

## CONTENTS

Company Profile

Engineering Solutions

Key Clients

Projects

Astral - Strategic Alliance

Contact Form

## Company Profile



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**ess consulting** will critically review practical sustainability of infrastructure development policies and projects from the perspective of any stakeholder in a project.

### Background

**ess consulting** has evolved from a background of general infrastructure management, design, and project development. **ess consulting's** pedigree derives from the Water and Energy Sectors. Management of the water cycle usually demands energy and energy production invariably uses water. Energy and Water developments are mutually dependent and **ess consulting** brings together an understanding of the inter-relationship of both, their impact on the environment and on 'sustainability'.

### Operating Philosophy

Useful Water and Energy are finite commodities. Used-water recycling, waste minimisation, energy recovery, energy efficient water and waste-water management, and the impact of a project on the water environment need early consideration in the life cycle of most infrastructure projects. Understanding the implications of the water/energy cycles at the very earliest stages of project development will have the greatest benefit for successful project delivery and the 'bottom line'. 'Greening' of corporate strategies and the impact of the 'renewables obligation', the 'climate change levy', the 'landfill tax', 'IPPC', water and energy costs, etc. on profit margins must all be understood to enhance the ultimate value of any project.

### Services

**ess consulting** will advise on economic impact of projects at strategic or specific, regional or business levels. **ess consulting** stresses the value of ensuring that the views of all the key stakeholders to a policy or project are accounted for and, to this end, can facilitate, or actively participate in, structured 'value/risk management' programmes for project definition, development and whole life value optimisation.

**ess consulting** will project manage individual, or a package of related projects, to ensure that asset investment plans are delivered to cost, time and quality objectives. **ess consulting** understands that delivering 'value for money' is essential for the business competitiveness of client organisations and, hence, for its own business development. **ess consulting** is used to working in procurement environments featuring, 'partnering/alliancing', 'DBFO', 'D&B', etc., where 'best value' is a primary goal.

## Environmental Solutions

### Development Studies

#### Infrastructure investment reviews and appraisals

**ess consulting** specialises in the strategic level review of water and energy assets and investment appraisals at regional, area, company, and project levels.

The company and its associates have successfully undertaken the following:

- Regional energy sector audit,
- Development Authority energy strategy review,
- County area opportunity development strategy from major power station infrastructure proposal,
- Resource productivity review through area heat and power utilisation opportunities from a proposed 550MW CCGT power station,
- Supply chain development reviews and action plans,
- Area sewage treatment asset rationalisation strategies and implementation,
- Sewerage operation and maintenance audits,
- Outline review of water company assets for small scale hydro-power developments,
- Wastewater and sewerage asset surveys and network analyses,
- Drainage area studies,
- Sludge biosolids management strategies,
- Wastewater treatment plant process optimisation reviews,
- Water and wastewater treatment operation and maintenance reviews,
- Project feasibility studies and project definition statements,
- Project risk assessment and value management reviews,
- Odour mapping.

**ess consulting** offers to critically examine and advise on water and/or energy sector issues at all levels of stakeholder input to infrastructure facilitation, development, operation or maintenance.

#### REGIONAL

Sector Audits

Area Development Plans

Drainage Area Plans

Resource Productivity

Strategy Planning

#### COMPANY

Process Reviews

Asset Studies

Investment Strategies

Regulator Compliance

Project Feasibility

#### PROJECT

Optioneering

Definition

Procurement Mapping

Whole Life Costing

Peer Reviews

## Environmental Solutions

### Wastewater/biosolids

#### Sewerage, wastewater treatment and sludge biosolids

**ess engineers** engineers are involved in the conception, planning, project management, evaluation and design, construction and operation and maintenance of wastewater management systems. The company offers a full range of specialist services including:

- Project management.
- Appraisal studies and scheme definition.
- Design of wastewater and effluent treatment systems.
- Design of public/industrial sewerage systems.
- Design of industrial wastewater treatment systems.
- Data collection and flow survey procurement.
- Hydraulic design.
- Sewer rehabilitation strategies.
- HAZOP studies.
- Procurement of package treatment plants.
- Consents and approvals.
- Asset management planning.
- Odour management.

**ess consulting** offers the experience to investigate all wastewater and contamination issues; optioneer and select the most appropriate technology; and ensure compliance with environmental regulations. Our network of consultants have an extensive track record of successful completion of wastewater treatment and networks, capital planning, and project delivery. Projects have ranged from first time sewerage facilities for rural communities through network area studies and rehabilitation schemes to regional sewage treatment works.

#### PLANNING STAGE

Flow and Load Assessments

Characterisation & Modelling

Feasibility Studies

Operation & Process Selection

Advanced & Natural Treatment Options

Sludge Disposal

#### DETAILED DESIGN

Operations & Processes Design

Sludge Processing

Plant Design

Industrial Treatment Systems

Advanced & Natural Treatment Systems

#### CONSTRUCTION PHASE

Design Support

HARA Appraisals

As Built Records

Commissioning

O&M Manuals

CDM Management

## Environmental Solutions

### Water Supply

#### Water Management, Treatment and Distribution

ess consulting offers planning, engineering and project management services and specialist services including:

- Source identification and asset management.
- Resource, supply and demand strategies.
- Reservoir, groundwater and inter-basin resource assessments.
- Demand management and leakage control measures.
- Supply and demand studies.
- Quality and contamination investigations
- Water treatment strategy, works layout and detailed design.
- Service reservoir design and construction detailing.
- Value engineering and hazard and risk assessment.
- Regulatory Compliance Audits.
- MEICA and SC ADA design and specification.
- CDM management.
- O&M manuals.

The efficient operation of water supply and distribution systems requires a proactive approach to achieve key business objectives with regard to customer services. Over recent years the requirement to improve operational efficiency has increased with the emphasis being on reducing costs. At the same time, optimum system performance to meet legal water quality standards and level of service obligations remains of paramount importance.

#### PLANNING STAGE

Yield Estimation & Demand Management

Underground & Surface Water Schemes

Storage & Distribution Systems

Treatment process Selection

#### DETAILED DESIGN

Intake Design

Treatment Processes & Plant Design

Advanced Treatment Technologies

Service Reservoirs

#### CONSTRUCTION PHASE

Design Support

HARA Appraisals

As Built Records

Commissioning

## Environmental Solutions

### Environmental Management

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**ess consulting** will project manage environmental impact assessments. Assistance can be given with the preparation and execution of Compliance Action Plans (CAP), specifying methods of energy and water resource management, waste disposal, new strategies and a plan of action to protect the environment.

**ess consulting** and its associates offer to undertake and to provide advice on:

- EIA studies for coastal resorts, power plants
- Energy projects and energy efficiency studies.
- Establishment of Environmental Management Systems.
- Installation of Environmental Management Systems.
- Audits to check BS7750 compliance.
- Green planning and construction.
- Sustainable designs for low-cost water and sanitation systems.
- Innovative designs for water and sanitation systems.
- Environmental monitoring and compliance assessment.

#### ASSESSMENT

Field Survey & Data Collection

Environmental Evaluation

Source Water Quality

Industrial Process Review

Expert Advice

Environmental Impact Assessment

#### MANAGEMENT

Water Environment

Waste Minimalization

Sustainable Resource Management

Energy Efficiency

Resource Productivity

Planning Submissions

Electricity Act S36/S37

## Environmental Solutions

### Flood Control

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#### Flood Studies and Drainage Area Planning

ess consulting offers a broad experience of all features of storm drainage, flood analysis and control from comprehensive river systems to individual drainage schemes. The company, its consultants and associates are able to offer a full range of specialist services including:

- Project management.
- Hydrology and Hydraulics.
- Catchment and aquifer characterisation
- Highway and Development Drainage.
- Industrial Site water management.
- River Engineering.
- Flood Appraisals.
- Flood Protection.
- Revetments.
- Flood and Storm Water Management.
- Pollution Control.
- Dredging.
- Weirs, Sluices and Controls.
- Lake and Reservoir Management.
- Third party liaison - EA, LA, drainage authorities, landowners.

The UK flood events of late 2000, concern over climate variability and changing attitudes towards 'soft' solutions to flood and drainage area management make flood control one of today's major environmental issues.

#### INVESTIGATION

Land Drainage

Flood Alleviation

Catchment Analysis

Channel Regime

Sediment Transport

#### DESIGN & IMPLEMENTATION

Channel Design & Improvement

Detention Basins

Embankments

Control Structures

## Environmental Solutions

### Pipelines

#### Pipelines and Pumping Systems

ess consulting offers planning, engineering and management services for pipelines and pumping systems and a full range of specialist services including:

- Project management
- System flow diagrams and route selection.
- Ground investigation procurement and geotechnical appraisal.
- Design of anchor blocks and thrust blocks.
- Pipe components and connection details.
- Buried pipeline embedment assessment.
- Above ground pipe support and stress analysis.
- Piping layouts, hydraulic modelling and surge analysis.
- Pump selection and procurement.
- Design of pumping station controls and instrumentation.
- HAZOP studies.
- Pipeline and pumping main operational reviews.
- Trunk main strategies.
- Condition assessments and refurbishment planning.
- Supervision of testing and commissioning.
- Strategic repair stock assessment.
- SSOs, CSOs, UIDs, etc.
- Small scale hydropower schemes.
- River and sea outfalls.
- Third party liaison; LA, EA, landowners etc.
- Asset management audits.
- O&M reviews.

ess consulting offers expertise in route appraisal, hydraulics, surge analysis and pump selection to assist in the planning and design stage of a project. In addition engineers with many years of experience in the supervision of pipelines are available to offer advice on the construction and commissioning stage. This means that the most appropriate resources are utilised as the project develops from inception to completion.

Pipeline projects have included directional drilling, thrust bores and other techniques for road, rail, canal and river crossings. Substantial experience has been gained in trunk main cross connections.

#### PLANNING STAGE

Route Appraisal

Cost options

Material Selection

Pump Costs

Energy Costs

Control Systems

#### DETAILED DESIGN

Hydraulics

Surge Analysis

Thrust Blocks

Pump Selection

Connection Details

#### CONSTRUCTION PHASE

Design Support

HARA Appraisals

Quality Checks

As Built Records

Test Verification

CDM management

O&M manuals

## Key Clients

Since establishment in April 2000, **ess consulting** has worked directly for the following key clients:-

### **Welsh Development Agency / Isle of Anglesey County Council**

- Anglesey Energy Project – presentation to Senior Management Group.

### **Hyder Consulting**

- Anglesey Power Study - 550MW CCGT heat utilisation review and development strategy.

### **West Coast Energy**

- Review of Welsh Development Agency's Outline Energy Strategy and proposals for development.
- Review of Renewable Energy Report to the National Assembly for Wales.
- Offshore wind farm(~100MW) cable landfall and onshore cable route optioneering. North Wales.

### **MEICA Process**

- Development of a Tender Review model for the assessment of Operational Proposals in Design, Build and Operate Tenders submitted for two Welsh Water WwTWs.

In addition, **ess consulting** has worked in alliance with the '**Astral**' group for the following key clients:-

### **Costain/Haswell (Yorkshire Water Framework)**

- Leeman Road, York. Sewer requisition - route selection, project definition and third party liaison.

### **Cumbria Waste Management**

- Leachate treatment schemes - contract preparation, tender appraisal and project management.

### **MEICA Process (Welsh Water Framework)**

- Gresford and Cefni WwTW - project definition and economic appraisal.

## Projects

### West Coast Energy

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**Client:** West Coast Energy

**Project:** Review of an Outline Energy Strategy and Proposals for Development.

**Dates:** February to July 2001

West Coast Energy (WCE) in association with EC Harris (ECH), were appointed to undertake a Review of an Outline Energy Strategy proposed by the Welsh Development Agency (WDA). A strategic approach for how best to engage with the Energy Sector in Wales was required in the light of major changes anticipated in the energy 'mix', policy objectives for 'sustainable development' and the WDA's remit for economic development. ess consulting was appointed by WCE to project manage the Review and to author the Review Report..

#### Sector Audit

To characterise the Energy Sector in Wales, the Review Team carried out an audit of the current status of energy provision, demand and distribution in the Region. This involved informal consultations with the major stakeholders in the Sector and enabled the Sector to be defined in a number of key areas:-

- The current energy generation mix
- The annual output and demand
- The contribution from renewable sources
- Regional energy quality issues
- Constraints to economic development
- Social, technical, environmental and political impacts.



#### Sector Forecasts

Spreadsheet models were prepared to enable assessments to be made of the changes likely to take place in the Sector over the next five to ten years. Existing and new generation technologies were compared to understand the forces acting for change (decline in coal and nuclear; changes to gas (CCGT) and support mechanisms for clean energy and renewables, etc). Currently identifiable new projects were subject to a probability assessment to enable projections to be made of Public Sector Investment, jobs created or sustained, total energy, renewable energy, and CO2 outputs.

#### Framework analysis and strategic development

A picture then emerged of the changes that could be expected over the next ten years in terms of the technology, location and distribution of energy. This provided the framework within which the WDA could expect to be operating and further models were prepared to enable the WDA to evaluate and prioritise their sector support programmes to give the best return within their corporate plan objectives.

## Projects

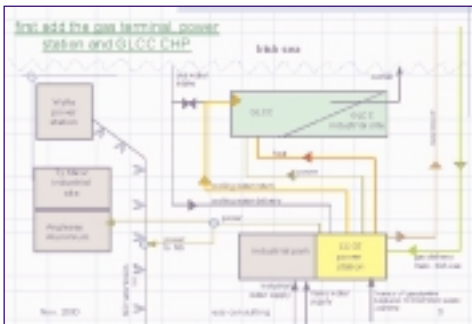
### Isle of Anglesey County Council / WDA

**Client:** Isle Of Anglesey County Council.

**Project:** Preparation of presentation material for a proposed CCGT power station, Energy Park and associated support infrastructure developments.

**Date:** October 2000.

During the Government's stricter consents policy in 1999 and 2000, a successful case was made for the development of a new gas-fired power station (CCGT) in the north of the Isle of Anglesey. Having worked on the technical and economic studies used in making this case, **ess consulting** was asked to prepare a non-technical briefing presentation for senior officials in the IoACC, the WDA and other stakeholders. This was needed to explain the complex interrelationships between the proposed CCGT station, the integral use of heat and power by existing and proposed industrial consumers and the potential impact on existing services and communications infrastructure.



Stylised line diagrams helped to explain the complex inter-relationship between the various key elements of the development strategy.

Possible Energy Park layouts were developed to highlight the implications for road and rail communications, services, wastewater and waste disposal.



Photomontages gave a typical impression of the landscape effects from key viewing points.

## Astral - Strategic Alliance

**ess consulting** is a founder member of 'Astral', a strategic alliance of six complementary SMEs with common objectives and established operating protocols for managing joint projects - including resource and expertise sharing and a commitment to quality. Together, they provide multi-disciplinary project services and advice from conception to commissioning and operation. In addition, **ess consulting** and **Astral** operate within a close network of associate businesses and specialists with expert knowledge of water, energy and environmental issues.

Astral comprises:-

COMPANY	BUSINESS AREA	PRINCIPAL
ARL Consulting	Water process engineering	Simon Binyon
CDM Consulting Ltd	Contract Management	Mike Bond
ESS Consulting	Strategy, and Technical Development	Peter Leach
H&M Environmental	Odour monitoring and management	Matthew Houseman
Jones-Jack Ltd	Mechanical and electrical engineering	Mike Jones-Jack
WaterCo Ltd	Civil and structural design	Peter Jones

**Astral** commitment: An alliance of complementary and self managed businesses committed to the provision of value-for-money solutions to water, energy and environmental infrastructure development.

'Astral' works through inter-company protocols, routinely reviewed, for operating and managing:

- Quality control
- Company systems
- Project management
- Resource optimisation
- Client interface

The 'Astral' team have 12+ years track record of project co-operation on such projects as:

- Welsh Water - water waste and sewerage asset management programmes
- Nipa Laboratories - pharmaceutical works effluent treatment plant
- Hyder/Lagan - Belfast and Bangor WwTW PFI project
- Hyder - Ganol WwTW, a £40m fast track project
- NWW - Mersey Valley Sludge Processing Centre

Projects recently undertaken by the 'Astral' team include:

- MEICA Process: - Welsh Water Small Projects - small sewage treatment works
- Costain/Haswell - Leeman Rd sewer requisition, Goathland, Settrington and Rewcliffe WwTWs
- Welsh Development Agency: Anglesey Power Study
- North Wales Health Authority: Highfield Park STW
- Tullis Russell: Paper Works Effluent Treatment Plant
- Cumbria Waste Management: Three Leachate Treatment plant upgrades