

## Transport planning

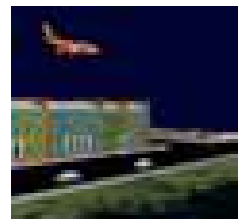
*Good transport is essential to an enhanced quality of life, to a strong economy and to a better environment.*

*Improving public transport is also vital in reducing social exclusion, particularly for people who have less access to a car including women, the old, the young and disabled people. It will help create a fairer society.*

***Transport 2010, The 10 Year Plan – DfT***

The quality of transport provision for any proposed development is often key to the feasibility of the project as a whole. The needs of all transport users must be met within the relevant policy framework and the commercial constraints of the proposals.

Entec's approach to transport planning incorporates all the relevant skills from within and outside the discipline to produce real solutions that are consistent with the needs of the client and the planning process.



## 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.*



Certificate No. EMS 69090

Certificate No. FS13881

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.



## *Transport planning*

### *Why Entec?*

#### *Multidisciplinary approach - effective delivery of co-ordinated solutions*

Our transport planning team is an integral part of Entec's Planning and Environmental Appraisal Group, providing stand-alone services or within larger multidisciplinary teams, tailored to the specific project requirements.

We are able to offer a true national presence from our network of 12 offices around the UK. Our multidisciplinary skill-base allows our project teams to operate with a high degree of co-ordination, resulting in the cost effective delivery of solutions for our clients.



#### *Breadth and depth of skill base - support throughout the project lifecycle*

We frequently combine with other in-house disciplines, and as a consequence staff have the breadth and depth of understanding and ability to work effectively with a wide range of other skills. Typically, teams include:

- Transport planners and traffic engineers
- Civil, highways and utilities engineers
- Development planners and experts in sustainability
- Architects and urban designers
- Ecologists
- Archaeologists
- Ecologists
- Water management, land quality and land remediation experts
- Waste management and waste disposal experts.

Our range of skills allows us to give full support to our clients, with advice offered throughout the project lifecycle, from concept through to feasibility, design and implementation.

#### *Broad range of experience - tailored solutions*

The Entec team benefits from experience gained by operating in a wide range of market sectors, including:

- Property
- Regional & local government
- Defence
- Energy
- Waste
- Transport & contractors
- Central government & agencies

This has allowed us to develop a valuable understanding of how our client's needs vary across sectors, and therefore allows us to deliver effective solutions tailored to their business objectives.



# Transport planning

## Our services

### Access appraisal

The ability to achieve safe and efficient access is a fundamental determinant of the feasibility of any development site. Entec therefore provides advice on access solutions to a variety of clients, in both the public and private sector.

We are proactive in developing cost-efficient solutions tailored to the requirements of each site, carefully evaluating the site constraints and the operational requirements of the development.



Based upon the Ordnance Survey Map with the permission of the Controller of Her Majesty's Stationery Office. © Crown Copyright. Entec UK Ltd. AL100001776.

### Transport assessment

Traffic growth has had a major impact on urban areas and elsewhere. Much of this growth is associated with new and expanded developments. As such, developers are required to provide transport assessments in support of planning applications. They enable the planning and highway authority to assess the potential transport implications of developments, and consider possible measures to manage the demand for travel by the private car.

Entec has valuable experience in the preparation of all aspects of transport assessments, including scoping, policy interpretation, capacity assessment, infrastructure design and travel planning. Our experience also extends to negotiation of S106 and S278 agreements, and the provision of expert witnesses at local inquiries.

### Microsimulation modelling

Traditional transport modelling techniques are 'black-box' mathematical models producing large amounts of numerical output that is difficult for the layman to interpret. They are also becoming increasingly redundant in the modern policy environment where the 'predict and provide' approach has given way to demand management.

We have therefore developed our skills in microsimulation modelling to demonstrate the transport implications of new developments. The output of these models is a three dimensional real-time graphical representation of the study area, showing how traffic moves through the network. All modes of transport can be included in the model and different development scenarios can be tested quickly and easily.

Entec is therefore able to provide this service as a valuable tool for clients to demonstrate the implications of development to local authorities and the general public.



# Transport planning

## Environmental impact assessment

Either as part of a full environmental statement prepared by Entec, or as a stand-alone input, we are experienced in providing transport inputs to environmental statements for a wide variety of development types. Our experience includes, for example, wind farms, waste to energy plants, waste transfer stations, large mixed use sites, pipeline and conveyor schemes, mineral extraction and quarrying, and sludge treatment centres.

This work has allowed us to develop a thorough understanding of the transport implications of development during the construction phase, and therefore compliments our transport assessment work that is more commonly associated with the operational phases of development.



## Travel plans

Planning Policy Guidance 13 ‘Transport’ now requires planning applications which are likely to have significant transport implications to be accompanied by a travel plan. The aim of the travel plan is to deliver sustainable transport objectives such as reduced car use, increased use of public transport, cycling and walking, improved road safety and more environmentally friendly freight movements.

Entec has a wide range of experience in the preparation of travel plans either as stand-alone documents or as the output of a transport assessment. Our experience also extends to travel plans prepared on behalf of clients wishing to comply with their own environmental management systems. Entec considers that the key to the travel plan process is the ability to identify the financial implications of the measures proposed, and demonstrate the impact on the client’s business.

## Highway improvements

Entec’s transport planners and highway engineers are able to add the valuable ‘buildability’ aspect to a project. The team is experienced in the design of all aspects of highway improvements, ranging from minor access works to complex junction arrangements. Our experience includes the design of signal-controlled facilities, sustainable transport infrastructure, traffic calming, signing and road markings.

We are able to provide support both for internal layouts and off-site infrastructure, often drawing on the breadth of Entec’s engineering skill base to provide a sole source for clients. The team is also experienced in the negotiation of S278 Agreements and, in conjunction with Entec’s planning team, can see a scheme through to implementation.

## Case studies

*The following pages demonstrate Entec’s capabilities in the area of Transport planning, using case study examples. ►*



## Access Studies for Onshore Wind Farms Powergen Renewables

As part of Powergen's ongoing programme to develop a number of sites in England, Scotland and Wales as onshore wind farms, Entec has been commissioned to undertake access studies in order to inform the development and planning process for each site. This commission has been awarded on a 'call-off' basis and a number of sites have been assessed to date, including potential wind farms in Staffordshire, Lincolnshire and the Scottish Highlands.

Each access study is comprised of three component parts:



### Plant Delivery

The first requirement of each study is to evaluate the feasibility of delivering wind turbine components, construction plant and materials to the site.

The transport requirements are identified by Entec based on the specification of the turbines to be used on the site. This information is then used to undertake a desk-top study of possible routes to the site from the nearest trunk road or import harbour, before undertaking a detailed site visit. A visual survey and assessment of the preferred route(s) to the site is then undertaken, identifying all potential pinch points and possible constraints on the route, such as horizontal alignment, gradients, load and axle restrictions, vertical clearances and areas where there may be a risk of grounding.

Having obtained detailed Ordnance Survey mapping for all potential pinch points, these areas are then subject to horizontal swept-path modelling using AutoTrack computer software to identify those areas where temporary engineering measures may be required. Recommendations can then be made as to the scope of works necessary to accommodate delivery of the turbine equipment.

### On-Site Works

Based on the turbine layout provided by Powergen, preliminary layout drawings are produced by Entec detailing possible routes for the on-site access tracks from

the highway to each turbine. These routes use existing tracks where possible and are optimised to minimise the impact of constraints such as ground conditions, topography and service crossings. Indicative cross-section details are also supplied for the construction of the access tracks and hardstandings.

### Traffic Generations

A critical element of the Environmental Statement prepared for any wind farm is the impact of traffic generated during the construction of the facility. Therefore, as part of each access study Entec provides Powergen with estimates of the likely traffic generations associated with the construction programme. These estimates take into account the delivery of all plant and materials such as turbine equipment, cranes, substation, stone, cement, steel, cable and the such like.

Entec's assessment of these access issues therefore supports Powergen in determining the relative merits of each site, assists in considering the likely financial consequences relating to access and aids the preparation of the Environmental Statement.

*Offering access  
solutions for onshore  
wind farms*



## **Business Park Travel Plan Gladman Developments**



*Identifying a range of solutions for improved access to a multi-occupancy business park*

ensure that the travel plan reflected their needs and concerns. Entec managed research of the companies and identified existing company policies on travel, flexible working systems and current infrastructure.

In order to identify what measures staff working on the business park considered to be potentially acceptable, Entec designed and distributed a business park wide staff travel survey. This aimed to raise awareness, establish current travel patterns and identify possible options for implementation to improve the current position.

Based on the results of the staff travel survey, a number of options for implementation and recommendations were identified for inclusion in the travel plan and were presented to the steering committee. Potential opportunities identified included:

- the introduction of flexible working schemes;
- the extension of the local bus service to include the business park;
- the implementation of a car sharing scheme.

Entec's work enabled Gladman Developments and the steering committee to appreciate the range of options available to them to improve transport access to the site. The information collected will enable the steering committee to negotiate with local bus service providers, and to identify potential car sharers, which will reduce transport access problems to the site.

Gladman Developments, who design and build offices, were constructing a series of business units on Gadbrook Business Park, an out-of-town development to the south of Northwich in Cheshire. As part of a plan to sell some of the units, and lease others, Gladman Developments were keen to implement a travel plan for the business park. This was aimed at improving the accessibility and attractiveness of the business park for potential employers, and to minimise the impact of an increase in employee numbers on the business park as a result of the new developments.

The business park consists of 37 different employers with over 3000 employees, including office-based staff, a bakery and a supermarket distribution centre.

Entec facilitated introductory seminars with presentations from the local borough council, Cheshire County Council and Gladman Developments to introduce the concept of the travel plan to all the employers on site, and to gauge the level of interest and support for the concept.

A steering committee with representatives of employers on the site was set up to



## **Bingham Employment Park The Crown Estate**



The need to provide more land for employment within Bingham was recognised in the 1996 Rushcliffe Local Plan. The Council expressed its wish to see a high quality business park on a site owned by the Crown Estate.

Entec was responsible for master planning the 37 hectare Employment Park, together with making the planning application and submitting an Environmental Impact Assessment (EIA) in its support.

The site lies to the north west of the town and is adjacent to the Fosse Way. It has a major drainage dyke running through it and is bounded by the railway and

residential development. Access, traffic generation, noise, archaeology and potential flood risk were major components of the EIA. The traffic issues at the Employment Park were further compounded by the near capacity flows along the A46(T) to the west of the site and the A52(T) to the south, which called upon innovative junction design.

The Crown Estate shared the high quality vision of the Employment Park with the local council. The illustrative master plan indicates balancing lakes at the entrance to the Park, which will provide both storm water retention and an

attractive landscape feature. Entec has prepared a development brief which will help achieve high quality development in attractive landscape surroundings to meet business needs.

The application received outline planning permission in March 2001 subject to completion of a section 106 agreement.

The Employment Park will provide much needed employment opportunities within Bingham on what is one of the largest employment sites in the Region. The success of the Park rests upon the careful planning that was given to the scheme at the master planning stage.



## Development of a Travel Plan Yorkshire Forward

As a regional development agency Yorkshire Forward (YF) has a statutory duty to contribute to sustainable development in the Yorkshire and Humber region. In November 2000 the YF Board made a commitment to become an exemplar organisation in terms of sustainable development. As part of the EMS, travel and transport impacts were identified as being significant issues for the agency.

In consequence, Entec was commissioned by YF to review the agency's travel and transport impacts and to develop a travel plan to minimise any associated environmental impacts.

Entec reviewed the current travel and transport connected with business and commuter travel at YF's five offices in Leeds, Bradford, York, Hull and Wath-on-Deane. The work required Entec to

undertake a travel survey, interview key personnel, undertake site audits, analyse existing travel data and policies impacting on travel and transport and to facilitate focus groups.

The travel survey developed by Entec was intranet based and interactive. We also ensured that the survey was intuitive (i.e. asking only questions relevant to the previous responses), thus quick to complete and was linked to a database to facilitate data extraction. This innovative approach, coupled with a high degree of publicity resulted in a very high response rate of 75% to the questionnaire.

GIS maps were also generated from the survey data to show the geographical distribution of employees for each office and the mode of transport they use to travel to work.

A travel plan was developed, containing objectives, targets and actions which:

- reduce the need to travel through substitution of travel e.g. use of video-conferencing;
- where this is not possible, reduce vehicular travel associated with YF's operations; and
- where this is not possible, reduce the impact of vehicular travel.

The travel plan will form part of YF's EMS, which will ensure implementation and progress reporting. Entec is being retained to provide technical support on the delivery of the travel plan.

*Implementation of  
travel plan helps  
Yorkshire Forward  
deliver its commitment  
to sustainable  
development*



## Wind Farm Design and Vehicle Access Studies Force 9 Energy

Force 9 Energy began a programme of wind farm development in the UK in 2002. Having identified a number of suitable sites, Force 9 required a consultancy to provide technical and environmental planning services to develop appropriate projects and ensure the best chance of planning consent. As part of Force 9's development programme, Entec was commissioned to perform initial feasibility and environmental scoping studies at two large sites in Scotland; one in Moray and one in Perth and Kinross. The key client requirements were determination of the environmental constraints on the sites, the design of site road routes and to address the challenge of delivering the required components and plant to these remote wind farm sites. The studies were critical inputs to the client's development decisions and ultimately fed into the client's financial model and land lease arrangements.

Entec investigated the technical and environmental constraints experienced at the sites and contributed to appropriate wind farm designs in response to the

specific features of the sites. Desk based design used industry standard software WindFarm supplemented by wind resource modelling in WAsP. Site surveys complimented the desk study, identifying further constraints not shown on maps.

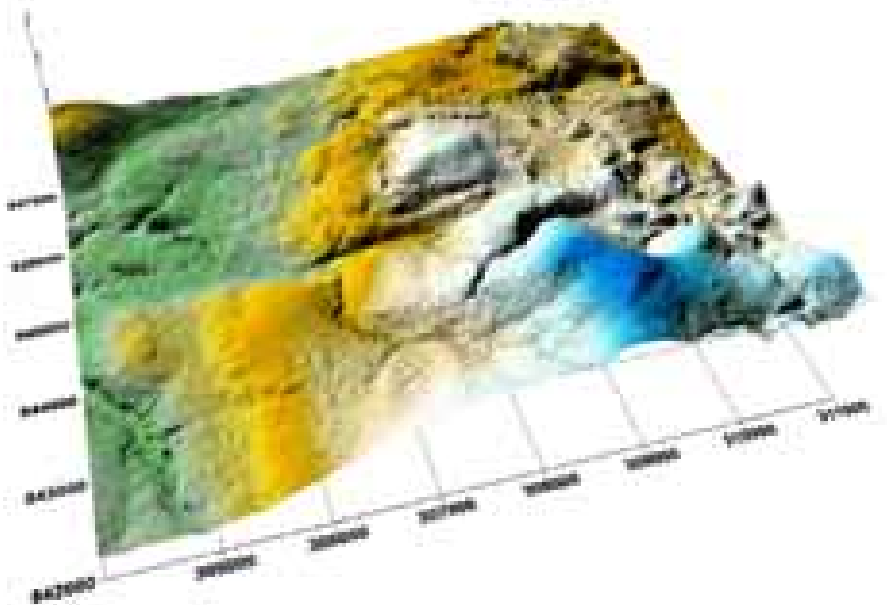
Bird populations were a particular concern at one site, so an early ecological survey was performed to determine breeding locations and sensitive habitats.

Potential issues relating to access for blade and tower delivery vehicles were identified through a combination of site surveys and desk-based map analysis. Pinch points on public highways were visually identified for further investigation and the routes for major vehicle deliveries were refined in light of this. 3D computer analysis was performed with terrain data to identify steep gradients on site and allow road routes to be designed accordingly. This process allowed a preferred route to be supplied to the environmental scoping phase, reducing the uncertainty in predicted environmental impacts.



Entec's assessment of site constraints and resulting wind farm layout provided Force 9 with a clearer idea of the potential site capacity and likely turbine locations, vital inputs to the subsequent environmental scoping process. Entec's identification of preferred delivery routes also allowed Force 9 to identify the appropriate land lease agreements.

*Designing optimised  
and environmentally  
sensitive wind farms  
in remote areas*



## **Research Project on 'Making the Best of Byways'** Department of the Environment, Transport and Regions (the environmental responsibilities of DETR now fall to Defra)



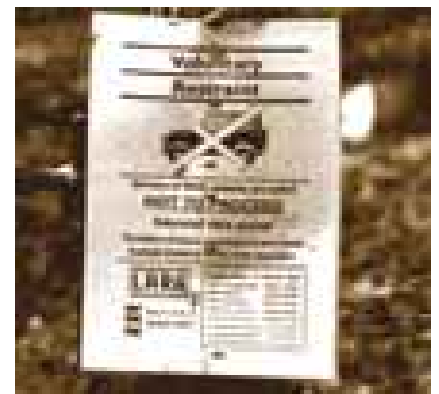
DETR was concerned that local highway authorities were not fulfilling their responsibilities towards rights of way with vehicular rights.

Entec researched the existing use of byways and the conflicts that arise, mainly through a sample survey of local highway authorities, and through discussion with user groups. The research confirmed that, while there were some localised problems with excessive use of byways by four-wheel drive vehicles, there were other

factors that contributed to the poor state of many byways, such as their use by farm vehicles and lack of maintenance.

Entec prepared a good practice manual for the use of local highway authorities that helped them to identify cost effective solutions.

*Research focused on the use of 4x4 vehicles*



## Peterlee Enterprise Zone Development One NorthEast

One NorthEast were trying to unlock 18 hectares of prime industrial development land at Peterlee in County Durham. To do this would require the construction of an access road and services infrastructure to tie the site into a new roundabout junction nearby.

One NorthEast called upon Entec's engineering and environmental skills to design a solution for this difficult site.

The initial works included demolition of a former coachworks and house purchased by the client. The infrastructure design included a 450 metre long, 7.3 metre wide industrial estate access road to adoptable standards. This included footways, cycleways, streetlighting and landscape design as well as the new utility services.

The drainage on the site was designed to incorporate storm water attenuation measures in the form of oversized pipework and culverts, discharging into a small watercourse near the site.

### Facts and Figures

#### Project

Peterlee Enterprise Zone Development

#### Client

One NorthEast

#### Location

Peterlee, County Durham, UK

#### Capital Project Value

£1m

#### Entec Services

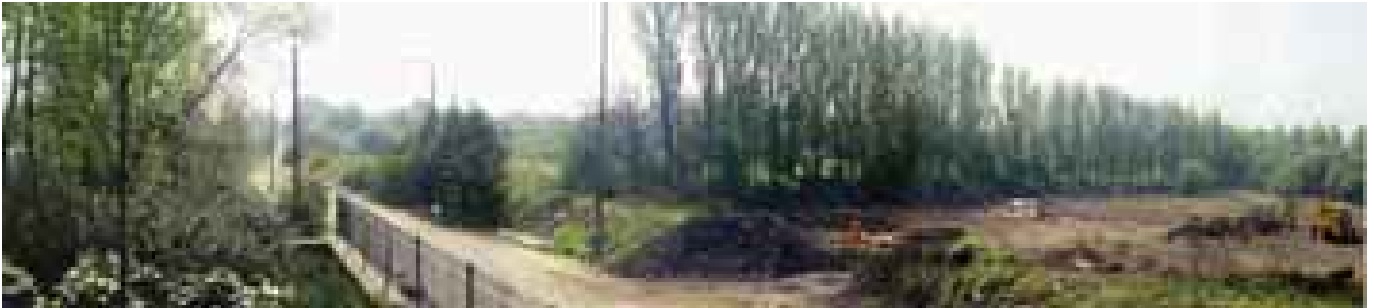
- Preparation of planning application
- Discussions with utility companies to assess service infrastructure demand
- Preparation of documents for demolition contract
- Agreement with local highways authority in respect of Adoption procedures
- Co-ordination and assessment of all infrastructure services including gas, water HV electric and telecommunications in conjunction with developer's requirements
- Discussions and seeking agreements with the Environment Agency
- Comprehensive landscape design including entrance 'gateway' and ornamental lighting features
- Landscape architecture
- Liaison with developers
- Civil engineering design of road and utilities infrastructure



*Facilitating site  
access and  
infrastructure for  
major industrial  
development*



## **Brownfield Site Redevelopment at Bilston, West Midlands** Advantage West Midlands



Advantage West Midlands, the regional development agency, has worked with local authority partner Wolverhampton City Council to assemble a large previously-used site for an 'urban village'. An imaginative vision and development concept was prepared by award winning architect Andrew Wright.

To establish the planning position and support a compulsory purchase action for an unsightly scrapyards, Entec submitted a planning application, environmental statement and transport assessment. The proposal is ambitious: high quality housing, commercial and leisure uses in a landscaped urban park, adding significantly to adjoining neighbourhoods and Bilston town centre. The approach is highly sustainable, emphasising public transport, cycling and walking, and low maintenance landscaping with a 2 hectare water feature. This is far removed from the legacy of heavy industry and coal mining - but quite appropriate for the largest brownfield opportunity in the Black Country.

Entec assessed the environmental implications of the proposed site remediation and built development, identifying appropriate design and controls to keep the impacts acceptable. A transport assessment considered how the site will be accessed, whilst reinstating pedestrian and cycle routes to the town centre and newly built Centro tram route.

The planning case has demonstrated how many of the Government's Urban Task Force recommendations are to be adopted. Some of the housing will be at high densities, up to 80 dwellings per hectare, with an emphasis away from private car usage and on-site parking. This is a radical approach for an established urban area with modest land values, and demonstrates Advantage West Midlands' intentions for the site.

Work by Entec and the overall project team has provided a compelling planning and environmental argument for taking forward this bold project. Planning approval will reinforce the case for compulsory purchase of the last piece in the land assembly jigsaw and remediation of the site can start in late 2002.

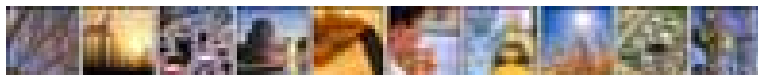
*Leading-edge  
solutions for a  
40 hectare  
brownfield site*



## *Transport planning*

### *Sample client list*

Airtricity  
Alnwick District Council  
Crown Estate  
Defence Estates  
English Partnerships  
Faithful & Gould  
Force 9 Energy  
High Peak Borough Council  
National Wind Power  
Newcastle City Council  
Nicholas O'Dwyer & Associates  
North West Development Agency  
Northumbrian Water  
Powergen Renewables  
Scottish Coal  
Sunderland Area Regeneration Company  
United Utilities  
Wandsworth Borough Council  
West Berkshire Council  
Yorkshire Forward  
Yorwaste



*Transport planning*

# **Entec**

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