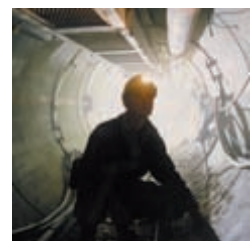


Today, more than ever, due to legislation and commercial pressures there is a need for effective Integrated Asset Management Planning, involving both Asset Management Planning and Asset Appraisal.

Entec recognises that the majority of organisations are asset based and depend on their assets to generate income in order to sustain their market position and customer base.

Integrated asset management planning



Capability statement



Entec

Entec is one of the UK's largest environmental and engineering consultancies. Our technical and business skills are dedicated to delivering strategic, technical and engineering solutions which bring commercial benefit to customers at home and overseas. This know-how is based on over 60 years' consulting experience in the public and private sectors.



Entec operates a Quality Management System in accordance with the latest requirements of the international standard BS EN ISO 9001 and an Environmental Management System compliant with BS EN ISO 14001. Both are audited by BSI Management Systems.



Creating the environment for business



Infrastructure assets - the backbone of your business



Most organisations - whether they are companies with manufacturing processes, fire brigades, local authorities or utilities - own a vast range of assets. Although there may be many different responsibilities and demands driving your organisation, these assets must be managed and maintained effectively. Failure to do this can have disastrous results. Entec has experience in :

- *Asset Management Planning -
the development of an overall strategy for reviewing existing assets, with the aim of maximising their value and potential in the most effective way*
- *Asset Appraisal -
the use of specific techniques to investigate, analyse and collect data about existing assets e.g. condition and performance assessments.*

This diverse experience has shown that understanding the performance of assets and their effective management can yield considerable benefits :

- *Ensures limited funds go further by focusing and prioritising investment*
- *Improves plant efficiency and reliability by effective targeted maintenance*
- *Maximises the return on asset investment by operating at optimum capacity*
- *Minimises disruption and adverse publicity arising from asset failure*
- *Gives greater confidence in the asset performance and the future growth of the business*
- *Identifies and provides the justification for phased capital improvement*
- *Ensures your major assets (the infrastructure below and above ground), retain their value, which in turn maintains the capital value of the whole organisation*
- *Helps you to comply with your legal requirement with respect to pollution, health and safety and public*



Our track record The capability

Entec has a long track record in Asset Management Planning and Asset Appraisal. Through this work we have gained considerable experience associated with all stages of the Asset Management process, (see Section 1) covering a wide range of assets:

- *emergency fire resources*
- *drains, sewers, culverts, pipe bridges, rising mains, sea and river outfalls*
- *brownfield sites and contaminated land*
- *water supply and distribution systems*
- *combined sewer overflows (CSO's)*
- *service reservoirs*
- *pumping stations*
- *detention tanks*
- *sewage and sludge treatment works*
- *building structures and estate roads*

One of Entec's strengths, available to few consultants, is our Instrument Control and Automation (ICA) experience, including plant and process automation, telemetry systems, telecommunications systems, networks and electrical systems.

Health & safety

Entec is committed to ensuring that all aspects of health and safety are adhered to in all works with which we are involved. We also have a number of health and safety specialists to support the consultancy service provided, e.g. electrical safety, construction (design and management) regulations, risk assessment up to and including major hazard risk analysis.

From our thorough understanding of the issues and drivers behind legislation, we can work with you to help you devise a strategy which will help you to run your assets efficiently, in the way that you want to. This will address the risks associated with non-performance of the assets, and how that could affect your business.

To achieve this Entec employ staff with many skills relevant to both above and below ground assets. These same skills which we can apply to all forms of assets managed in any organisation include:

- *asset management*
- *project management/construction management, risk based planning and health and safety*
- *surveying*
- *mathematical modelling of all water and sewerage related networks, rehabilitation of damaged or undersized pipes, leakage detection, odour control , mitigation of contamination caused by leaking sewers, design of new systems*
- *instrumentation, control and automation (ICA), telemetry, telecommunications both data and speech, management information systems etc, electrical and mechanical engineering*
- *design of database systems for information storage*
- *geotechnical investigations*
- *environmental assessment (noise, air quality, vibration, visual impact, traffic impact, archaeology, hydrogeology, water quality, aquatic ecology), groundwater management, planning.*



The flexible response

Entec recognises that not all organisations will be in a position to carry out all aspects of effective Asset Management Planning and Asset Appraisal, because it is simply not cost effective to have the specialist equipment and skills in-house. Specialist areas such as capturing asset data, digital mapping, using close circuit TV for internal inspections, obtaining flow data from monitors and undertaking hydraulic simulations can all be undertaken by Entec.

Working closely alongside our clients to provide positive, practical assistance, Entec can tailor the service to meet your needs, whatever the problem.

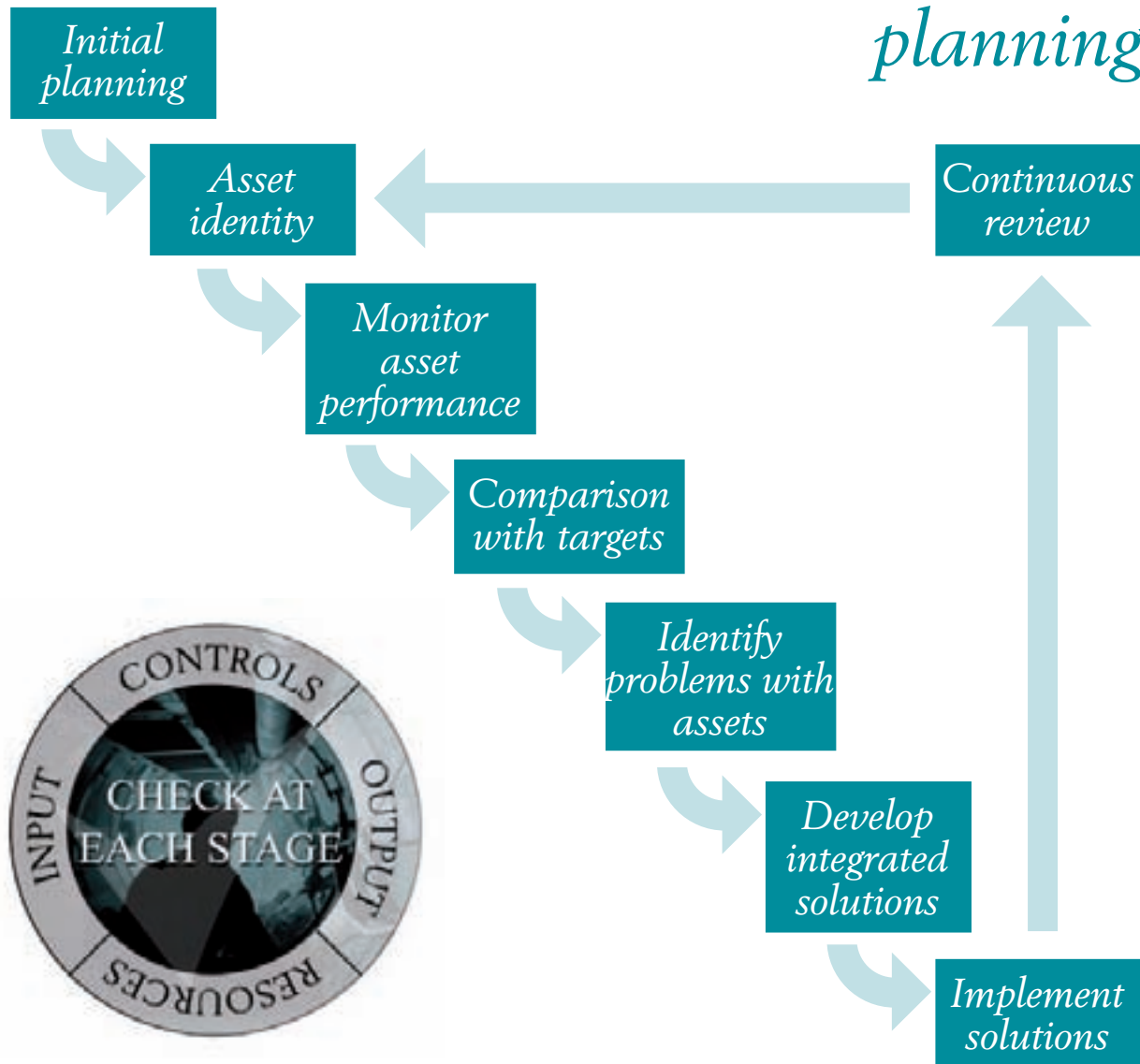
This flexibility means that services range from the secondment of individual specialist personnel, to the provision of a totally integrated multi disciplinary asset management service, including the development of maintenance regimes to achieve client/regulatory standards of service, the development of capital and operational profiles and the implementation of solutions. This is especially beneficial where the assets to be maintained are not part of your core business and your organisation would like to be relieved of the headache of the whole life management of such services.

Our approach and our experience, together with our single point of contact philosophy, mean that clients receive both cost effective solutions and projects easily





Asset management planning

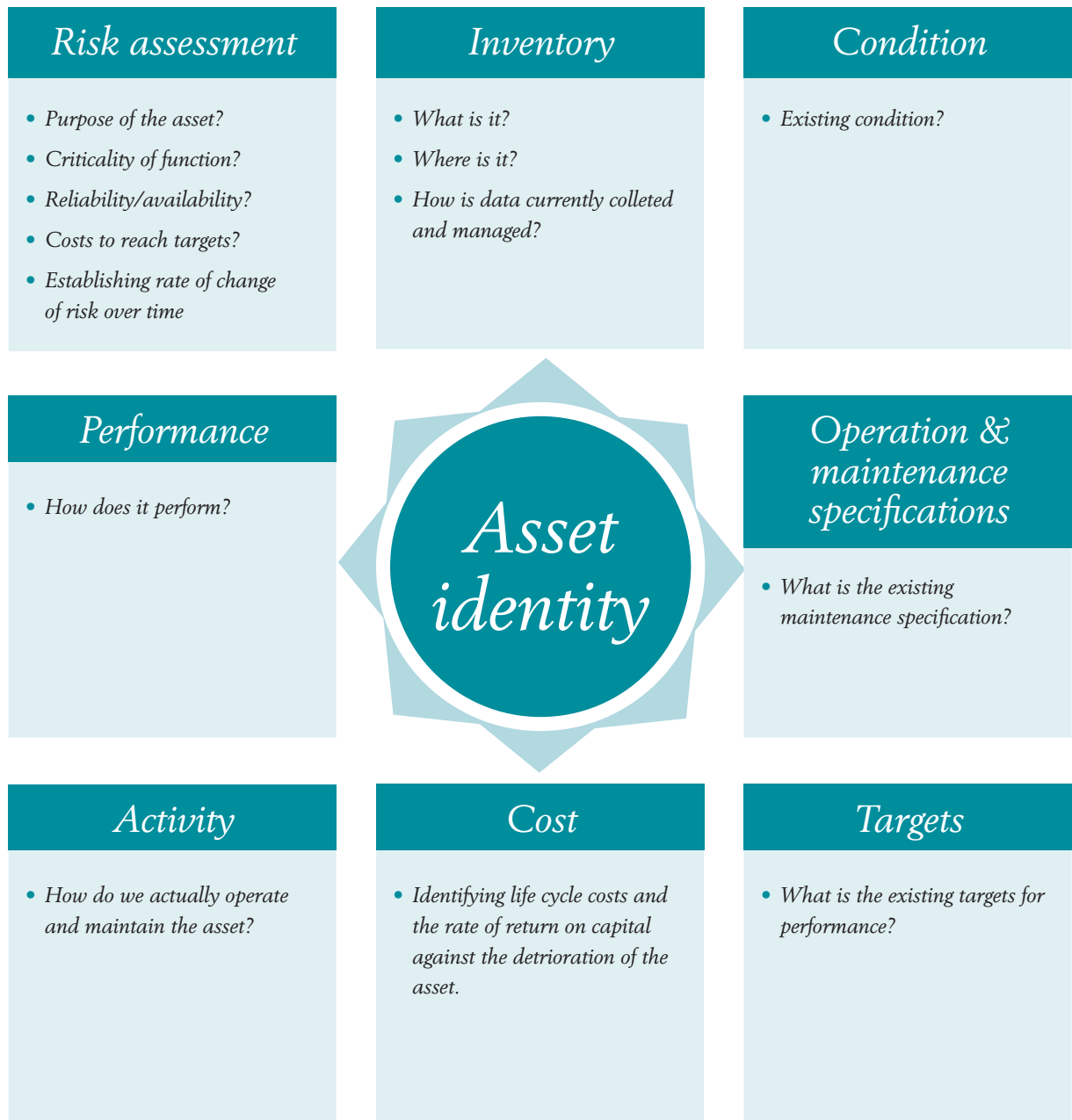


Notes:

1. The above flow diagram represents the total asset management planning framework.
2. Each sub-activity represents a key asset management function within the overall asset management planning frame work.
3. Each sub-activity involves further sub-divisions, e.g. Asset Identity as shown overleaf.



Asset identity - data collection





Case studies

The following pages demonstrate Entec's capabilities in the area of industrial effluent treatment, using case study examples



Asset management condition survey

Client:
Northumbrian Water Limited

As part of NWL's Asset Management Planning programme, Entec undertook asset surveys of 218 sewage treatment works, reporting individually on the civil, mechanical and electrical condition at each.

As well as condition, an assessment was made of the life expectancy of each of the works. This included the preparation of refurbishment cost data for replacement to be made within 2-5 year, 6-10 year, 11-15 year, 16-20 year and over 20 year timescales, taking into account projected future changes in both population and legislation.

To simplify the reporting procedure Entec used state of the art Psion data-loggers on site and recorded observations following a standardised format. This information was down-loaded daily to build up records of all surveyed facilities on our office-based computer network.



Risk based planning and management of fire service resources

Client: Home Office



Entec is in the process of updating the system used by the UK fire service to plan the provision of emergency fire resources. This system is one of the main determinants of the cost of the fire service and the standards of service provided to the public. This is a critical project on which the achievement of Government objectives and maintenance of appropriate standards of service depends.

The project has a number of stages:

1. Demonstrating The Risk Assessment Process

This included:

- *establishing the principle of risk assessment*
- *demonstrating that risk assessment can be applied to plan fire stations*
- *producing and trailing example methods.*

This work was sufficient to satisfy the Joint Committee on the Audit Commission Report (JCACR) that risk assessment can be recommended in principle to the Central Fire Brigades Advisory Council (CFBAC)

2. Development of National Risk Criteria

Entec developed a set of risk criteria for use in determining whether the level of risk warranted the provision of emergency fire resources.

3. Trials on large area basis

Having demonstrated the value of risk assessment, we proceeded to complete the risk assessment methods and assist on a national trial of the process.

4. Costing The Implications of Risk Assessment

This entailed estimating the cost implications of applying the proposed national risk criteria and inclusion of certain special service incidents and community fire safety work in the fire cover planning process. As part of this work it was also necessary to reconsider the notional costs of fire stations and appliances used by the Audit Commission and the Home Office in the Comprehensive Spending Review. In addition, the cost implications of setting the risk criteria at higher or lower levels needs to be evaluated. The Home Office views this latter task as critical.



Regenerating old gasworks' sites

Client: BG Properties

BG Properties is undertaking one of the world's largest programmes of brownfield land regeneration by remediating many of its former gasworks' sites. The programme of releasing prime town and city centre sites for sale or lease extends the length and breadth of Britain. As a consultant to BG, Entec is engaged in the assessment of a large portfolio of sites and in the design and supervision of remediation contracts.

To date Entec has been involved in over 40 sites, taking several through to remedial contracts on which various technologies have been applied. This has included traditional excavation and disposal, soil screening, odour control, tar pumping and recovery and groundwater clean-up.

Remedial schemes using various technologies have been developed using risk assessment techniques involving detailed negotiations with the Environment Agency to agree the clean-up action levels required.





London Underground set up a department to review and record accurately the drainage assets of stations and tracks. Entec was appointed under a framework agreement.

Entec carried out a complete and detailed drainage asset survey and reviewed those assets which required refurbishment or updating. The commission involved all civil, mechanical, electrical and ICA works associated with each station, covering gravity drains, sanitary ware, electrical installations, pumping installations and rising mains. This also included floor level surveys and water sampling.

The vast majority of the survey work was carried out during the night in London Underground's engineering hours.

Entec recorded all of the drainage assets on CAD using the Intergraph Microstation.

The feasibility study reviewed all drainage assets and included recommendations for their refurbishment or redesign together with the associated costings.

Old Street and Tower Hill underground stations drainage assets survey and feasibility study

Client: London Underground



Groundwater risk assessment at a refinery site

Client: Shell

Entec undertook the review and investigation of ground water conditions beneath a major UK refinery sited over an important aquifer.

The review of this major asset included detailed planning and scoping of the project in conjunction with the client and desk study review of the hydrogeological setting, site operations, operational incidents, waste arising and on-site waste disposal practices. This was followed by the installation of a groundwater monitoring network together with the sampling of monitoring wells. Particular attention was given to the migration of organic contaminants through the unsaturated zone to groundwater and the impact on surface waters.

Through this asset appraisal, long-term strategies to manage the associated environmental risks were formulated.



Asset survey - Gibraltar

*Client: Lyonnaise des Eaux
(Gibraltar)*

Lyonnaise des Eaux (Gibraltar) has a concession to maintain all potable water, sea water and sewage systems in Gibraltar. Entec was commissioned to undertake an asset survey of the condition and performance of all of the above assets.

Each asset was surveyed and an assessment made of its condition and performance. Databases in the form of condition survey sheets were developed. Once data had been entered, the assets' age, condition and performance were used to generate a date and cost for replacement. This information was collated to form the capital expenditure profiles, which detail the recommended phased capital investment over the remaining period of Lyonnaise des Eaux's (Gibraltar) concession.

Entec was also commissioned to provide a bespoke database that would be used to monitor current and new assets owned by Lyonnaise des Eaux (Gibraltar).





CIBA-GEIGY site appraisal

Client: Faithful & Gould

Faithful & Gould has an ongoing presence at the chemical plant of CIBA-GEIGY in Grimsby and was asked to carry out an asset survey and issue a condition report for a number of areas on the site.

Entec's brief was to contribute to an overall asset management survey of all properties, roads and structures. Buildings associated with the survey included large warehouses, offices, production buildings with numerous levels of intermediate floors, stores, a laboratory, a sports and social pavilion and a number of various types of temporary buildings. In addition the commission included some concrete bunded areas for tank spillage containment. The structures dated from the early 1940's through to the present day.

The estate roads were generally of concrete construction, with some lengths of tarmac on those roads constructed recently.

Our work enabled Faithful & Gould to complete a long term maintenance plan and cost assessment by identifying when repair or refurbishment would be necessary.



Sample client list

BG Properties

Cardiff Bay Development Corporation

Conwy County Borough Council

Faithful & Gould

GKN Defence

Home Office

Lincoln City Council

London Underground

Lyonnaise des Eaux (Gibraltar)

Ministry of Defence

National Power

Northumbrian Lyonnaise International

Northumbrian Water

Shell



Entec

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