Surrey, GU3 1HS

T: +44 (0)1483 569 965, E: info@wisenvironmental.co.uk

www.wisenvironmental.co.uk

Environmental Due Diligence

WISenvironmental employs registered environmental auditors and can carry out on-site evaluations of conditions, assess historic environmentally hazardous risks, and risks to neighbouring properties, through the examination of relevant documents and interviews with key personnel. If a Phase I Environmental Site Assessment (ESA) deems it necessary, *WISenvironmental* has the experience to carry out a Phase II ESA, involving chemical analysis of the site for hazardous substances and petroleum hydrocarbons.

Phase I Environmental Site Assessment

Architecture Firm, UK

2010

WISenvironmental Environmental Management & Compliance Division was commissioned by a firm of architects in West London to carry out a Phase 1 Environmental Site Assessment (Phase 1 Audit) to support the application for planning permission to the local planning authority to change the use of the premises from offices to residential.

Review of HTTU and DTU

Oil and Gas Firm, Angola

2010

A major oil producer, which operates oil and gas exploration and production activities in Angola, generated a range of non-hazardous and hazardous wastes that needed to be managed in accordance with Angolan and international law and best practice. The company used a third party to dispose of the majority of its waste, and its duty of care triggered the review. Due to the technical specialism required to fully understand incineration technology and current best practice landfill management, the company commissioned a team of waste treatment experts including *WISenvironmental* to provide technical assistance.

Phase I Environmental Site Assessment

Engineering Consultancy, Ireland

2008

Acting as a sub-contractor to an environmental engineering consultancy, *WISenvironmental* provided an environmental expert to participate in an M&A due diligence in Northern Ireland for a multinational organisation.

Phase I Environmental Site Assessment

Engineering Consultancy, Ireland

2007

On behalf of an environmental engineering consultancy, the company provided the lead auditor for a pre-acquisition Phase I ESA of 2 large sites in west and central Ireland for a leading global multinational healthcare equipment manufacturer. The audit team included a health & safety expert and a biohazards expert.

Phase I & II Environmental Site Assessment

Oil and Gas Firm, Scotland

2005

WISenvironmental planned, implemented and reported on a Phase I pre-acquisition Environmental Site Assessment and HSE regulatory compliance review with limited soil and shallow groundwater sampling using drive-in piezometers at a Dutch manufacturing facility. *WISenvironmental's* responsibilities included selecting, instructing and liaising with the

analytical laboratory. Interpret the results, conduct a Tier 1 risk assessment and provide recommendations for further actions. The facility manufactures industrial process equipment to remove odour from food processing plant air emissions.

Environmental Site Assessment Capacity Building Programme

UNEP Post-Conflict Branch, Iraq

2004 – 2005

WISenvironmental prepared and delivered 4 capacity-building workshops in Amman, Jordan and Geneva for UNEP to introduce the theory and practice of Environmental Site Assessment to Iraqi environmental professionals delegated by the Iraqi Ministry of Environment. Workshop 1 included a one-day 'hands-on' initial environmental assessment of a quarry and cement manufacturing plant near Amman. Workshop 2 included training in the use of field monitoring and testing equipment for use by the delegates at 5 selected pilot conflict-damaged contaminated sites in Iraq. Sampling and analysis plans for the pilot sites were jointly prepared early in 2005 and a 4th workshop on risk assessment took place in mid-2005. Preliminary clean-up took place subsequently at 2 of the sites: former small arms manufacturing factory and a Ministry of Agriculture pesticide distribution warehouse.

Phase I and II Environmental Site Assessment

Oil and Gas Firm, Holland

2004

WISenvironmental planned, implemented and reported on a Phase I pre-acquisition Environmental Site Assessment and HSE regulatory compliance review with limited soil and shallow groundwater sampling using drive-in piezometers at a Dutch manufacturing facility. *WISenvironmental* selected, instructed and liaised with the analytical laboratory. Interpret the results, conduct a Tier 1 risk assessment and provide recommendations for further actions. The facility manufactures industrial process equipment to remove odour from food processing plant air emissions.

Phase I Environmental Site Assessment

Environmental Engineering Consultancy, UK

2003

Phase I pre-acquisition audits of two assembly, repair & overhaul facilities operating within the aerospace sector and located near two major London airports on behalf of a major US multinational corporation.

Contaminated Land Valuation

Solicitors, UK

2001 – 2002

Retained through a local firm of solicitors acting on behalf of the owner of contaminated land near King's Lynn, *WISenvironmental* assessed the results of previous site investigations and analytical data available and provided an expert opinion on data quality and interpretation, the proposed remediation strategy, clean-up costs for the whole site and the apportionment of costs to the client's property. This enabled the client to negotiate a fair price for the land to account for the necessary clean-up costs.

Contaminated Land Investigation

Environmental Engineering Consultancy, UK

2001 – 2002

WISenvironmental took the role of Team Leader and Competent Person on environmental assessment site investigations at three sites in the UK. The Health, Safety and Environmental Plan for the larger two of the three properties followed the requirements of the Construction (Design and Management) Regulations, 1994. The projects included drilling boreholes, collecting soil samples, utilising Chain-of-Custody procedures, installing monitoring wells in addition to sampling and monitoring both groundwater and gas in the field using field instruments on four occasions over an eight-week period following well installation.

WISenvironmental, Home Farm Business Unit 7, Loseley Park, Guildford, Surrey, GU3 1HS

T: +44 (0)1483 569 965, E: info@wisenvironmental.co.uk

www.wisenvironmental.co.uk

Phase I Environmental Site Assessment

Manufacturing Firm, Austria

2000

WISenvironmental undertook a Phase I pre-acquisition environmental due diligence assessment was carried out at a manufacturing plant in Linz, with a plant floor area of 6,500 square metres and a site area of 22,000 square metres. The principal issue was the abstraction of groundwater from a well on site located in a hydrogeological down-gradient position that was in use as both a process source and a drinking water supply to the facility.

Phase I Environmental Site Assessment

Telecommunications Firm, Turkey

2000

A Phase I lease pre-acquisition environmental due diligence assessment was carried out by *WISenvironmental* at an office in Ankara. The office in question had a floor area of 120 square metres and was located in a complex of 61,000 square metres. The principal issues included concerns about the quality of the car-park air, the absence of a procedure to manage the environmental risks associated with the storage and refilling of bulk oil at the property and noise generated by the electricity generators roof-located air chillers.

Phase II Environmental Site Assessment

Property Developer, UK

2000

A Phase II environmental site investigation was carried out on the site of an old printing works, of approximately 5 hectares in Hayes. The property had a substantial history of uses both past and current that may have resulted in contamination of soils and shallow groundwater on site. Four underground storage tanks were located on the property, of which two of these were still in use at the time of the investigation.

Phase I Environmental Site Assessment

Waste Recycling Site, UK

1998

Preparation of a pre-acquisition environmental audit of the site for Waste Recycling Group in co-operation with an environmental engineering consultancy.

Biomass Boiler Evaluation

WISenvironmental, in partnership with *Mercia Energy*, is capable of monitoring and improving the performance of biomass boilers. Biomass boilers are an environmentally friendly alternative to fossil fuel heating, with the carbon emissions from burning neutralised by the carbon dioxide consumed by the living tree, falling within the Renewable Heat Incentive's financial reward system.

WISenvironmental offers an independent analysis of boiler performance, identifying and rectifying areas preventing the optimal operating of the boiler. *WISenvironmental* also works in concert with *Mercia Energy* to perform annual servicing on biomass boilers, monitoring efficiency and gas emissions to ensure they meet the legal requirements set out in the Renewable Heat Incentive.

Biomass Boiler Heat Balance

Mercia Energy, UK

2011

WISenvironmental was commissioned by *Mercia Energy* to perform a Heat Balance Calculation on one of a number of biomass boilers installed in 2009. The boiler owner was concerned that the biomass boilers supplied and commissioned were running below their expected efficiency range of around 90%. To validate this claim *WISenvironmental* performed a test run to monitor the boiler's performance and verify whether these concerns were real or perceived. The exercise not only confirmed that heat losses were occurring, but it also identified the location of the main heat loss. The client was able to target the problem area, which ultimately resulted in improved efficiency.

Auditing

WISenvironmental has strong experience in undertaking audits on behalf of plant operators themselves or on behalf of legal firms and other such non-operational companies.

WISenvironmental has experience in three key forms of auditing:

- 1) Environmental Health and Safety Compliance – *WISenvironmental* can provide environmental expertise on these audits as part of a team, assessing the legal compliance and environmental impact of operations
- 2) Technical/Operational Audit – *WISenvironmental* can undertake audits on plants to ensure legal compliance regarding emissions and other waste streams. *WISenvironmental* can also analyse plant performance, pinpointing key risks both to health and safety and to operational issues.
- 3) Clinical Waste Audit – *WISenvironmental* can perform Pre-Acceptance and Acceptance audits for clinical waste disposal. This can be performed alongside an external audit of a firm's environmental management system or separately as required.

Clinical Waste Pre-Acceptance Audit Review

EfW Plant, UK

2013

On behalf of a UK clinical waste incinerator, *WISenvironmental* reviewed both the pre-acceptance audits submitted by producers and the internal audit review procedure to check compliance with Environmental Agency guideline EPR 5.07.

Technical/Operational Audit

Insurance Firm

2012 – 2013

WISenvironmental was commissioned to investigate the causes of an accident arising at an anaerobic digestion plant in the UK. The scope also included the examination and recommendation of operational and design modifications in order to safely restart the plant and avoid any further failure. This work was commissioned by a firm of lawyers following an overpressure accident, causing a spillage of the contents of the plant into immediate surroundings.

Clinical Waste Audit

EfW Plant, UK

2010

The *WISenvironmental* team was commissioned by a major EfW Operator to carry out an audit of the clinical waste incineration operations. The site operations audited were the 'receipt and storage of clinical and specified hazardous wastes, through pre-treatment and incineration to despatch of residual waste'. *WISenvironmental* audited and reported on the following activities: measures undertaken pre-acceptance and upon delivery of the waste to the site; measures for waste storage and handling; measures for the control of emissions to air, surface water and sewer.

Environmental Health & Safety Audit

Environmental Engineering Consultancy, UK

2010

WISenvironmental provided expert environmental support to a 2-man, US-led team carrying out an EH&S Compliance Assurance audit of an epoxy-resin manufacturing plant, a large tank fabrication plant and a hydrogen manufacturing plant in England and Wales. The epoxy resin plant was re-audited in 2010 along with a gas distribution facility in the West Midlands.

Environmental Health & Safety Audit

Various Firms, Ireland

2006 – 2008

WISenvironmental has provided expert environmental advice on many EH&S compliance audits in Northern Ireland to a US-based lead auditor within the food, healthcare, pharmaceuticals and manufacturing industries.

Landfill Contract Compliance Audit

Oxfordshire County Council, UK

2006 – 2007

WISenvironmental produced a Landfill Performance methodology on behalf of Oxfordshire County Council Waste Management Department to enable them to demonstrate Best Value for the landfill service provided at four landfills by three major national waste management companies. The methodology focussed on compliance with the requirements of operators' licences, consents, permissions and working plans.

EH&S Compliance Audit

Environmental Engineering Consultancy, UK

2003 – 2004

A corporate EH&S team commissioned *WISenvironmental* to carry out an Environmental Compliance Audit at a Part B LAAPC-authorized electronics manufacturing plant located in SW England. The audit involved providing initial guidance for site personnel in the areas identified for corrective action. Support to address the CAs was provided in a second week-long site-based phase in early 2004 that included writing procedures for the management of chemicals and waste, dust and solvents and providing training in their use.

EH&S Compliance Audit

Oxfordshire County Council, UK

2003

A methodology was devised by *WISenvironmental*, on behalf of the Environmental Services section of Oxfordshire County Council to routinely audit the operational performance of the County's eight Waste Recycling Centres. Baseline assessment reports were produced and the findings for each were reviewed with each of the site operators. The methodology focuses on compliance with the requirements of industry good practice and good health & safety management. The methodology utilised the Audit and Agenda Modules of the environmental information management system E Quest.

Technical/Operational Audit

EfW Plant, France

2001 – 2003

WISenvironmental reviewed the performance of an EfW plant in La Rochelle, and its operators, covering specific operating characteristics and conducted bench marking. This was as part of an audit team covering legal, financial and technical aspects, and was undertaken on behalf of the Local Authority.

Technical/Operational Audit

NHS Trust, UK

2003

A high PCDD/F release to air from a NHS Trust clinical waste incinerator was the subject of this technology-based project. *WISenvironmental* assisted with investigations and a report, which led to the operator regaining compliance. We also produced an outlined strategy for compliance with the EU Waste Incineration Directive.

Technical/Operational Audit

EfW Plant, France

2000

WISenvironmental had technical input in the operational audit of the flue gas treatment of an EfW plant in Western France, with the aim of ensuring the plant met legislative compliance.

Technical/Operational Audit

EfW Plant, France

2000

WISenvironmental conducted this audit to explore what measures would be needed to adapt the 25 year old lines 1 & 2 to the changing MSW properties, increase MSW throughput and optimise energy usage. The first successful measures were implemented immediately after the on-site work, which immediately led to efficiency gains.

Technical/Operational Audit

Joinery, UK

2000

WISenvironmental audited a joinery in Hydestile to establish existing waste generation patterns and propose alternative outlets. As a result of the study waste management costs were reduced and a more sustainable operation achieved.

Other Services

In addition to the services mentioned throughout the Job Profile, *WISenvironmental* has been tasked to perform several bespoke tasks during its long history. These include providing regulatory support of environmental compliance applications, appearing as an expert witness in environmental cases, documentation review, and many more.

OJEU Procurement of Maintenance Project Management

EfW Operator, UK

2010 - 2013

An EfW plant operator commissioned *WISenvironmental* to manage the procurement process for its thermal insulation and refractory repairs & maintenance following European Regulations. This was a delicate project that required a transparent process whilst maintaining a fair opportunity to all potential providers. Extensive market research, followed by appropriate advertising resulted in a substantial number of expressions of interest and a significant number of tenders were submitted. *WISenvironmental* managed the project from inception through to completion when two contracts were awarded, ensuring the client obtained the most cost-effective and technically-sound solution.

Expert Witness

Law Firm, Ireland

2011

WISenvironmental was engaged as an expert witness by a Dublin law firm in support of a civil action taken by the law firm's Dutch client who sued for damages resulting from the alleged misclassification and mismanagement of hazardous waste exported from a pharmaceuticals manufacturing facility in Ireland to a treatment facility in Belgium under Transfrontier Shipment regulations. Process residues from the treatment facility were supplied to the animal feed chain. The matter came to light when Dutch pig farmers complained to their regulators of health problems in their animals and the identification of contaminants allegedly from the treatment facility in pig feed in mid-2002. The action was taken against the waste producer and their waste brokers at the time of the incident.

Expert Support in Landfill Operating Costs

Oxfordshire County Council, UK

2006 - 2011

WISenvironmental acted for Oxfordshire County Council in reviewing and responding to a 'Cost Pass Through' claim submitted by a contracted landfill operator for unexpected costs accrued over a 10-year period in the operation of a landfill between 1994 and 2004. A second CPT for the period 2004-2008 was reviewed in 2010-11 and a third CPT was reviewed in 2011.

Design of a Negative Pressure System

Building and Infrastructure Firm, UK

2009

WISenvironmental has produced the necessary technical documentation for submission to the EA for a negative air composting aeration system. The forced mechanical aeration system has been successfully tested by the composting company carrying out the modifications. The system was designed for an existing (non-aerated operation) composting facility in order to tackle odour nuisance as well as increase the aeration rate. The project has allowed the client to comply with EA requirements and to improve the overall composting rate.

Regulatory Support for Environmental Permitting Application

Haulage Firm, UK

2000 - 2006

WISenvironmental prepared the waste management licence application and wrote the supporting risk assessment and Working Plan for a waste transfer station in the Bromley area of London in 2000. A performance audit of site operations was carried out in 2004. Other activities have included the preparation of an updated Working Plan and commissioning a noise survey following a request by the Environment Agency to the licence holder. *WISenvironmental* also prepared a second Working Plan for a second licence in 2005, and produced an Environmental Performance report in early 2006.

Online Boiler Cleaning

WISenvironmental, UK

2000 - 2004

WISenvironmental was the sole licensee of the novel Bang & Clean online Pressure Wave Treatment until 2004, whereupon *KRR ProStream* took over the licence and cleaning operations from *WISenvironmental*.

Preparation of Bidding Documentation

Engineering Consultancy Firm, UK

2003

WISenvironmental was contracted to produce bidding documentation for the Eden Project (Stage 1&2) for contractors to bid for the supply of an anaerobic digester. The documentation made formal recommendations regarding the plant type, suitable tenders and procurement, installation and commissioning requirements.

Preparation of Operating Manuals

EfW Plant, Switzerland

2003

WISenvironmental prepared technical documentation for two French EfW projects, allowing the contractor to accelerate commissioning and hand-over procedures. *WISenvironmental* was chosen to outsource these activities due to our knowledge of the process, familiarity with procedures and grasp of the French language.

Preparation of Bidding Documentation

Plant Operations Firm, Switzerland

2002 – 2003

WISenvironmental prepared the bidding documentation for the yearly upkeep work package for an EfW plant. This involved summarising all maintenance activities in one document. This allowed construction of a bidding document, in order for contractors to compete on a level playing field. This work was carried out through a Swiss consultancy specialising in maintenance management for the Geneva Local Authority.

Regulatory Support for PHARE Hazardous Waste

PHARE, Europe

2001 – 2002

WISenvironmental acted as Technical Specialist for the preparation of contract documentation and Terms of Reference for conducting site visits and risk assessments (and the subsequent remediation and restoration plans) for waste landfill sites in Malta and Latvia.

Bid Support for Hong Kong Shipyard Decontamination

Engineering Consultancy Firm, UK

2002

WISenvironmental formed part of the technical team supporting a bid for the decontamination elements of the government tender for the decommissioning works for

Hong Kong shipyard. The decontamination processes specified in the bid include technical, operational, environmental mitigation, monitoring and auditing aspects of bio-piling, solidification and the high temperature thermal destruction of soils contaminated by TPH, metals and dioxins respectively.

Interactive Training System Translation

EfW Plant, USA

2001 – 2002

WISenvironmental was commissioned to produce a translation of the interactive training system they had produced for use by an American EfW plant.

Low-Cost Incineration for Developing Companies

Department for International Development, UK

1999 – 2001

WISenvironmental was involved with a 2-year project for the Department for International Development (DFID) to develop a cost-effective plant which will be built as a pilot in the UK followed by a working plant overseas. A later step in this project (September 2001) was the final design phase of the UK test rig. In addition to being of a technically and economically appropriate design, environmental and social aspects of the project had to be taken into account. In the latest Phase the test rig was taken through a test program demonstrating the technical feasibility of the design.

Expert Witness

Her Majesty's Inspectorate of Pollution, UK

1996

WISenvironmental acted as an expert witness in the field of combustion and dioxin abatement in the widely publicised case of HMIP v. Coalite Products Limited.